Get fit, feel great, look amazing!

Regulation of exercise behaviour and body image in women

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DECLARATION

This thesis conforms to an 'article format' in which the middle chapters consist of discrete articles written in a style that is appropriate for publication in peer-reviewed journals in the field. The first and final chapters (Chapters 1 and 6) present synthetic overviews and discussions of the field and the research undertaken.

Chapters 2 through 5 are written in the style of articles suitable for publication in peer-reviewed journals in the field of Psychology. For all chapters, and subsequently submitted articles, the author order is the same, with myself, Megan Hurst, as first author, followed by Dr. Helga Dittmar (first supervisor) and Prof. Robin Banerjee (second supervisor).

The first author was responsible for the initial research designs, all data collection, analyses and writing of the manuscripts. Dr Dittmar and Professor Banerjee provided feedback on the study designs, the planned analysis and on the manuscripts themselves.

Study 1 of Chapter 2 was previously been submitted for publication and I am grateful to the anonymous reviewers of this study for their suggestions regarding the literature review and analyses.

I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

Signature:…………………………………………

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Summary

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Exercising to improve one's appearance has been consistently associated with negative body image (e.g., Tiggemann & Williamson, 2000). However, little is known about either the processes underlying this association, or the causal direction of the effects. This thesis draws upon both self-determination theory (SDT; Deci & Ryan, 2000) and objectification theory (Fredrickson & Roberts, 1997) in order to investigate the role of regulations for exercise and self-objectification in the link between appearance goals and body image.

The thesis examines both individual variations in these constructs, and their influences on body image among young women, utilising cross-sectional, longitudinal and experimental methodologies with both student samples and a community sample of gym-users (Chapter 2 and 3). It also considers factors in the exercise environment that can influence regulations of behaviour and feelings of self-objectification, using the physical education classes of adolescent girls as an exemplar (Chapter 4 and 5), drawing upon recent work on objectifying environments (Moffitt & Syzmanski, 2011) and the existing self-determination theory literature on motivation in physical education.

The four empirical papers highlight in particular the importance of introjected, or guilt-based, regulation in the link between appearance goals and negative body image,

and illuminate the associations with self-objectification. Furthermore, they highlight the negative impact that an objectifying and non-autonomy supportive environment can have on girls' engagement in and enjoyment of physical education, and on their body image. The theoretical and practical implications of these findings are discussed, in relation to an integration of self-determination and objectification theories as well as the potential for autonomy-supportive, non-objectifying exercise interventions that de-emphasise guilt and emphasise the intrinsic value and joy of physical activity.

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Chapter 1:

Introductory Overview

1. Introductory Overview

This thesis focuses on the associations between women's motivations for exercise and their body image. Body image has been identified as a critical component of women's physical and mental health (Grabe, Ward, & Hyde, 2008), but has a complex and unclear relationship with exercise and physical activity, particularly for women. In this domain, research has thus far only provided limited understanding of the processes associated with exercise and body image, resulting in a crucial gap in the research literature: there are no coherent, theory-based explanations of when exercise will be harmful for women's body image, or when it might have a positive influence. This thesis therefore explores the processes linking women's goals for exercise to their body image, using cross-sectional, experimental, and longitudinal studies, which draw on self-determination theory (Deci & Ryan, 2000) and objectification theory (Fredrickson & Roberts, 1997).

In this chapter, the concept of body image is described, and its substantial links to both mental and physical health outlined. From here, the breadth of research connecting physical activity, exercise, and sport to body image will be reviewed. Of particular interest and requiring further investigation are the complicated and at times contradictory relationships between exercise and body image for women, and the substantial negative association of certain appearance-focused reasons for exercise with body image. This overview explores these issues and locates them within cultural and motivational theoretical frameworks.

A crucial factor in the influence of women's reasons for exercise on their body image is the Western cultural context within which much of this research has been conducted. In examining the primacy of appearance in evaluations of women (by themselves and others), the restrictive and unattainable nature of cultural beauty ideals,

and the incompatibility of sport with femininity, it is possible to begin to understand the complex nature of women's relationship with exercise, and with their bodies. Objectification theory (Fredrickson & Roberts, 1997) offers the intra-individual process of self-objectification, the process of viewing one's body from the perspective of an external observer and valuing the body's appearance over its function, as a means of understanding how these cultural pressures affect the link between exercise and women's body image. These pressures encourage women to endorse appearance goals for exercise more strongly, which, in turn, result in greater experiences of objectification during exercise. These experiences, in turn, can negatively influence body image and lead to future self-objectification.

The influence of appearance goals for exercise should also be considered from the perspective of a motivational framework, self-determination theory (Ryan & Deci, 2000). This theory can help us examine the way in which women's regulation of exercise behaviour – the extent to which they feel self-determined in their exercise behaviour – may mediate the relationship between the endorsement of appearance goals for exercise and body image.

Previous literature has provided support for these theoretical approaches to women's exercise behaviour. However, there remain considerable research gaps, most crucially a) the lack of work integrating these theories and their processes, and b) the scarcity of appropriate longitudinal and experimental paradigms for investigating relevant hypotheses. These are therefore the critical theoretical and methodological concerns of the thesis.

1.1. Conceptual and Cultural Background

The Nature and Importance of Body Image

Interest in body image as a psychological construct has been increasing in recent years, with the emergence of specialist journals (e.g., *Body Image*; Cash, 2004) and of specialist research centres (as cited by Grogan, 2006). Body image is a broad concept, but at its most basic is how we perceive, experience, and evaluate our bodies. Grogan (2006) defines it as "a person's perceptions, feelings or thoughts about his or her body" (p. 524). It has been conceptualised as a multi-faceted construct, encompassing body size estimation, evaluations of attractiveness, and emotions associated with body shape and size (e.g., Muth & Cash, 1997).

Approximately two decades ago, research into body image was predominantly centred upon its value as a predictor of disordered eating, with strong associations found between body image disturbance and eating disturbance, and with scales such as the Eating Disorder Inventory combining measurement of both body dissatisfaction and anorexic and bulimic tendencies (Garner, Olmsted, & Polivy, 1983; Garner, Olmsted, Bohr, & Garfinkel, 1982). Indeed, body image dissatisfaction is highlighted in multiple reviews as a potent risk factor in the development of eating disorders (Stice, 2002; Stice & Shaw, 2002). However, research over the last 20 years has demonstrated body image's influence on a far wider array of mental health issues. Considerable research has linked body image disturbance to depression in particular: initial body dissatisfaction consistently predicts increases in depressive symptoms over time in adolescent girls (Ferreiro, Seoane, & Senra, 2011; Stice, Hayward, Cameron, Killen, & Taylor, 2000) and gender differences in body image account for differences in depression and self-esteem between boys and girls (Siegel, Yancey, Aneshensel, & Schuler, 1999). Moreover, in addition to depression, negative body image has been

associated with anxiety and stress (Wilson, Latner, & Hayashi, 2013), whereas positive body image has been associated with mental well-being outcomes, such as satisfaction with life, the experience of positive emotion and sexual satisfaction (e.g., Donaghue, 2009).

In addition to its strong associations with mental health, body image has been associated with subjective perceptions of physical health, and with engagement in healthy behaviours. Wilson et al. (2013) found a strong link between body image satisfaction and health-related quality of life, both mental and physical. In the case of physical health, it is particularly noteworthy that body satisfaction held stronger predictive value than body mass index, a ratio of a person's height to weight. In addition to these subjective perceptions, Grogan (2006) details a range of positive health behaviours which appear to be inhibited by negative body image: individuals might be reluctant to quit smoking due to concerns over weight gain (King, Matacin, White, & Marcus, 2005), or may avoid exercise due to concerns over how they look (Liggett, Grogan, & Burwitz, 2003). Thus, the examination of body image is not a frivolous concern, and has considerable implications for both individual and public health.

Theoretical understanding of body image disturbance has borrowed considerably from communications and media theories, positioning the media as a key influence on body dissatisfaction. Cultivation theory (Gerbner, Gross, Morgan, & Signorielli, 1994) proposes that the more television individuals watch, the more they believe that real life mirrors the world depicted in television shows and advertisements. Thus, the more women watch television, and engage with other forms of media, the more they believe that the exceptionally thin bodies of the women portrayed on-screen and in print are realistic, expected, and important for them to achieve, and this impacts negatively on their body image. Sociocultural theory expands the consideration of external influences,

suggesting three key factors that generate perceived pressures concerning appearance: the media, parents, and peers (Thompson, Coovert, & Stormer, 1999). In this tripartite model, these three factors are thought to have both a direct influence on women's body image, and an indirect influence, via the processes of the internalisation of sociocultural norms of attractiveness and increased appearance comparison.

These sociocultural theories of body image are often discussed as a factor behind the greater levels of body dissatisfaction experienced by women, compared to men. Although men's body image concerns and sociocultural pressures on them have increased in recent years (Pope et al., 2000), the weight of evidence still demonstrates that women report higher levels of body dissatisfaction at a population level and experience greater pressure than men from television and magazines to have a perfect body (All Party Parliamentary Group on Body Image, 2012). Furthermore, adolescent girls, to a greater extent than adolescent boys, experience increases in body image disturbance across adolescence and these concerns peak again in early adulthood, in longitudinal and large-scale cross-sectional studies (Brooks, Magnusson, Klemera, Spencer, & Morgan, 2011; Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013; Patton, Selzer, Coffey, Carlin, & Wolfe, 1999). Given these consistently negative developmental trends for girls, and the greater incidence of body dissatisfaction for women than for men, this thesis focuses on women's body image and exercise behaviours.

Exercise and body image: Existing knowledge

The relationship between exercise and body image is a complex one, with a multitude of seemingly contradictory findings reported in the literature. As discussed above, there is evidence to suggest that body dissatisfaction may prevent individuals from engaging in exercise (Liggett et al., 2003; Markland, 2009). However, exercise has

also been suggested as a means of improving how individuals feel about their bodies, in addition to improving their physical health: a meta-analysis of exercise-based body image interventions found that there was a significant, positive effect of engaging in a scheduled exercise regime on body image, with studies involving women, the gender perhaps most at risk of disturbance, showing larger, more positive effects (Campbell & Hausenblas, 2009). Furthermore, women who participated in sports during their adolescent years have better body image in college than women who did not (Greenleaf, Petrie, & Boyer, 2009; Richman & Schaffer, 2000). This research suggests that exercise may be a potent means of combating body image dissatisfaction, both in general and in particular for women, given the strong cultural pressures they face surrounding appearance (Campbell & Hausenblas, 2009; Fredrickson & Roberts, 1997).

These retrospective findings are not universally supported, however: Parsons and Betz (2001) found that women who participated in sport in their high school years had *higher* levels of body shame than women who did not, and this finding has been replicated by Slater and Tiggemann (2006). In cross-sectional work, exercise has been associated with greater preoccupation with weight (Davis, 1990), more negative views of body shape (Imm & Pruitt, 1991) and greater levels of eating disturbance (Hausenblas & Carron, 1999; McDonald & Thompson, 1992; Smolak, Murnen, & Ruble, 2000). Women in particular seem to have more difficulty accessing the body image benefits of exercise outside of the highly controlled, intervention context: in a cross-sectional meta-analysis, female samples showed a lower association between exercise and body image than male samples (Hausenblas & Fallon, 2006), and some studies have found negative associations between body image and exercise among young women, but not among other demographic groups (Tiggemann & Williamson, 2000). Furthermore, an intervention study aimed at increasing physical activity among

college students found the unintended side effect of increased drive for thinness for women, but not for men (Zabinski, Calfas, Gehrman, Wilfley, & Sallis, 2001).

The literature linking physical activity and exercise to body image is evidently far from united, particularly for women, thus raising the importance of considering the cultural and psychological conditions under which exercise and physical activity occur. One key factor may be the reasons behind women's engagement in physical activity, which are often very different from men's. Research has repeatedly found that women engage in physical activity for appearance or weight-related reasons more than men, and that these are often their main reasons for engaging in exercise (Davis & Cowles, 1991; Furnham & Greaves, 1994; Smith, Handley, & Eldredge, 1998). These appearance and weight loss reasons for exercise are consistently associated with higher levels of social physique anxiety, body dissatisfaction, and eating disorder symptomatology (de Bruin, Woertman, Bakker, & Oudejans, 2009; Eklund & Crawford, 1994; Frederick & Morrison, 1996; Hubbard, Gray, & Parker, 1998; McDonald & Thompson, 1992; Strelan, Mehaffrey, & Tiggemann, 2003; Tiggemann & Williamson, 2000). Furthermore, traditionally feminine, appearance-focused activities, such as figure skating, dance, and gymnastics have consistently been linked to worse body image (Brooks-Gunn, Burrow, & Warren, 1988; Parsons & Betz, 2001; Tiggemann & Slater, 2001).

However, in spite of the prevalence of these reasons, the benefits of exercise for women's body image may depend on them *not* endorsing appearance reasons for exercise: recent research has found that the positive association between physical activity and positive body image is dependent on the reasons behind exercise (Homan & Tylka, 2014). Exercise frequency was positively associated with a positive measure of women's body image, but this link was moderated by women's appearance reasons for

exercise. Women with low to average endorsement of appearance reasons for exercise demonstrated this positive relationship between exercise and body image, whereas women with high endorsement of appearance reasons for exercise experienced no benefits to their body image from increasing exercise.

Given the evidence reviewed above, appearance reasons for exercise may play a critical role in explaining the complexity of women's relationships with exercise and body image. Although previous research has demonstrated a clear negative link between body image and appearance or weight loss reasons for exercise, there has been very little investigation of the mechanisms behind this association, or why women are more likely to endorse these reasons than men. To fully explore why appearance reasons for exercise appear to be such a negative influence on body image, it is important to first how culture influences women's perceptions of themselves, and of exercise and its purpose.

Physical activity for women in the Western cultural context

Much of the research on exercise and body image discussed above has been conducted in Western cultures. Here, there are at least three key elements of social ideals and norms which may influence how women view their bodies, how they perceive exercise, and the influence these two constructs have on one another: a) the importance of women's appearance; b) the narrow and unachievable nature of appearance ideals for women; and c) the contradiction between femininity and physical activity. In discussing these influences of culture, it becomes apparent that women's relationship with exercise, and its relationship with cultural ideals for their bodies and with their body image, involves multiple, distinctive complexities that are gender-specific. Therefore, women's experiences will be the focus of this introductory overview and the thesis overall.

The cultural importance of attractiveness and weight for women

In spite of the recommendation of one English idiom to 'never judge a book by its cover', physical appearance plays a crucial role in how people form opinions of others, influencing their perceptions of personality and chances of success in life (Eagly, Ashmore, Makhijani, & Longo, 1991). However, within Western cultures, there is considerable evidence that women's physical appearance receives far greater attention and is viewed as of greater importance than that of men. Content analyses of visual media, such as advertising, music videos, magazines and video games, consistently find that women's bodies are represented to a far greater degree than those of men as existing for the sexual or visual gratification of others (Aubrey & Frisby, 2011; Downs & Smith, 2010; Hatton & Trautner, 2011). Furthermore, in descriptions of women in the media, their attractiveness and appearance are often discussed, even in occupational contexts where these elements are irrelevant: media coverage of female politicians consistently highlights their appearance, along with their personality and family situation, far more than the coverage of male politicians (Aday & Devitt, 2001; Bystrom, 2006; Heldman et al., 2005). These details would seem out of place when discussing a male candidate for a high-level position, but appear frequently in discussions of their female counterparts, which both serves to trivialise powerful women's achievements, and to refocus attention on the primary female attribute: appearance.

Even within sport, a domain where many features of appearance may be irrelevant to success, newspaper discussions of female athletes follow this same trend, with three recurrent themes which do not typically appear in descriptions of male athletes: sexuality and appearance, family, and personality (Choi, 2000). In both news reports and in commentary, the discussion of female athletes' appearances often occurs to the detriment of discussing their performances (Messner, Duncan, & Jensen, 1993).

A recent high-profile example of this is tennis commentator John Inverdale's comment regarding Marion Bartoli, Wimbledon women's champion in 2013, made during the finals: "Do you think Bartoli's dad told her when she was little: 'You're never going to be a looker, you'll never be a Sharapova, so you have to be scrappy and fight'?" (Wyatt, 2013, July 8). Although the subject of widespread criticism, this verdict on Bartoli's attractiveness (and its relevance to her tennis career) was repeated in social media responses to the final. These responses replicate the cultural messages regarding the importance of women's appearance. In the aftermath of this commentating incident, Marion Bartoli was subjected to appearance-focused and sexualised abuse, with one Twitter user stating "Bartoli didn't deserve to win because she is ugly" and another "I want Lisicki [her opponent] to win because she is really fit. Bartoli wouldn't even get raped" (Delgado, Allen, & Webb, July 2013). Here, Bartoli's worth as a tennis player (whether she 'deserves to win') is conflated with her attractiveness, or, according to culture, her worth as a woman.

These media depictions and descriptions of women, even high profile athletes, promote the importance of attractiveness as a goal for women, and this promotion continues explicitly in women's media, even among publications purportedly relating to health and fitness. Women's health and fitness media promote the goals of appearance improvement and weight loss more frequently than any other goal: a content analysis of women's health and fitness magazines from the United States found that more than 50% of main features in these magazines related to appearance or weight loss advice (Aubrey, 2010). Furthermore, 'success stories' printed in these health and fitness magazines quantify this success not in improvements in health and fitness indicators, such as resting heart rate, VO_2 max, or blood pressure, but in changes in waist and hip measurements, reductions in weight, and body fat lost (Choi, 2000; Duncan, 1994). By

emphasising these as the tangible, measurable goals of exercise and physical activity, these features further reinforce the idea that physical activity's primary purpose for women lies in improving their appearance. In this cultural context, even at the peak of physical performance, women are still valued and evaluated according to their appearance, and the primary purpose of physical activity for women is framed as its appearance benefits.

Women's appearance is therefore of symbolic importance: it is highlighted as their primary characteristic by visual and verbal depictions in the media. However, women's appearance and weight also have considerable real world implications in women's lives, and play a greater role in their life chances than for men. For example, women experience discrimination in work, health, and interpersonal contexts as a result of their weight and attractiveness to a greater extent than men and, perhaps most disturbingly, begin to be penalised for increases in weight at both levels lower than men *and* at levels lower than the medical definition of 'overweight' (Fikkan & Rothblum, 2012). In the domain of work, attractiveness and gender biases interact to affect hiring decisions, and although this attractiveness bias generally decreases with managers' experience levels, unattractive female applicants remain at a disadvantage during job selection simulations even with experienced managers (Marlowe, Schneider, & Nelson, 1996). This pattern is replicated across employment issues, from hiring, to wage gaps, to redundancies: unattractive people, particularly unattractive women, lose out in the jobs market (see Berry, 2007, for a review). Recent experimental work has found that weight bias extends even into the criminal justice context: women who were overweight were more likely to be viewed as guilty than women who were lean, particularly by men; no similar weight bias existed towards overweight or lean male defendants (Schvey, Puhl, Levandoski, & Brownell, 2013). Women's appearance is therefore not merely

represented as important by the media, but often may have a direct impact on their lived experiences.

Given the emphasis in the media on women's attractiveness, and the ramifications for women of failing to be attractive enough, potentially the primary value of *any* activity for women will be the extent to which it increases their attractiveness and enables the maintenance of an 'acceptable' weight. In this context, sport, exercise, and physical activity could be logically considered by women to have value in terms of how these activities can assist in weight and appearance management. The persistence of these messages in the sport and exercise context, in media framing of exercise's primary purpose for women as appearance and in its focus on sportswomen's appearances and attractiveness, further cements the value of exercise for women's physical attractiveness. In this context, it is unsurprising that women endorse appearance and weight loss reasons for exercise more strongly than men (Tiggemann & Williamson, 2000).

Physical activity and women's bodies: Reinforcing the thin ideal

"Eat, drink and still shrink!" – Women's Health feature, July/August 2010.

In addition to the pressure to be attractive, and the emphasis placed on women's appearance, women are also exposed to a restrictive image of beauty. In Western cultures, this ideal is thin and becoming increasingly so: in 1975, the average model was 8% smaller than the average woman; by 2012, this margin had widened to 23% (Rader Programs, 2012). As discussed above, exposure to cultural images and messages results for many in the internalisation of these messages, and Thompson and Stice (2001) discuss women's adoption of these ideals as a personal body goal as the internalisation of the thin ideal. Considerable research evidence suggests that this internalisation is associated with body image disturbance and eating pathology, as well as being one of

the key ways in which exposure to media depictions of women impact upon these

outcomes (e.g., Dittmar & Howard, 2004; Karazsia, van Dulmen, Wong, & Crowther,

2013; Stice & Shaw, 1994, 2002). Given these cultural ideals promoting weight loss and

thinness, exercise may be perceived to have value for women in its ability to bring them

closer to the culturally prescribed size (Garrett, 2004).

Scholars have argued in recent years that, although the 'ideal' body of any

culture is generally achievable by only a select few (Calogero, Boroughs, & Thompson,

2007), the current ideals of Western culture are particularly unachievable (Bell, 2012;

Groesz, Levine, & Murnen, 2002; Harrison, 2003; Tiggemann, 2011). Harrison (2003, p.

256) refers to the emerging ideal for women as the "curvaceously thin ideal",

highlighting the unachievable combination of large breasts and extreme slenderness on

the rest of the body. Equally, Bell (2012) argues that the ideal has shifted from merely a

'thin' ideal, to a 'body perfect' ideal, with women now expected not simply to be thin,

but also to have perfect hair, teeth, and skin tone, alongside toned (but not too sizeable)

muscles, as well as large breasts. These increasing demands, of toned, but not overly

developed, muscles, and of a thin waist while maintaining breast size, mean that

exercise is necessary to achieve these ideals; where once dietary restraint was enough in

pursuit of the thin ideal, the rise of the athletic, or body perfect ideal, makes it but one

of many required activities (Bell, 2012; Tiggemann, 2011). However, given the narrow

window of acceptability for these new ideals (thin but not too thin; toned but not

muscular), there is also the possibility of engaging in too much exercise. This is the key

way in which the relationship between cultural body ideals and exercise differs for men

and women: men, too, are under increasing pressure to 'bulk up' and achieve the

muscular ideal (Pope et al., 2000), and exercise is crucial in achieving this, as it is for

women in achieving the new body perfect ideal. However, the ideal for women is a

narrower range than for men, and they are more likely to be penalised for exceeding the 'perfect' size; an excellent example of this can be found in competitive body building, where female competitors can be 'too muscular', even in the size-based 'physique' category, whereas there is no such limitation for men (Choi, 2000).

Exercise's association with the cultural beauty ideal for women can be seen most clearly in how exercise is marketed to women by the media. First, health and fitness magazines regularly present images of thin, beautiful women alongside features promising 'Bikini body now!' (Townsend & Stock, 2012), inextricably linking the two. Second, features in these magazines relating to muscles and strength workouts for women come almost inevitably with a promise that this will not result in 'bulking up': one recent publication promises that you will 'lift like a man, look like a goddess' (Schuler, Forsythe, & Cosgrove, 2008). Thus, while exercise is necessary for achieving the 'perfect' body, a body that too obviously exercises is not the feminine ideal.

Physical activity and femininity: Stereotypes and challenges

"Horses sweat; gentlemen perspire; ladies glow." – Unknown.

In addition to having complex associations with feminine beauty ideals, exercise and physical activity are deeply problematic for achieving the feminine ideal more broadly, due to their construction as a masculine pursuit in Western culture. The challenge of remaining feminine while engaging in sport is proposed to stem from cultural stereotypes regarding gender roles for men and women and their contrasting correspondence with physical activity. Choi (2000) argues that to be successful in sport is to be agentic, strong, and powerful, constructs which she argues are associated with masculinity in Western cultures. This view is supported by research into personality traits and gender roles, which finds that both children and adults consistently associate traits such as 'strong', 'athletic', and 'competitive' with men and not women, and that

these traits are viewed as more desirable for men than for women to possess (Bem, 1974; Holt & Ellis, 1998; Powlishta, 1995; Twenge, 1997). Sport is thus seen as masculine and incompatible with femininity, resulting in cultural discomfort around women's participation in elite sports and physical activity more broadly. This can be seen in explicit statements of discomfort, such as in a columnist's discussion of women's judo at the Olympics ("It's disturbing to watch these girls beat each other up", Brown, 2012, August 2), but also in more subtle presentations in the media.

One of these is simply athletic women's absence from the media: between 2003 and 2009, women featured on fewer than 5% of covers for two prominent sports magazines in the US (Martin & McDonald, 2012); in magazines aimed at adolescent girls, only 7% of images of women showed them in physically active poses (Daniels, 2006). When women are represented in sports media, they are presented in a feminising manner: in the analysis reported by Martin and McDonald (2012), while the majority of male athletes were pictured in active poses, the majority of women (60%) were depicted in passive poses, and were often sexualised or portrayed in a manner which reinforced conventional feminine norms. Sports media, as well as mainstream media, therefore reinforce cultural norms of femininity, but also portray the view that sports *participation* is incompatible with femininity, by presenting women in passive and feminising poses.

This representation of physical activity and femininity translates into women's and girls' attitudes towards physical activity, with concerns raised particularly about the impossibility of appearing feminine and engaging in sport. In a focus group study with adolescent girls, Dwyer et al. (2006) found that girls believed looking good and feminine was incompatible with engaging in physical activity. Sweat in particular emerges as a barrier for both women's and girls' participation: 48% of girls in a

Women's Sport and Fitness Foundation survey (2012) agreed that sweating was

unfeminine, and Yungblut, Schinke, and McGannon (2012) found that adolescent girls

considered sweat an unattractive side effect of physical activity, strong enough to deter

them from engaging in it. The perception of the contrast between femininity and

athleticism extends beyond adolescent girls: focus groups with elite college athletes in

the United States have raised this as an issue as well (Krane, Choi, Baird, Aimar, &

Kauer, 2004).

However, although such incompatibility of ideal femininity and sport may

discourage some participants, evidence suggests that overcoming this and participating

in physical activity may, in fact, enable women and girls to challenge these restrictive

constructions of femininity: women who engage in more physical activity are more

accepting of a range of body shapes, finding more than simply the 'thin ideal' attractive

(Furnham, Titman, & Sleeman, 1994), and adolescent girls who engage in higher levels

of physical activity have less stereotypical views about attractiveness (Whitehead &

Biddle, 2008). In the case of visual media, women and adolescent girls exposed to

images of active female athletes, rather than sexualised, passive ones, were less focused

on their appearance, suggesting the potential for even images of physically active

women to reduce sociocultural pressures on women (Daniels, 2009).

Physical activity and the feminine ideal thus have a paradoxical relationship:

engaging in physical activity is crucial in the pursuit of the feminine ideal, thus

reinforcing it, but also has the potential to deconstruct the feminine ideal, and disrupt its

influence on women and girls (Garrett, 2004). Physical activity could therefore have a

positive influence on women's body image, to the extent that it assists them in

challenging cultural ideals of attractiveness, or a negative one, if it reinforces these

ideals and supports the importance of appearance, as many prominent discourses in the

media do. However, without a theoretical framework within which to conceptualise these cultural effects, and their influences on women's experiences of their bodies, it is not clear why some women experience the positive effects outlined, as opposed to the negative ones. Thus, objectification theory (Fredrickson & Roberts, 1997) is discussed in the next section, to explain how women's experiences of physical activity may influence their body image in qualitatively different ways.

1.2. Objectification theory: Explaining women's experience of Western culture

Objectification theory (Fredrickson & Roberts, 1997) posits that women are treated as objects in Western popular culture, with an attractive appearance represented as their primary function, providing visual stimulation for a presumed male, heterosexual gaze. This cultural environment results in women internalising the importance of their body's appearance (over its function) and engaging in increased self-monitoring in order to ensure these cultural standards are met (Fredrickson & Roberts, 1997; Moradi, 2010). These processes are then proposed to have negative effects on women's mental and physical health.

Considering the earlier discussion of women's appearance-focused representation in the media, both visually and descriptively, and the influence of weight and appearance on their interpersonal experiences, there appears to be strong support for the initial proposition of this theory. The second proposition, relating to women's subsequent internalisation of the importance of appearance, is also well-supported by research, as women's feelings of self-worth are more strongly influenced by their appearance than men's. Studies have found a stronger link between body dissatisfaction and low self-esteem for women (e.g., Furnham, Badmin, & Sneade, 2002) and women explicitly report higher levels of appearance contingent self-worth than men, and these are associated with increased body image concerns (Grossbard, Lee, Neighbors, &

Larimer, 2009), suggesting the greater importance for women than men of this dimension of the self. Women also rank their bodies' aesthetic elements, such as weight and sex appeal, more highly than the functional elements, such as health, strength or stamina, as compared to men (Noll & Fredrickson, 1998; Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998).

In support of the theory's third and final proposal, this internalisation of the importance of appearance and the view of the observer on one's own body has been consistently associated with negative outcomes for body image, and for women's mental health, in both adolescent girls and adult women (Grabe, Hyde, & Lindberg, 2007; Miner-Rubino, Twenge, & Fredrickson, 2002; Moradi, Dirks, & Matteson, 2005; Noll & Fredrickson, 1998; Slater & Tiggemann, 2002; Tiggemann & Slater, 2001). Objectification theory provides a well-supported explanation of why women in Western culture experience greater levels of psychological ill-being, in terms of depression, body image disturbance and eating disorders. However, objectification theory may also explain why women struggle to consistently accrue the same positive benefits from exercise for body image as men.

Self-objectification and physical activity

In their seminal work on objectification theory, Fredrickson and Roberts (1997) suggest that participation in sport and physical activity may be a key preventative measure against the negative outcomes of objectification, by offering women a dimension on which to value their bodies other than appearance. The evidence reviewed earlier certainly supports the proposition that exercise has the potential to aid women in resisting sociocultural pressures on appearance (e.g., Furnham et al., 1994; Whitehead & Biddle, 2008). Additionally, it would appear that previous experiences of competitive sport reduce the extent to which women experience self-objectifying thoughts (Wolfe,

1998). There is therefore considerable evidence that engaging in physical activity can change how women think about their bodies, for the better.

Moreover, beyond changing women's thoughts, objectification theory suggests that exercise may change women's experience of their bodies. Menzel and Levine (2011) emphasise the potential for physical activity to promote 'embodiment', which is conceptualised as an integration of the mind and the body, promoting ownership of the body and its behaviour (e.g., Menzel, 2010). Furthermore, embodiment is argued to share similarities with positive body image (e.g., Avalos, Tylka, & Wood-Barcalow, 2005), in that it promotes pride in the body's abilities and function, focuses attention on the feeling rather than appearance of the body, and provides women with cognitive resources to resist cultural pressures on their body image. Thus, these recent theoretical developments would suggest that to the extent that physical activity can successfully promote women's embodiment, women will experience positive body image outcomes from engaging in exercise.

Research into the effects of yoga on body awareness and responsiveness provides support for this proposal: as a form of physical activity which specifically promotes the integration of the mind and the body, yoga would thus be predicted to have positive associations with bodily awareness, responsiveness, and body image. Prichard and Tiggemann (2008) found that more time spent in yoga classes was associated with lower levels of self-objectification for women. Work by Daubenmier (2005) suggests that this is due to the increase in bodily awareness that results from yoga: awareness of and responsiveness to bodily feelings explained group differences in self-objectification between yoga participants, aerobic participants, and non-exercising women. An evaluation of a two-month yoga intervention provides further support for

the direction of these effects, with women engaging in less self-objectification as a result of the programme (Impett, Daubenmier, & Hirschman, 2006).

Furthermore, retrospective studies linking high school sport to positive body image in early adulthood have suggested that part of this effect is due to women's increased feelings of instrumentality, conceptualised as taking ownership of one's behaviours and control of one's life (Greenleaf et al., 2009). Additionally, qualitative research suggests that although athletes may be aware of a conflict between their bodies and the cultural ideals, their participation in sport is experienced as empowering, giving them a sense of control and purpose (Krane et al., 2004), echoing key elements of embodiment. These athletes also discussed the importance of and pride they took in their body's functioning, providing evidence for the proposed shift from valuing the body's appearance to its competence or function. There is therefore evidence for the proposition that women's experiences of physical activity have the potential to promote embodying experiences, which reduce self-objectification and internalisation of cultural standards of attractiveness, and so result in better body image.

However, physical activity is not universally associated with positive body-related experiences and thoughts. In one study, although experience of competitive sport reduced women's self-objectifying thoughts, overall, women experienced more self-objectifying thoughts while running on a treadmill than when engaging in a sedentary control activity (Wolfe, 1998). Furthermore, engagement in sport as a teenager predicted higher levels of shame related to not meeting cultural standard of attractiveness (Parsons & Betz, 2001). It would appear that exercise therefore also has the potential to negatively affect women's body image, by resulting in *greater* levels of self-objectification.

Exercise has the power to be an objectifying experience as well as an embodying one. Prichard and Tiggemann (2005) argue that this negative association may come about due to women's experiences during particular types of exercise. Specifically, they highlight the fitness centre or gym environment as one which can encourage self-objectification among women, with the availability of mirrors for self-monitoring, the high potential for social comparison with others' bodies, media depicting images of the body perfect ideal, and the presence of men observing women exercising. These features of the fitness centre environment map neatly onto Szymanski, Moffitt, and Carr's (2011) conceptualisation of a sexually objectifying environment, which features attention drawn to the physical or sexual aspects of women's bodies, and high probability of male gaze. One predicted effect of an objectifying environment is that women who experience it also experience increased self-objectification. This specific association has thus far been demonstrated only in the case of appearance-focused restaurants in the United States, such as Hooters (Moffitt & Szymanski, 2011); however, research into fitness centres and their users suggests that the gym, or indeed any exercise environment, may be viewed as a potentially objectifying environment. Women who attend fitness centres or gyms have higher levels of self-objectification, and time spent within this environment is associated with higher levels of self-objectification (Prichard & Tiggemann, 2005; Strelan et al., 2003). The atmosphere within a given sport may also influence women's self-objectification: women who have participated in more traditionally feminine or appearance-focused sports (e.g., figure skating or gymnastics) as teenagers have higher levels of body shame as young adults (Parsons & Betz, 2001). These environments contain features which reinforce the importance of attractiveness for women, and promote considering the gaze of others, thus perpetuating rather than challenging the cultural pressures on women.

Although not an environmental factor *per se*, previous research suggests that women's reasons for exercise may influence the environments women choose for their exercise activity, with appearance reasons in particular playing a negative role. Prichard and Tiggemann (2008) found that appearance reasons for exercise are associated with more participation in cardio-based aerobics classes, which are associated with lower body esteem and higher levels of disordered eating. In contrast, women who strongly endorse appearance reasons for exercise are less likely to participate in yoga classes, which are associated with lower levels of self-objectification. Appearance reasons for exercise may therefore reinforce cultural pressures on women by encouraging them to engage in exercise in environments which replicate these pressures (e.g., cardio classes; Mutrie & Choi, 2000), and to avoid classes which challenge them (e.g., yoga; Impett et al., 2006). Research relating to women's individual experiences while exercising further supports this suggestion: women who strongly endorse appearance reasons for exercise are more likely to experience objectifying thoughts during an exercise activity (Wolfe, 1998), and exercisers who strongly endorse appearance and weight loss goals for exercise describe unsatisfactory social comparisons and concerns over evaluation by others as key features of their gym experiences (Sebire, Standage, Gillison, & Vansteenkiste, 2013). Thus, appearance reasons for exercise encourage women to participate in environments which reinforce sociocultural pressures relating to appearance, and are associated with greater experiences of self-objectification during exercise.

Considering women's experiences of self-objectification within exercise therefore provides us with a framework within which to understand the contradictory effects seen on women's body image due to exercise. According to objectification theory, the finding that activities such as dance or figure skating are worse for girls' and

women's body image (e.g., Brooks-Gunn et al., 1988; Tiggemann & Slater, 2001) is due to the emphasis these activities place on a lean or attractive appearance, and the increased objectification (by the self or by others) that this causes. This framework may also explain why the strong positive results of exercise for women in interventions specifically targeted at body image become less consistent in naturally occurring exercise or in interventions without this body image focus (e.g., Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006; Zabinski et al., 2001): interventions focused on body image improvement are likely to be extremely careful to avoid situations focusing attention on participants' bodies, thus reducing objectification within them. Exercise occurring without this explicit focus may merely result in replication of cultural pressures and reinforcement of norms of self-objectification, warping the embodying potential of physical activity. Crucially, objectification theory provides us with an intra-individual process through which appearance and weight loss reasons for exercise may exert a negative influence on women's body image: endorsing these reasons may make women more likely to experience self-objectifying thoughts during exercise. This, in turn, may result in both state body image disturbance and gradual increases in trait self-objectification and internalisation of cultural standards of attractiveness, which will further influence women's trait body image.

From the work outlined above, it is clear that there is substantial emphasis placed on women's appearance and physical attractiveness in Western cultural discourse, both in general and in the specific context of sports, encouraging women to self-objectify, that is, view their body as an external observer might and value its appearance over its function. In turn, this may lead more women to pursue exercise for appearance and weight loss reasons, but, as discussed above, engaging in this culturally sanctioned form of physical activity for women is likely to reinforce these pressures, via increased

objectifying thoughts, and thus worsen women's body image. However, as yet, very little research has considered the influence of appearance reasons for exercise on body image through the lens of objectification theory. In addition, other motivational factors may play a key role in shaping the nature and impact of these processes.

1.3. Self-determination theory: A motivational framework

Considering sociocultural influences on women's feelings about their bodies and about exercise, it is clear that there is substantial cultural pressure on women to exercise for appearance reasons, and that these reasons may have substantial influences on women's experience of their bodies within the exercise environment. However, these influences may hinge upon variations in women's experiences of motivation relating to exercise. Thus, consideration of a motivational framework, in the form of self-determination theory (Ryan & Deci, 2000) may be crucial for understanding how appearance reasons for exercise may influence women's body image.

Intrinsic motivation and the tendency for organismic growth

Self-determination theory (SDT, Deci & Ryan, 2000) is concerned with the quality of human motivation: rather than limiting itself to a quantitative view of motivation, where more motivation is better motivation, self-determination theory focuses on the nature of motivations, and how different forms of motivation can influence persistence and well-being. Within the mini-theory of cognitive evaluation theory (CET, Deci, 1975; Vansteenkiste, Niemiec, & Soenens, 2010), self-determination theory addresses the concept of intrinsic motivation: activities which are intrinsically motivated are those which are inherently satisfying of our innate need for growth and exploration, and as such we are drawn to behaviours based in curiosity, discovery, and challenges (Vansteenkiste et al., 2010). Such behaviours are performed for their own sake, because they are innately enjoyable, and this enjoyment stems from

the full immersion of the individual in the activity. Exercise could potentially be an intrinsically motivated behaviour: biologically, physical activity is associated with increased endorphins and other positive mood hormones, and experiential reports of athletes of 'being in the zone' or of 'flow', a zen-like state of immersion in an activity (Csikzentmihalyi, 1990; Howlett et al., 1984), support the potential for physical activity to provide this form of enjoyment.

However, for some individuals, exercise may not be an inherently enjoyable behaviour, and engaging in it may be driven instead by extrinsic motivation: the motivation for the behaviour is not derived from the activity itself, but from the outcomes of this behaviour. Organismic integration theory (Deci & Ryan, 1985), a further mini-theory of self-determination theory, proposes that the motivation for these extrinsically driven behaviours can be internalised to a greater or lesser extent; the more internalised the motivation for a behaviour is, the more the individual feels a sense of choice or volition in it, with engagement in the activity coming from their own desires or values rather than from external pressures. Thus, any behaviour can be *regulated* in a number of different ways, with corresponding variations in affect and well-being as a result. *External regulation* is when the individual is driven by the gain of a reward or the avoidance of punishment. In an exercise domain, this form of regulation is present in someone who exercises because they feel pressure from their family to do so and thus seeks to avoid their disapproval. In *introjected regulation*, this controlling pressure has been internalised, but still exists in the form of contingent self-esteem, where the individual's feelings of self-worth are dependent on engaging in the behaviour in question. Individuals exercising as a result of this regulation may exercise to avoid the feelings of guilt or shame if they do not. Due to their controlling nature, in one case

external, in the other internalised, these two forms of regulation are conceptualised as *controlled regulation* (Ryan & Deci, 2000).

In contrast, individuals high in *identified regulation* engage in an activity because of the benefits they perceive as stemming from it, or its congruence with their personal values. In an exercise context, this could be an individual who exercises because they value the health benefits of the activity. *Integrated regulation* is an even more internalised form of extrinsic motivation, where participants have integrated engaging in the behaviour into their sense of self. This form of regulation could be seen in an athlete who construes their engagement in physical activity as critical to their identity.[1] Finally, *intrinsic regulation,* as described above, relates to behaviour which is rewarding in its own right; an example of this form of regulation would be an exerciser who engages in physical activity because they enjoy the feeling of exertion. These forms of regulation are classified as a*utonomous regulation,* as they stem from within the individual and are experienced as driven by choice, volition, and personal values (Ryan & Deci, 2000).

Self-determination theory proposes that autonomous regulation will be associated with positive outcomes for individuals, such as greater persistence in behaviour and higher well-being (Ryan & Deci, 2006). Regulations of behaviour in general, often referred to as general feelings of self-determination, have been repeatedly associated with psychological functioning: people who feel more autonomous (rather than controlled) in their behaviours consistently demonstrate better psychological well-

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[1] Although an important element of the continuum of regulation, this thesis did not assess integrated regulation in the empirical programme of research. Markland (2007) comments that in development of the measure most commonly used to assess regulation of exercise behaviour (Behavioural Regulation of Exercise Questionnaire 2; Markland & Tobin, 2004), items assessing integrated regulation were not empirically differentiated from items assessing identified or intrinsic regulation. Although more recent measures have sought to address this problem (e.g., McLachlan, Spray, & Hagger, 2011; Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013), the empirical programme used the BREQ-2 in order to ensure its results were comparable with the existing body image and exercise regulation literature.

being, with higher levels of life satisfaction, positive affect, and feelings of self-actualisation (Carver & Baird, 1998; Sheldon, Ryan, Deci, & Kasser, 2004). This proposition is also supported by evidence from the sport and exercise domain, with more autonomous regulation associated with increased exercise levels in adult samples (Ingledew & Markland, 2008; Markland, 2009; Sebire, Standage, & Vansteenkiste, 2011), increased enjoyment and interest in physical education classes, and greater vitality during these sessions among adolescents (Mouratidis, Vansteenkiste, Sideridis, & Lens, 2011; Vlachopoulos, 2012; Zhang, 2009). In the related domain of eating regulation and of weight-loss interventions, autonomous regulation of eating behaviour is associated with greater levels of success: autonomous regulation is a key predictor of weight loss over time and is strongly associated with healthy eating behaviours (Pelletier, Dion, Slovenic-D'Angelo, & Reid, 2004; Teixeira, Silva, Mata, Palmeira, & Markland, 2012).

Vansteenkiste et al. (2010) suggest that, due to their experiential and emotional content, regulations of behaviours are highly likely to be associated with affective outcomes, such as well-being. Considering body image as an outcome, which is conceptualised as a multi-faceted construct, encompassing both cognitive elements (such as actual-ideal discrepancies) and emotional elements (such as appearance anxiety), there is therefore potential for influence from general feelings of self-determination and from experiences of regulation within body-relevant domains, such as exercise. Studies considering global self-determination have generally used composite measures, such as a relative autonomy index, to assess this, rather than considering the individual regulations. Nevertheless, these studies provide support for the proposition that global self-determination is associated with more positive body image, with women who feel more self-determined in their behaviours being less likely

to internalise cultural beauty ideals and, as a result, less likely to experience body dissatisfaction (Kopp & Zimmer-Gembeck, 2011; Pelletier & Dion, 2007). Research using the relative autonomy index measure in the exercise domain also supports these general conclusions, with more autonomous (vs. controlled) regulation in exercise behaviour being associated with smaller actual-ideal body discrepancies (Markland & Ingledew, 2007). In addition to these cross-sectional findings, experimental work has found that women higher in autonomous regulation, either in general or in the domain of eating regulation more specifically, are less susceptible to the negative effects of exposure to thin ideal media representations, such as body dissatisfaction and eating restriction (Mask & Blanchard, 2011a, 2011b).

Given the importance of the experiential and emotional elements of regulation highlighted by Vansteenkiste et al. (2010), it could be predicted that regulations, which are typically measured with more emotion-related items, would be more influential than an overall relative autonomy measure in predicting body image. In particular, a negative effect of introjected regulation would be plausible, due to the focus of measures in the exercise domain on the guilt and shame avoidance elements of this form of motivation (e.g., Markland & Tobin, 2004). However, the suggestion that guilt as motivation should be a negative influence is not universal: in literature on children's socialisation and emotion more generally, authors discuss the importance of guilt as a means of motivating children to do the right thing, and as a process among adults which prompts us to make amends for negative actions (Baumeister, Vohs, De Wall, & Zhang, 2007; Bybee, 1997; Hoffman, 1982). This is particularly interesting given, first, the role socialisation is proposed to play in the internalisation of cultural pressures, as outlined by objectification theory (Fredrickson & Roberts, 1997), and, second, the far higher trait levels of guilt found among women in Western cultures, compared to men (Fischer &

Manstead, 2000; Silfver, 2007; Tangney & Dearing, 2002). Guilt may potentially be a key way through which women are socialised into modifying their body to meet cultural standards, as outlined in Calogero and Pina's discussion of 'body guilt' (2011). As such, this motivation may play a key role in the link between exercise and negative body image. This form of regulation for exercise is also empirically supported as an important correlate of body image outcomes in the existing literature, with consistent negative associations with body image (Brunet, Sabiston, Castonguay, Ferguson, & Bessette, 2012; Brunet & Sabiston, 2009; Thøgersen-Ntoumani & Ntoumanis, 2007).

In contrast, intrinsic regulation should be a strong positive influence on women's body image, given the focus of subscales measuring this on positive emotionality, such as enjoyment, fun, and pleasure. Exercise associated with fun and enjoyment has been consistently linked with better body image (Furnham et al., 2002; Strelan et al., 2003), and successful body image interventions based around exercise often emphasise enjoyment and fun, by focusing on activities that participants identify as enjoyable, such as dance (Burgess, Grogan, & Burwitz, 2006; Grogan et al., 2014). A key theme reported by participants engaged in such sessions was the lack of self-consciousness, and reduced concern with their appearance. Such elements may promote immersion in the physical activity, rather than distraction by self-consciousness, and thus result in better well-being outcomes, such as more positive body image. Indeed, existing literature on regulation of exercise behaviour and body image specifically suggests that intrinsic regulation may play an important role in linking exercise and body image, with a significant positive association with physical self-worth and with smaller actual-ideal body weight discrepancies (Markland, 2009; Thøgersen-Ntoumani & Ntoumanis, 2007).

Self-determination theory suggests that the circumstances individuals experience can either facilitate autonomous regulation or undermine these feelings of self-determination. Specifically, it argues that the satisfaction of basic psychological needs of autonomy, competence, and relatedness promotes these processes, while their frustration undermines them (Deci & Vansteenkiste, 2004). The need for autonomy relates to experiencing a sense of choice and volition in one's actions, whereas the need for competence is associated with feeling effective in dealing with challenges and the world around us. Finally, the need for relatedness captures the need to feel connected and mutually supported by important others. Environments that promote the satisfaction of these three basic needs, or need-supportive environments, should therefore be associated with more self-determined, autonomous regulation, as should individual behaviours or cognitions associated with these needs.

As individuals' regulation of exercise behaviour is strongly linked to their body image, considering factors which might influence these regulations will give us insight into how exercise might lead to better or worse body image. Thus, this chapter now outlines two potential influences on individuals' regulations of exercise behaviour: the content of their goals for exercise, and the need-supportive nature of their exercise environment.

Goal content, regulations and well-being

As well as considering the nature of our motivation, self-determination theory also implies that our well-being will be linked to the content of the goals we pursue (Deci & Ryan, 2000). Self-determination theory differentiates between extrinsic goals, which are focused on the external validation of self-worth, and intrinsic goals, which are inherently growth-promoting, and thus congruent with the innate self-developmental tendencies of humans. The three key extrinsic goals identified by Kasser and Ryan

(1996) are those of financial success, image and fame, and it is notable that these are promoted within Western culture as achievements that will result in happiness and fulfilment (Dittmar, 2008; Richins & Dawson, 1992). Potentially the prototypical intrinsic life goal, which is most closely representative of the human tendency to seek growth, is self-actualisation, the goal of fully developing one's personal potential. In the exercise domain, the goal of development (Sebire, Standage, & Vansteenkiste, 2008) is also clearly a growth-focused, intrinsic goal, with its emphasis on learning and mastering new skills, as is that of affiliation, of forming close and meaningful bonds with others through engagement in physical activity.

Extrinsic goals are classified as such due to their lack of relationship to the basic psychological needs of autonomy, competence, and relatedness, whereas the pursuit of intrinsic goals is inherently associated with the satisfaction of these needs (Vansteenkiste et al., 2010). Thus, endorsing intrinsic goals should be associated with better psychological functioning and well-being, whereas endorsing extrinsic goals should be associated with maladaptive psychological functioning and mental ill-health. This proposal has considerable empirical support, from research considering life goals in general and domain-specific goals, such as those for work or exercise. A recent meta-analysis of 66 studies demonstrates a consistent link between higher endorsement of extrinsic life goals (relative to intrinsic goals) and reduced psychological well-being (r = -.16, Dittmar, Bond, Hurst, & Kasser, in press), and research spanning nearly 70 years of data has linked increases in mental health difficulties in the United States to an increase in the endorsement of extrinsic goals among the population (Twenge et al., 2010). Furthermore, research considering goal attainment, as well as endorsement or pursuit, has found that achieving intrinsic life goals resulted in greater well-being and lower ill-being (Niemiec, Ryan, & Deci, 2009). In contrast, the attainment of extrinsic

life goals was not associated with well-being, and was, in fact, associated with greater ill-being. Thus, it is not simply detrimental to well-being to pursue these extrinsic goals and fail; even achieving them may be problematic.

This association holds not simply for well-being in general, but also for the specific outcomes of body image and disordered eating: intrinsic goals for eating regulation, such as improving health and fitness, are associated with lower levels of disordered eating, as measured by bulimic symptoms, and with lower levels of body dissatisfaction (Verstuyf, Vansteenkiste, & Soenens, 2012). In contrast, extrinsic goals for eating regulation, such as increasing physical attractiveness, are associated with increased bulimic symptoms and with higher levels of body dissatisfaction. More broadly, considering the life goals of adolescent girls, the intrinsic goal of health was associated with better body image, whereas the extrinsic goal of image was associated with a more negative view of their bodies (Thøgersen-Ntoumani, Ntoumanis, & Nikitaras, 2010). Particularly within the domain of eating regulation and weight control, it has been argued theoretically and demonstrated empirically that the type of motivation, or content of goals, is a far stronger predictor of both success (long-term weight loss, reduced binge eating) and well-being than simply the overall strength of motivation (Teixeira et al., 2010; Verstuyf et al., 2012). It seems logical therefore, that this should be extended to the exercise domain, for the outcome of body image: the extent to which women endorse different goals for exercise, such as health or appearance, will predict body image outcomes, even once the quantity of exercise is controlled for. In considering the 'reasons for exercise' literature discussed earlier in the context of objectification theory, these appear to be analogous to goals for exercise, such as the goal of improving one's appearance or of supporting one's health and fitness. Appearance and weight loss reasons for exercise are therefore likely to be experienced

by individuals as extrinsic goals for exercise: although the goal of weight loss *could* be

viewed as intrinsic, being potentially linked to better physical health, in current Western

culture, as discussed above, this is not likely to be the case as a low weight is strongly

associated with attractiveness, in the form of the thin ideal (Thompson & Stice, 2001).

As extrinsic goals, self-determination theory predicts that appearance and weight goals

for exercise will be associated with negative outcomes, such as body dissatisfaction, and

this prediction is supported by the findings of the 'reasons for exercise' literature

discussed previously, where appearance and weight loss reasons have been consistently

linked with negative body image (e.g., Furnham et al., 2002; McDonald & Thompson,

1992; Tiggemann & Williamson, 2000).

Moreover, self-determination theory provides an explanatory framework for

these patterns. Research suggests that extrinsic goals tend to be associated with more

controlled regulation (external and introjected), whereas intrinsic goals tend to be

associated with more autonomous regulation (identified, integrated, and intrinsic).

Within the exercise domain, the association between goals and regulations is well

established (see Teixeira, Carraça, Markland, Silva, & Ryan, 2012, for a review) and

regulations have been shown to mediate the association between goals for exercise and

levels of physical activity: intrinsic goals are associated with more autonomous

regulation, leading to more activity, whereas extrinsic goals are associated with more

controlled regulation, leading to less activity (e.g., Gillison, Standage, & Skevington,

2006; Ingledew & Markland, 2008). Some recent evidence suggests that individuals

who achieve their extrinsic goals may evade the detrimental association with controlled

regulation (Ingledew, Markland, & Strömmer, 2014). However, in reality these goals

are difficult, if not impossible, to achieve: people pursuing extrinsic exercise goals

describe a process of continual dissatisfaction and constant adjustment of their goals,

and are more likely to perceive themselves as having failed to achieve their goals

(Sebire et al., 2013). Therefore, given the evidence considered earlier, linking

regulations for exercise behaviour to body image, a potential mechanism through which

appearance and weight loss goals for exercise negatively influence women's body

image might be via their association with controlled regulation.

Need-supportive environments and their links with regulation

In addition to being influenced by individuals' goals, regulation for behaviour

can be influenced by the nature of the environment in which it occurs. Organismic

integration theory proposes that the more environments support the basic psychological

needs of autonomy, competence, and relatedness, the more autonomous regulation

individuals will experience within them (Vansteenkiste et al., 2010). In contrast,

environments which frustrate these basic needs will result in individuals experiencing

their behaviour as more controlled, and less autonomous.

This proposition has been well-supported in the exercise domain, with

autonomy- and need-supportive environments associated with higher levels of identified

and intrinsic regulation in physical education classes and in exercise settings (e.g., Duda

et al., 2014; Ullrich-French & Cox, 2013), and with greater vitality, enjoyment of

activities, and positive emotion (e.g., Mouratidis et al., 2011; Vlachopoulos, 2012).

Relatively little research has considered the influence of the exercise environment on

women's body image from a self-determination theory perspective. Brown (2012)

implemented an exercise climate-changing intervention at a campus exercise centre,

aiming to reduce participants' perceptions that the exercise centre environment was

focused on valuing and recognising only those of higher ability. This is described as an

ego-involving climate and promotes self-esteem contingent on succeeding in this

context, similar to introjected regulation. Instead, a participatory focus was emphasised,

with heightened emphasis on the activities that individuals engaged in: a task-involving climate, similar to the benefits-based focus of identified regulation and the enjoyment focus of intrinsic regulation. This manipulation of the exercise centre climate increased centre members' basic psychological need satisfaction and, as a result, their autonomous regulation for exercise. This increase in autonomous regulation appeared to be responsible for increases in well-being measures, of satisfaction with life, positive mood states and, crucially for the interests of this thesis, body satisfaction. Although only one study, this research strongly supports the importance of considering the environment in which women participate in physical activity, as this may influence their regulation of exercise behaviour, and thus their body image.

1.4. The Present Research

Integrating self-determination theory and objectification theory

Very little previous research considers associations between self-objectification and self-determination theory, with previous integrations of sociocultural perspectives and self-determination theory focusing on internalisation of the thin ideal (e.g., Pelletier & Dion, 2007; Thøgersen-Ntoumanis et al., 2010). Verstuyf, Patrick, Vansteenkiste, and Teixeira (2012) do, however, provide a brief overview of the associations between these two theories, in the course of an overview of self-determination theory and eating regulation research. This review highlights several similarities between self-determination theory and objectification theory, such as the predicted negative effects of prioritising appearance over other elements of the body or life, the adverse role of objectification as a process through which extrinsic goals influence well-being and body image, and the disruptive effects of objectification on task performance and enjoyment. However, as a small section of a broader review, it is limited in its ability to capture fully the processes by which the constructs of these two theories relate to and influence

one another. Thus, the thesis aims to integrate the processes discussed above, by examining how self-objectification, goals, and regulations may influence one another, and result in different body image outcomes for women in the context of exercise.

Trait self-objectification as a higher-order value

Trait self-objectification is conceptualised as the chronic internalisation of the perspective of an external observer of one's own body. This is evidenced, according to objectification theory, in the valuing of the body's appearance over its functionality, and in constant self-surveillance (Fredrickson & Roberts, 1997). The primary measurement instrument for trait self-objectification, the Self-Objectification Questionnaire (Noll & Fredrickson, 1998), assesses the first of these constructs: the extent to which an individual values the appearance and sexual characteristics of their body over its health and function. In the context of self-determination theory, this is clearly a measure of relative importance of extrinsic, over intrinsic, values for the body, and potentially represents not only the extent to which women have internalised the cultural importance placed on attractiveness discussed above, but also the extent to which the extrinsic goal of appearance and attractiveness is a dominant life goal for them. Thus, 'self-objectification', as measured by the SOQ, could be conceptualised as a higher-order value of attractiveness, relative to health or function. Vallerand (1997) proposes a hierarchical structure to goals and motivation, with global life goals or values theorised to predict domain-specific goals, such as goals for exercise. Trait self-objectification therefore should predict appearance goals for exercise as the domain-specific manifestation of this internalised value of attractiveness and, indeed, support for this can be seen in Strelan et al.'s (2003) finding of mediation of the link between trait self-objectification and body image by appearance reasons for exercise.

State self-objectification as a micro-mediational process of appearance goals for exercise

Self-objectification can also be considered as a temporary, rather than a trait, variable, experienced as the state of heightened self- and appearance-consciousness resulting from an environment which makes appearance salient, or elicits a feeling of being observed (Fredrickson et al., 1998). Appearance goals for exercise may result in increased instances of state self-objectification for women and thus, in turn, worse body image. Vansteenkiste et al. (2010) discuss such a concept as a micro-mediational process, suggesting that extrinsic goals may lead to specific different behaviours or experiences while pursuing them that will, in turn, result in less satisfaction of basic psychological needs, and thus lower well-being outcomes, in this case body image. Support for experiences of self-objectification as a micro-mediational process can be seen in work cited previously, with women who more strongly endorse appearance reasons for exercise being more likely to experience objectifying thoughts while exercising (Wolfe, 1998), more likely to engage in negative, appearance-based social comparisons in the gym environment (Sebire et al., 2013), and more likely to select clothing which emphasises the body's sexual characteristics (Prichard & Tiggemann, 2005).

In a further extension of this process, objectification theory proposes that trait self-objectification is influenced by state experiences of objectification, arguing that these form a socialisation process (Fredrickson & Roberts, 1997; Moradi, 2011): individual experiences of objectification accumulate over time, gradually leading women to internalise these experiences, and increasing women's trait self-objectification. If state experiences of self-objectification are considered in the same process, it could be expected that appearance goals for exercise not only result in

increases in *state* self-objectification in the short-term, but that these then translate into increases in *trait* self-objectification in the long term. In a manner similar to that suggested for internalisation of the thin ideal by Karazsia et al. (2013), state self-objectification during exercise, resulting from appearance goals, could result in worse body image both via its links with state body image, which, in turn, influences trait body image, and via its effect of increasing trait self-objectification, which theory would suggest will result in decreases in trait body image.

State self-objectification as a controlling influence on regulations

Arguably, the state of self-objectification could, in fact, be seen as being in direct opposition to that of self-determination: self-determination places the individual as the subject, or active participant within their life, whereas self-objectification by definition reduces the individual to an object, which is viewed, evaluated, and controlled by others. This is supported by Nussbaum's (1995) criteria for objectification, which include the removal of self-determination from a person as an element of this process. State self-objectification could therefore also be a process through which the extrinsic goal of appearance in the exercise domain might influence regulation of exercise behaviour: with increasing self-objectification, women may move away from regulation of behaviour from their body's needs or their preferences and values (intrinsic or identified regulations), and instead focus on the preferences (perceived or real) of others.

The autonomy-frustrating potential of sociocultural pressures is a key consideration of previous research linking these to self-determination theory: women who have strongly internalised the thin ideal experience more controlled regulation of eating behaviour as a result of the pressure they feel from this social influence (Pelletier & Dion, 2007), and Brunet and colleagues (Brunet et al., 2012; Brunet & Sabiston, 2009)

suggest that the association they find between body image concerns and less autonomous forms of motivation of exercise behaviour is due to the influence of social pressures relating to appearance. This previous theoretical and empirical work supports the suggestion that self-objectification may influence women's regulations of exercise behaviour. Furthermore, in comparing objectification theory's proposed process of socialisation, and self-determination theory's conceptualisation of internalisation of regulation, it is possible to formulate some tentative hypotheses for how self-objectification may be associated with specific regulations. Internalisation, both of regulation of behaviour and of cultural ideals, is dependent on internalising the monitoring of behaviours, such that these are eventually experienced as stemming from within the self (Costanzo, 1992; Fredrickson & Roberts, 1997; Vansteenkiste et al., 2010). Experiences of being objectified by others, the beginning of this internalisation process in objectification theory, are likely to be associated with external regulation, due to the external nature of this pressure. However, self-objectifying experiences are more likely to be associated with introjected regulation, as women have internalised this external male perspective of their bodies, but still experience this as a controlling influence.

Support for this link between self-objectification and introjected regulation can be found in a consideration of the items of the body shame subscale of the Objectified Body Consciousness Scale (OBCS, McKinley & Hyde, 1996) and the introjected subscale of common measures of regulation in exercise (e.g., Markland & Tobin, 2004). The Body Shame subscale is the measure most frequently used to assess body image outcomes of self-objectification, and contains items relating to feelings of guilt and shame resulting from failing to meet cultural standards of attractiveness and appearance maintenance, exemplified by the item, "When I'm not exercising enough, I question

whether I am a good enough person". This construct clearly focuses on contingent self-esteem: in the case of this specific item, self-regard which is contingent on exercising. Similarly, the items of introjected regulation subscales focus predominantly on motivation to avoid guilt and shame: "I exercise because I feel guilty if I don't exercise" (Markland & Tobin, 2004). Although body shame does not capture *motivation* based on guilt, the similarity of content between these concepts strongly suggests that self-objectification may also be associated with introjected regulation, as well as body shame. In addition to influences of self-objectification on controlled regulations, state self-objectification, in particular the act of viewing the body from the viewpoint of an external observer, has been theorised to restrict embodied experiences, such as that of 'flow', the full immersion in a particular activity (Dion, 2004; Fredrickson & Roberts, 1997). As such, this experience could inhibit intrinsic regulation, by disrupting women's focus and inhibiting their experiences of immersion.

The effects of state self-objectification on regulations may also come into effect when they are the result of an objectifying environment, through a process similar to how autonomy-restrictive environments are proposed to function. In objectification theory, recent work by Moffitt and Szymanski (2011) highlights the impacts of a sexually objectifying environment in increasing women's self-surveillance and focus on their appearance, whereas in self-determination theory, there is a wealth of research focused on the impact of autonomy- and need-supporting environments in influencing both well-being and motivation (e.g., Duda et al., 2014; Mouratidis et al., 2011). Previous work conceptualises sociocultural pressures as autonomy- or need-frustrating (e.g., Pelletier & Dion, 2007), raising the possibility that objectifying environments are such negative ones for women because they thwart the satisfaction of their basic needs for autonomy, competence, and relatedness. These themes can, in fact, be seen in the

qualitative analysis from Moffitt and Szymanski (2011), particularly with respect to relatedness: women report more negative relationships with other women in these environments, describing increased competition and comparisons, and more negative attitudes towards, and relationships with, men in their lives. Additionally, women have very little control in these environments, potentially indicating the potential of such places to be autonomy-frustrating. In the context of exercise and physical activity, understanding the motivational dynamics operating within potentially objectifying environments such as fitness centres could be an important step towards increasing women's participation in physical activity and improving body image.

In conclusion, this thesis conceptualises self-objectification as both a trait variable and a state variable, with trait self-objectification encouraging women to endorse appearance goals for exercise, which, in turn, are likely to result in increased state self-objectification. This state self-objectification may then influence women's body image by influencing their regulation of exercise behaviour, and by increasing their trait self-objectification over time.

Research Questions for the thesis

The overall aim of the thesis is to integrate objectification theory and self-determination theory perspectives on women's goals for exercise and their body image, and to empirically test theoretically plausible mechanisms linking these two constructs. Given the lack of previous consideration of the processes linking women's goals for exercise and their body image, the empirical programme examines whether the association between these two constructs can be explained by their associations with the regulation of exercise behaviour. Furthermore, it examines how self-objectification relates to these constructs from self-determination theory and to body image, in the context of exercise. Thus, the empirical work reported below seeks to test the proposed

mechanisms outlined above and depicted in Figure 1, and to address two overarching research questions.

Do regulations for exercise behaviour mediate the association between women's goals for exercise and their body image?

Chapters 2 &3

Previous work suggests substantial links between goals for exercise and regulation of exercise behaviour (e.g., Ingledew & Markland, 2008), and between regulations for behaviour and body image (e.g., Thørgersen-Ntoumani & Ntoumanis, 2007). Thus, the thesis sought to assess whether the negative influence of appearance goals for exercise on women's body image may be explained by the more controlled regulations associated with these appearance goals. Going beyond the cross-sectional nature of previous research linking goals, regulations, and body image, the thesis provides novel evidence on the causal and temporal direction of these associations.

Some previous work has utilised combined measures of autonomous and controlled regulation (e.g., Gillison et al., 2006), or even a relative autonomy measure combining all four regulations (e.g., Markland & Ingledew, 2007). However, this thesis adopts an approach focused on illuminating the individual forms of regulations (external, introjected, identified and intrinsic). These are likely to provide critical insight to inform both theoretical and practical developments, given previous work which has found differential associations of these regulations with body image variables (e.g., Brunet & Sabiston, 2009; Markland, 2009; Thørgersen-Ntoumani & Ntoumanis, 2007).

Specifically, the thesis identifies introjected regulation, with its focus on guilt-avoidance in the exercise measures, and intrinsic regulation, with its focus on fun and enjoyment, as two regulations which may be particularly important correlates of body image, from their associations in the work cited above. Thus, the thesis investigates

whether these regulations, as well as external and identified regulation, can explain the association between exercise goals and body image, at the cross-sectional level (Chapter 2, Study 1; Chapter 3, Study 1), over an extended period of time (Chapter 3, Studies 2 & 3), and in an experimental design (Chapter 2, Study 2).

Can self-determination theory provide a motivational account of the links between self-objectification and body image?

Chapters 3, 4 & 5

The thesis also considers whether the constructs of goals for exercise and regulation of exercise behaviour, from self-determination theory, can provide a motivational account of self-objectification and its influence on body image within the exercise context. Previous work suggests that the association between self-objectification and body image may occur via several pathways. First, trait self-objectification may act as an overarching value for women, focusing them on the importance of their appearance, and thus leading them to pursue domain specific exercise goals of appearance improvement and weight loss (e.g., Strelan et al., 2003). Self-objectification's association with body image may therefore be partly explained by the negative effects of appearance goals, via controlled regulation, discussed earlier in this section and investigated empirically in the thesis (Chapter 3, Study 1). Second, drawing from theoretical work on the thin ideal (Karazsia et al., 2013), over time, appearance goals for exercise may also result in increased trait self-objectification, due to women's repeated state experiences of self-objectification while exercising with these goals (e.g., Sebire et al., 2013); these repeated experiences of state objectification may then feed back into the trait level. The thesis investigates this association between appearance goals and trait self-objectification over time (Chapter 3, Study 3).
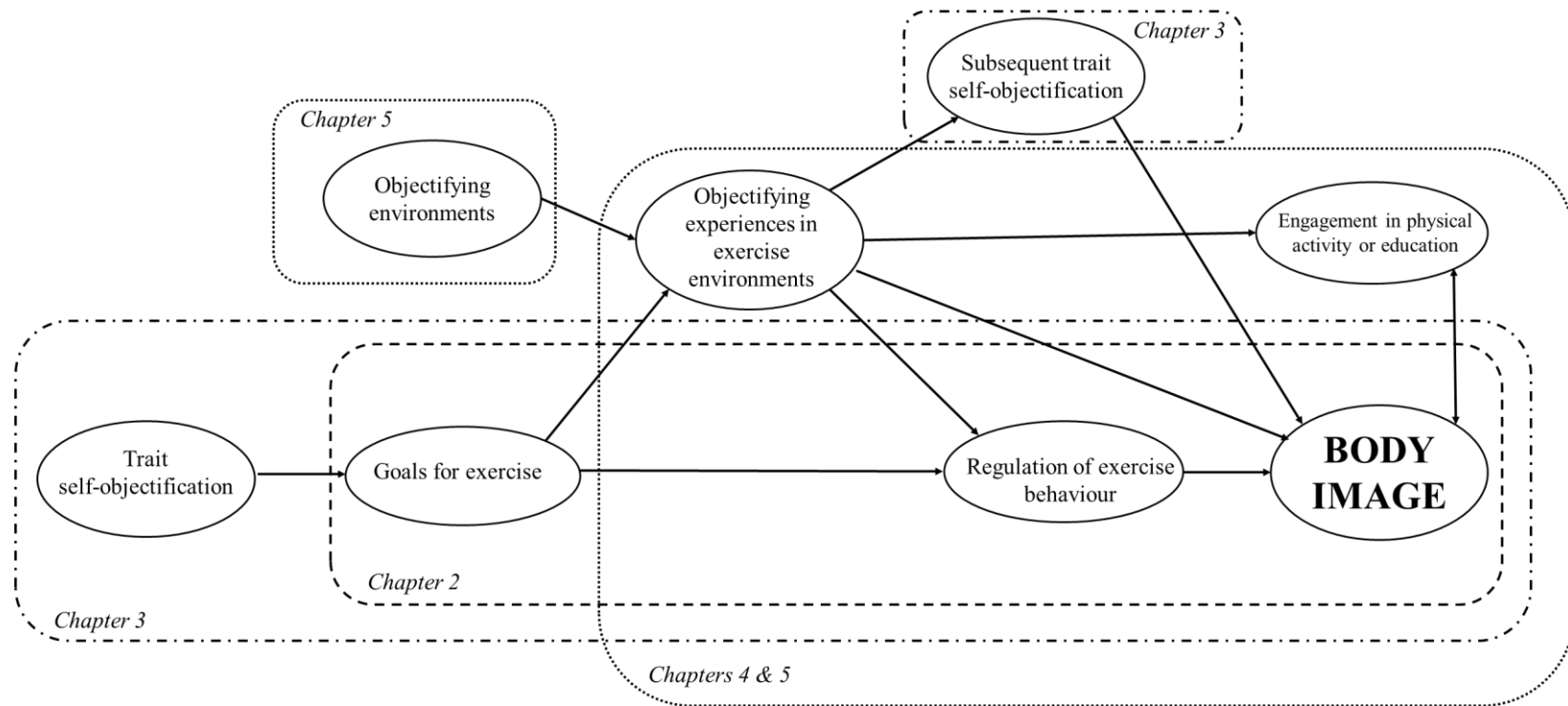
Figure 1. Proposed theoretical model tested in the thesis.

Note to Figure 1. The rounded rectangles serve to indicate which empirical chapters of the thesis address which variables and relationships.

In addition to the links between trait self-objectification and controlled regulation via appearance goals for exercise, previous research supports disrupted motivation as a direct outcome of state objectification. Specifically, state experiences of objectification, by others or by the self, may result in frustration of women's feelings of autonomy and self-determination in the exercise environment, given the associations between self-determination and cultural pressures relating to attractiveness established in previous research (e.g., Kopp & Zimmer-Gembeck, 2011; Pelletier & Dion, 2007). The thesis examines the autonomy-frustrating potential of state self-objectification as a mechanism through which the objectifying environments discussed by Szymanski, Moffitt and Carr (2011) may influence girls' engagement in and enjoyment of exercise, and their body image (Chapters 4 and 5). From this perspective, state self-objectification is positively associated with controlled regulation of exercise behaviour, due to its experience as a controlling environmental factor, and negatively associated with intrinsic regulation, due to its ability to disrupt peak motivational states (Fredrickson & Roberts, 1997). Through these associations with regulations, state or environmental experiences of self-objectification are then associated with lower levels of enjoyment and engagement in physical activity, but also worse body image outcomes, as seen in women's discussions of objectifying work environments (Moffitt & Szymanski, 2011).

Methodological Issues

Causal and temporal relationships

In the preceding literature review, the relationships between women's self-objectification, goals for exercise, regulations of exercise behaviour, and body image are predominantly discussed in the following causal sequence. Trait self-objectification predicts greater endorsement of appearance goals for exercise. These goals then result in

increased experiences of objectification during exercise and controlled (vs. autonomous) regulation, which result in decreases in women's body image.

Although supported by considerable theoretical and empirical work, this is not the only direction in which these variables could be related. It is, of course, entirely plausible, and likely, that women's dissatisfaction with their bodies might motivate them to engage in exercise, in order to address this issue. In this situation, body image would, in fact, predict women's goals for exercise. Furthermore, body image dissatisfaction, resulting from sociocultural pressures on women regarding their appearance, could result in women feeling coerced into engaging in exercise, with body image therefore predicting women's regulation of exercise behaviour. Indeed, this is the process proposed by one area of research from a self-determination theory perspective (Brunet & Sabiston, 2009; Brunet et al., 2012), although other work supports this thesis' proposed order of these variables, with goals influencing regulations (e.g., Ingledew & Markland, 2008), and both predicting well-being outcomes such as body image (e.g., Sheldon et al., 2004; Thøgersen-Ntoumani & Ntoumanis, 2007; Thøgersen-Ntoumani et al., 2010). In cross-sectional research, such as the majority of the work cited above, it is not possible to distinguish between these causal directions.

Even among variables for which the directions are not under discussion, cross-sectional considerations may also not allow a full exploration of how these constructs influence one another. For example, trait self-objectification may play a role in influencing appearance goals for exercise among women, but also may be increased by women's experiences of exercising with these goals. Measurements of trait self-objectification and goals at merely one point in time, as in cross-sectional, correlational research, cannot identify both of these effects. Furthermore, given the particular concern of the thesis with mediation, or the processes through which these variables exert their

influence on one another, cross-sectional research is insufficient to provide conclusive evidence of this, as there is no manipulation of the mediator variable (Bullock, Green, & Ha, 2010). As such, although cross-sectional research is needed to begin to give us an understanding of these relationships, methods which allow the specification of the temporal and causal order of these relationships are crucial to further psychological understanding of the processes through which women's goals for exercise and body image are linked.

Evidence for causality can be provided in several ways. The first of these is temporal antecedence, that is, evidence that the proposed 'cause' occurs before the 'effect'. This can only be established via longitudinal research, which considers body image, regulation of exercise behaviour, self-objectification, and exercise goals, at multiple time points. There is virtually no longitudinal work considering the relationships of these self-determination theory variables to body image. However, research considering other elements of well-being, such as satisfaction with life and positive affect, suggests that extrinsic goals, such as the goal of appearance improvement, predict well-being at later points in time, while controlling for each variable at each time point (Niemiec et al., 2009). With regard to the influences of self-objectification, exercise, and body image, there is some work linking the experience of objectification and body image over time. Parsons and Betz (2001) considered the influence of more objectifying sports experiences during high school on women's body image at college, finding an association between these two constructs. However, the assessment of sports was retrospective, and did not include a measure of the *participant's* perceptions of the sporting environment. Furthermore, they did not control for body image in adolescence; this could, in fact, predict both engagement in sport and later body image. Anderson, Petrie, and Neumann (2012) assessed changes in female

athletes' body dissatisfaction over the course of a five-month competitive season. This research found, from assessing perceived sports pressure on appearance and weight and body image at both time points, that sports pressures predicted increases in body dissatisfaction. However, there is, from an extensive review of the literature, no longitudinal research which assesses body image, regulation of exercise behaviour, women's goals for exercise, and self-objectification over time. By considering these variables across multiple time points, the thesis can provide initial evidence for the direction of these relationships, and stronger support for the proposed mediation of these effects than currently exists in the literature.

However, as with all correlational research, finding that regulation of exercise behaviour predicts body image at a later time point does not preclude the possibility that a further variable may influence both regulation and body image. Therefore, to fully establish a causal effect of regulations for exercise on body image, experimental manipulation of regulations is necessary. Furthermore, to demonstrate the mediating effect of regulations for exercise on the relationship between appearance goals for exercise and body image, Bullock et al. (2010) emphasise the importance of experimental manipulations where the independent variable (appearance goals for exercise) is held constant and the mediator (regulation) is manipulated. Previous work has shown that framing the purpose of physical activity in either an extrinsic (appearance and weight loss) or an intrinsic (health) way increases participants' endorsement of the associated goal for exercise and results in greater body shame, suggesting that priming these extrinsic or intrinsic frames can have a significant impact on body image (Aubrey, 2010). Research has also successfully primed extrinsic or intrinsic goals in a single physical activity situation (e.g., Vansteenkiste, Timmermans, Lens, Soenens, & Van den Broeck, 2008) and manipulated participants' regulation of

behaviour within a single session of physical education by providing support for their basic needs (e.g., Mouratidis et al., 2011). This last finding is particularly promising, as it indicates that there is potential to manipulate a proposed mediator, the regulation of exercise behaviour, within a very short timeframe, rather than depending on a longer term intervention. Therefore, the design of an experimental manipulation which holds constant the framing of physical activity, yet manipulates women's regulation of exercise behaviour, will enable the thesis to examine the influence of this as a mediator.

Sample selection

As discussed in detail above, exercise and sport are more culturally complex activities for women than for men: although engaging in physical activity can move both genders towards the culturally prescribed 'body perfect', there is far less risk of men being deemed 'too' muscular and, indeed, participation and success in sport are highly compatible with male gender roles in Western societies (Choi, 2000). By contrast, women's participation in sports and exercise is poorly represented in the media and often seen as incompatible with constructions of femininity (Martin & McDonald, 2012; Krane et al., 2004). For the above reasons, this thesis focuses on women's experiences of physical activity, in order to investigate the complex, gender-specific nature of its associations with body image.

The thesis focuses on three samples: a sample of young adult women, a community sample of adult women with a more diverse age range, and a sample of adolescent girls. Research suggests that body image concerns initially spike during adolescence, but that there is a second peak at the transition to adulthood (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013). As such, a consideration of this young adult population specifically allows the examination of the relationships between exercise regulation variables in a particularly vulnerable group. In contrast,

examining a community sample with a diverse age range enables the thesis to test the extent to which these findings could be generalised to a wider range of women: research has suggested that older women do not necessarily experience the same negative association between exercise and body image as young women (Tiggemann & Williamson, 2000), raising the importance of considering motivation among this sample as well.

Finally, an adolescent sample will provide an insight into this key developmental period, when initial increases in body image concerns may be occurring. In tandem with these increases in body dissatisfaction, participation in physical activity and education among girls sharply declines over adolescence, potentially due to their growing body concerns (Brooks, Magnusson, Klemera, Spencer, & Morgan, 2011; Cairney et al., 2012; Flintoff & Scraton, 2001). Examining body image concerns and motivation in physical education among girls of this age group therefore has the potential to provide an excellent insight into the joint processes of self-objectification and regulation in exercise environments, while also exploring the well-documented issue of disengagement from physical education and activity among teenage girls.

Furthermore, given the compulsory nature of physical education in the UK school system, considering this particular exercise environment precludes the issue of environment selection: that is, the apparent negative outcomes of objectifying environments, such as appearance concerns and self-objectification, may, in fact, be factors which prompt women to seek out these environments. Women high in trait self-objectification may be more likely to exercise in gyms with mirrors in which to check their appearance, and which advertise their facilities with depictions of the thin ideal, making it difficult to differentiate between the cause of such environments (trait self-objectification) and the consequences (increased experiences of state objectification).

Thus, by considering a compulsory exercise environment, it will be possible examine the impact of the environment without these concerns over selection.

The role of exercise and physical activity frequency

As discussed earlier, the relationship between physical activity and body image is a complicated one, particularly outside of specific body image interventions; comparisons of exercisers and non-exercisers yield mixed results regarding body image (e.g., Davis, 1990; Furnham et al., 1994) and exercise has been proposed as both a cure and a cause of eating disorders (Hausenblas, Cook, & Chittester, 2008; Hechler, Beumont, Marks, & Touyz, 2005). The focus of this empirical programme is on the influence of goals for exercise on body image, rather than on the influence of more vs. less exercise; however, even though exercise quantity was not the primary research interest, it is important to control for possible associations between exercise quantity and goals for exercise, regulation of exercise behaviour and body image. In fact, previous work has suggested that variations in people's goals for exercise can predict variations in levels of physical activity, with intrinsic goals, such as health, encouraging more autonomous regulation and thus more activity (Gillison et al., 2006; Ingledew & Markland, 2008). In contrast, extrinsic goals, such as appearance, are associated with lower levels of physical activity, due to their links with controlled regulations. One possibility, therefore, is that intrinsic goals, which encourage more exercise, will be better for body image due to the impact of this exercise on women's actual body shape and size. In order to account for this possible process, and enable the thesis to consider other psychological mechanisms at work, such as regulation of exercise behaviour's direct association with body image, it was necessary to take account of women's levels of physical activity, by including this variable in the analyses as a control variable whenever possible.

To measure this important control variable, a self-report assessment of physical activity was used: the Leisure Time Exercise Questionnaire (LTEQ, Godin & Shephard, 1985). This measure has been used in both the self-determination and exercise literature (e.g., Gillison et al., 2006; Markland, 2009), and in the body image and exercise literature in general (e.g., Kowalski, Crocker, & Kowalski, 2001; Savage, DiNallo, & Symons Downs, 2009). The LTEQ asks respondents to detail the number of times they engage in mild, moderate, and strenuous exercise in a typical week. A recent meta-analysis found that correlations between self-report and direct observation measures of physical activity vary widely across studies (r between -.71 and .96; Prince et al., 2008), but that the specific self-report measure influenced the size and magnitude of this correlation. The LTEQ has consistently been associated with objective assessments of physical activity, as measured by pedometers (Godin, 2011; Sebire et al., 2011).

Shephard (2003) suggests that, given their issues of reliability and validity, self-report measures are inappropriate for considering dose-response relationships between activity and outcomes, but that these measures can be appropriate for situations where light activity needs only to be distinguished from moderate to vigorous efforts. Research suggests that moderate to vigorous activity is a better predictor of body fat and of physical fitness than composite scores including light activity, and more closely correlated to actual physical activity levels than light activity measures are (Godin & Shephard, 1985; Jacobs, Ainsworth, Hartman, & Leon, 1993). Therefore, the thesis separated light physical activity from moderate and strenuous, and used a composite measure of moderate and strenuous to control for exercise frequency (METs calculation detailed in Godin & Shephard, 1985). To control for the quantity of physical activity among participants, rather than precisely predict its effects, a self-report measure was

viewed as most appropriate, being minimally invasive into participants' lives and most cost-effective, while still measuring physical activity levels with sufficient precision.

Overview of Studies in the Thesis

The variables of interest and relationships examined in each chapter can be seen noted on Figure 1. Chapter 2 aims to investigate the possibility of young women's regulation of exercise behaviour (external, introjected, identified, intrinsic) mediating the relationship between goals for exercise and body image and to provide an experimental test of the causal direction of the relationships proposed in Figure 1. It seeks to answer the research question of whether regulation of exercise behaviour can account, in part, for the relationship between goals and body image and whether it is different forms of regulation that result in different levels of body image, rather than the reverse relationship. Specifically, in Study 1, utilising a cross-sectional survey design, path analysis is employed to test the relationships between intrinsic (health) and extrinsic (appearance and weight loss) goals for exercise, regulation of exercise behaviour, and a multi-faceted measure of body image. In Study 2, the direction of one particularly strong pathway from this first study is tested empirically: from appearance goals, via introjected regulation, to body image. Using a text-based manipulation modelled on women's health and fitness magazines (Aubrey, 2010), the appearance (vs. health) framing of a sample magazine article was manipulated, separate from guilt-based (vs. no guilt) regulation of exercise, in order to provide evidence of causality in the link between guilt relating to exercise and body image.

Chapter 3 aims to extend this initial work, by expanding the model to include trait self-objectification (see Figure 1) and by investigating the relationships between women's goals for exercise, regulation of exercise behaviour, body image, and trait self-objectification over a variety of time periods. Following a group of women exercising in

the community over 6 months, this chapter investigates how these constructs relate to one another over time, with both large-scale survey collections (at 0, 3 and 6 months) and an intensive period of weekly data collection (over 10 weeks between the first and second large surveys). It seeks to provide further evidence for the research question of the nature of the relationship between regulation of exercise behaviour and body image, by considering these two variables, and others, over time, and enabling the consideration of temporal antecedence in the relationship. The initial survey provides further supporting evidence for the importance of regulations in the link between goals for exercise and body image, as well as integrating trait self-objectification into this model as an overarching personal value. This chapter also utilises multi-level modelling on the weekly data to investigate how fluctuations in the different regulations, between weeks and between women, predict body image, and to assess the role played by women's initial goals for exercise over this period. Finally, it employs cross-lagged analysis over the 6 months of large-scale survey data to examine the temporal relationships of appearance goals for exercise, self-objectification, regulation of exercise behaviour, and body image.

Chapters 4 and 5 see the focus of the thesis shift from women's motivation for exercise and its links with body image to girls' motivation in Physical Education (PE classes) and its links with both body image and engagement in and enjoyment of PE. These chapters aim to explore the link between well-documented declines in physical activity among adolescent girls and the corresponding increases in body image concerns, by considering the motivational associates of objectifying experiences in this particular exercise environment. Thus, both of these chapters address the second research question of the thesis, aiming to integrate self-determination theory and objectification theory by considering the motivational associations of objectifying experiences.

Chapter 4 explores student motivation in PE from the teacher perspective, aiming to understand teachers' understanding of the link between body image concerns and motivation, and the strategies currently used by teachers to address these issues. The individual and cultural influences on girls' engagement in PE, and the specific practices teachers say they use to combat disengagement among their students were examined via semantic thematic analysis of PE teacher interview, within the context of self-determination theory and objectification theory.

Chapter 5 aims to complement the teacher perspective on objectification and motivation in PE with the views of their female students. Using a cross-sectional questionnaire, completed by girls between the ages of 12 and 14, across four schools in the South of England, this chapter employs path analysis to examine the associations between the PE environment, girls' experiences of self-objectification within it and the motivational and body image associates of these experiences. Thus, the chapter aims to address the second research question of the thesis, examining whether self-determination theory can provide a motivational account of why self-objectification in PE class may be associated with disengagement from PE, and with more negative body image (Figure 1).

Chapter 2:

"I just feel so guilty": The role of introjected regulation in linking appearance goals for exercise with women's body image

"I just feel so guilty": The role of introjected regulation in linking appearance goals for exercise with women's body image

2.1. Abstract

Appearance goals for exercise are consistently associated with negative body image, but research has yet to consider the processes which link these two variables. Self-determination theory offers one such process: the regulation of exercise behaviour. Study 1 investigated these relationships within a cross-sectional sample of female UK students ($n = 215$, 17-30 years). Health goals were associated with autonomous regulations and these regulations, in turn, were associated with body image. Appearance goals were indirectly and negatively associated with body image due to strong links with introjected regulation. Study 2 experimentally tested this pathway, manipulating guilt relating to exercise and appearance goals independently and assessing post-test guilt and body anxiety ($n = 165$, 18-27 years). The guilt manipulation significantly increased post-test feelings of guilt, and this, in turn, was associated with increased post-test body anxiety. Findings are discussed in relation to their implications for self-determination theory and the importance of guilt in the body image literature more generally.

2.2. Introduction

Whether to improve their physical abilities, lose weight, or safeguard their health, people may engage in exercise for a multitude of reasons. Research has consistently linked people's reasons for exercise to their feelings about their bodies. In particular, the endorsement of reasons for exercise such as weight loss, improving appearance, and increasing muscle tone is consistently associated with more negative body image (Furnham, Badmin, & Sneade, 2002; Tiggemann & Williamson, 2000). Health reasons for exercise, in contrast, are associated positively with body image (Strelan, Mehaffrey, & Tiggemann, 2003). However, previous research has not directly evaluated the mechanisms underlying these associations.

Self-determination theory offers a context within which to place these findings, with its focus on the motivation underlying human behaviour (SDT; Deci & Ryan, 2000). Self-determination theory divides our goals, or reasons for behaviour, into extrinsic goals, which focus on externally evaluated attributes or acquisitions, and intrinsic goals, which focus on self-development and supporting those around us. According to Ryan and Deci (2000), the pursuit of intrinsic goals fulfils basic psychological needs, resulting in higher levels of psychological functioning, whereas the pursuit of extrinsic goals does not. This proposition is well supported, with the endorsement of extrinsic goals, such as image and financial success, consistently associated with negative outcomes such as lower subjective well-being and mental health difficulties (e.g., Kasser & Ryan, 1996; Twenge et al., 2010). Overall life goals have also been shown to predict the specific outcome of body image: in a sample of adolescent girls, the intrinsic life goal of health was associated with better body image, whereas the extrinsic goal of image was associated with a more negative view of their bodies (Thøgersen-Ntoumani, Ntoumanis, & Nikitaras, 2010). Thus, the differential

correlations of appearance and health reasons for exercise with body image could be understood to reflect the extrinsic and intrinsic nature of those reasons.

Crucially, self-determination theory provides an explanatory mechanism for interpreting these correlations, although it has not been directly tested in the domain of exercise: the regulation behind our behaviours. Self-determination theory suggests that the behaviour we engage in when pursuing our goals can be regulated in a variety of ways, varying in levels of self-determination (how much the motivation stems from inside the self; Ryan & Deci, 2006). External regulation occurs when we engage in behaviour due to external rewards or pressures, such as when someone exercises to please others. Introjected regulation is where the motivation for the behaviour has been partially, but not fully, internalised: an individual might exercise to avoid the guilt they experience if they do not attend a session. Although guilt is often conceived as a potentially positive motivating force, spurring us into action (e.g., Hoffman, 1982), self-determination theory suggests that guilt-based, introjected motivation may be particularly damaging for well-being, especially in the domain of body-modification behaviours, such as eating regulation and exercise (Verstuyf, Patrick, Vansteenkiste, & Teixeira, 2012). Moving to more self-determined regulations, identified regulation is associated with a valuing of the benefits of the behaviour, whatever these are believed to be, rather than the behaviour itself. Finally, at the most self-determined end of the continuum, intrinsic regulation is experienced by those who engage in a behaviour because they enjoy the behaviour itself.

Ryan and Deci (2006) suggest that more self-determined regulation of behaviour should be associated with better well-being outcomes, due to the feelings of autonomy that it provides, and review a considerable amount of evidence to support this assertion across a variety of domains. The regulation of behaviour has been empirically

associated with better body image, both when considering regulation in general

(Pelletier & Dion, 2007) and, in particular, for exercise behaviours (Brunet, Sabiston,

Castonguay, Ferguson, & Bessette, 2012; Brunet & Sabiston, 2009; Markland, 2009;

Thøgersen-Ntoumani & Ntoumanis, 2007), providing support for this assertion.

However, research also suggests that self-determined regulation is more likely to

be associated with intrinsic goals, and non-self-determined regulation with extrinsic

ones. Research has consistently found, within the exercise domain, that extrinsic goals

for exercise, such as weight loss or appearance reasons, are associated with less self-

determined regulation, and that intrinsic goals, such as health or affiliation, are

associated with more self-determined regulation (Gillison, Standage, & Skevington,

2006; Ingledew & Markland, 2008).

Considering these two associations and the theoretical direction of them, it is

possible therefore to consider the link between extrinsic reasons for exercise, such as

appearance or weight loss, and body image as stemming, in part, from the non-self-

determined regulations associated with these goals. Thus, the link between appearance

goals for exercise and body image may be mediated by regulation of exercise behaviour.

The Present Research

The current research seeks to investigate the proposal that appearance goals for

exercise influence body image via regulation of exercise behaviour, a mechanism

previously unexplored in the literature. Consequently, the first study explores the cross-

sectional relationship of appearance and health goals with body image via four forms of

regulation of exercise behaviour (external, introjected, identified and intrinsic), using a

structural equation framework for this correlational data. The second study aims to

provide a causal test of a specific mediational pathway identified in Study 1: from

appearance goals via introjected regulation to body image. Using a 2 x 2 experimental

design, appearance goals for exercise and guilt related to not exercising are manipulated separately, allowing a causal test of this proposed mediation process.

By utilising both correlational and experimental designs, the present research aims to be able to discuss both the direction of causality in these relationships and the naturally occurring relationships between them, allowing for a fuller picture of this process than either method alone. For both studies, a sample of young adult women was used, due to the high frequency of body image issues within this group (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013) and the complex relationship women have with exercise: research suggests that exercise outside of intervention contexts may be more beneficial for men's body image than for women's (Hausenblas & Fallon, 2006), and that young women may even experience negative effects of exercise (Tiggemann & Williamson, 2000). Thus, understanding these motivational processes among women may be important for explaining the more varied impact of exercise on their body image.

2.3. Study 1

Given that previous research has not considered the processes underlying the links between goals for exercise and body image, the first study aimed to consider cross-sectional relationships between these variables and regulations of exercise behaviour, and test the hypothesis that the association of these goals with body image will be mediated by exercise regulations. Specifically, it was predicted that the intrinsic goal of health would be positively associated with self-determined regulation, and, in turn, with more positive body image. Conversely, extrinsic goals (appearance and weight loss) were expected to be associated with non-self-determined regulation, and, in turn, with less positive body image. Self-reported physical activity and body mass index

were controlled for in the analysis, to account for the possible confounding associations of these variables with women's body image.

2.3.1. Method

Participants and Procedure

Following institutional ethical approval, 215 female students (17-30 years, $M =$ 19.77 years, $SD = 2.0$; 86% white) were recruited from a university participant pool to complete an online questionnaire. The ethical procedures of the study complied fully with APA and BPS ethical guidelines, with informed consent given before the study and debriefing for all participants after completion.

Measures

The full measures used in this study can be found in Appendix A. In addition to the measures reported below, the study contained additional measures which were not relevant to the hypotheses of this paper.

Goals for exercise. The Exercise Motivations Inventory was used to measure participants' goals for exercise (EMI-2, Markland & Ingledew, 1997). Participants indicated how true (on a five-point response scale ranging from *not at all true for me* to *very true for me*) each of 51 statements was of their reasons for exercising. Health Goals consisted of the Ill Health Avoidance and the Positive Health subscales (6 items; example item: "I exercise to have a healthy body"; $\alpha = .91$). Appearance Goals consisted of the Appearance and Weight subscales (8 items; example item: "I exercise to help me look better"; $\alpha = .95$).[2] Appearance and Health emerged as distinct factors in an exploratory factor analysis of the full inventory, with no evidence of substantive cross-loading of items between these factors.

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[2] The EMI-2 also contains 11 other subscales relating to mental health reasons for exercise (e.g., stress management, revitalisation), social reasons (e.g., affiliation, social recognition) and performance reasons (e.g., strength and endurance, nimbleness). Although the full inventory was administered, only the four subscales mentioned above were used in analysis due to the focused nature of the research questions.

Regulation of exercise behaviour. Participants' regulation of their exercise behaviour was measured using the Behavioural Regulation of Exercise Questionnaire 2 (BREQ-2, Markland & Tobin, 2004). This 19-item questionnaire includes measures of the four subtypes of regulation discussed earlier: external (example item: "I exercise because other people say I should"; $\alpha = .82$), introjected (example item: "I exercise because I feel guilty when I don't exercise"; $\alpha = .82$), identified (example item: "I exercise because I value the benefits of exercise"; $\alpha = .86$) and intrinsic (example item: "I exercise because it's fun"; $\alpha = .95$). Participants indicated the extent to which items described their underlying regulation of exercise behaviour on a five-point scale, ranging from *not at all true for me* to *very true for me*.

Body image. Three measures of body image were used. Participants completed a trait version of the Physical Appearance State and Trait Anxiety Scale (PASTAS, Reed, Thompson, Brannick, & Sacco, 1991), which presents eight body anxiety items (legs, waist, stomach, muscle tone, buttocks, hips, size, weight) alongside 12 filler items. Participants rated how anxious they had felt over the past six months about each item on a five-point scale, ranging from *not at all* to *extremely so* ($\alpha = .91$).

The Body Appreciation Scale (BAS, Avalos, Tylka, & Wood-Barcalow, 2005) was included as a positive measure of body image. The scale includes 12 items ($\alpha = .92$), which assess participants' positive feelings and behaviours towards their body, using a five-point response scale ranging from *not at all true for me* to *very true for me*. An example item from this scale is "I take a positive attitude towards my body".[3]

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[3] One item from the original scale ("I do not allow unrealistically thin images of women presented in the media to affect my attitudes toward my body") was removed from the scale before administration in the present study. The BAS appeared early in the questionnaire and this item could have primed a 'backlash' against media representations of women and against the general valuing of attractiveness, thus biasing the women's responses to key scales such as appearance goals for exercise. As the scale retained excellent reliability without it and was still of reasonable length, it was considered unproblematic to remove this item.

Third, participants completed the Self-Discrepancy Index (SDI, Halliwell &

Dittmar, 2006). Participants are asked to generate four different things about themselves

they would like to change (self-discrepancies) in an open-ended format, and then rate on

a scale from one to six how concerned they are about each of these discrepancies

(importance) and how different they are now from their ideal (size). Participants'

responses were coded to identify weight, shape or tone (WST) discrepancies ("I am a

size 12, but I would like to be a size 8").[4] A second researcher coded a subset of 25% of

these discrepancies and inter-rater agreement on the identification of general appearance

vs. weight-related discrepancies was high (98.3%). As per the published guidelines, size

and importance of discrepancy were multiplied together and summed to provide a

composite total score for weight, shape and tone discrepancies.

Physical Activity and Body Mass Index. Physical activity was controlled for

using the Leisure Time Exercise Questionnaire (LTEQ, Godin & Shephard, 1985).

Participants recorded how many times within an average week they engage in mild,

moderate, or strenuous physical activity for more than 15 minutes. A combined

moderate-strenuous 'METs' score was computed from these figures (a moderate

exercise session contributed 5 units; a session of strenuous exercise contributed 9). Six

participants were extreme outliers on this composite measure (more than three standard

deviations above the mean), suggesting they had not completed it realistically. The final

sample, with these participants excluded, was 215 women. Body Mass Index was also

controlled for, using self-reported height and weight.

2.3.2. Results

Table 1 shows the zero-order correlations, means and standard deviations of

variables utilised in the analysis. MPlus 6 (Muthén & Muthén, 2011) was used to run a

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[4] These were coded separately from other appearance-related discrepancies that could not be affected by exercise. Only the weight, shape and tone discrepancies were correlated with the PASTAS and BAS scores ($r = .44$ and $-.38$, respectively, ps $< .05$).

structural equation model, in order to assess the relationships between goals, regulations, and body image. Appearance and health goals were modelled to be correlated and to be associated with the four regulations, which, in turn, were associated with body image. Goals and regulations were represented as observed variables using their scale means. Body image was modelled as a latent construct, with the PASTAS scale mean as the reference indicator due to its strong position within the body image literature,[5] and with the BAS scale mean and the WST discrepancies score as the other indicators. Residuals did not correlate within this latent factor, but the residuals of the regulations (external, introjected, identified, intrinsic) were allowed to covary. Body mass index and participants' moderate-strenuous activity from the LTEQ were included as covariates in the model, by modelling these as covarying with goals and predicting regulations and body image. This model had very good overall fit indices, with CFI above .95, RMSEA below .08 and SRMR below .06 ($\chi^2 = 28.60$, $df = 16$, $p = .03$; CFI = .99, RMSEA = .06, SRMR = .03; Figure 1); the local fit of the model was also good with standardized residual covariances suggesting that no relationships in the data were poorly represented by the model (all < 2). Thus, no additional paths were inserted.

In the model, appearance and health goals for exercise were correlated, but only modestly. Appearance goals were strongly associated with introjected regulation and more weakly with external regulation. There was also a significant link between appearance goals and identified regulation. Health goals were strongly and positively associated with both identified and intrinsic regulation. Health goals for exercise were also marginally positively associated with external and introjected regulation ($p = .050$ and .052, respectively). Introjected regulation was negatively associated with body

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[5] Although PASTAS was used as the reference indicator, the weight of the factor loading was fixed to -1 (rather than the traditional +1), in order to keep the latent variable as a *positive* measure of body image.

image, whereas intrinsic regulation showed a positive association. External regulation was marginally negatively associated with body image ($p = .09$).

Bootstrapping with 2000 samples was used to assess whether the associations between goals for exercise and body image were mediated by their joint links with regulations. Appearance goals had a strong negative direct association with body image, but also a significant indirect association via introjected regulation ($\beta = -.14$, $se = .04$, $p = .001$). The other three indirect pathways (via external, identified, and intrinsic regulation) were non-significant ($ps > .05$). The link between appearance goals and body image is therefore partially mediated by introjected regulation.

Health goals also had a direct association with body image, with greater endorsement of health goals associated with more positive body image. Only one of the four indirect pathways was significant (other $ps > .05$): there was a significant positive association of health goals with body image due to their links with higher intrinsic regulation ($\beta = .08$, $se = .03$, $p = .01$). The pathway between health goals and body image is therefore partially mediated by intrinsic regulation.

Table 1. Zero-order correlations and descriptive statistics for exercise goals, exercise regulations, body image and covariates (Study 1).

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Activity (METs)	22.59	19.46											
2. External Regulation	1.61	0.74	.15*										
3. Introjected Regulation	2.59	1.05	.21*	.29*									
4. Identified Regulation	3.10	0.99	.48*	.10	.66*								
5. Intrinsic Regulation	2.92	1.18	.40*	.02	.36*	.75*							
6. Health Goals	3.51	0.94	.18*	.17*	.27*	.47*	.39*						
7. Appearance Goals	3.75	1.04	.14*	.24*	.55*	.37*	.10	.25*					
8. PASTAS	2.78	1.01	.08	.32*	.50*	.24*	-.05	.09	.67*				
9. BAS	2.94	0.82	-.02	-.19*	-.39*	-.08	.17*	.10	-.57*	-.67*			
10. ASDs	9.48	14.78	-.02	.09	.04	.03	-.10	-.03	.12	.20*	-.13		
11. WSDs	10.17	14.46	-.02	.10	.28*	.15*	.04	-.07	.35*	.44*	-.36*	.23*	
12. BMI	22.38	4.28	.03	.19*	.01	-.06	-.09	-.15*	.14	.24*	-.19*	-.01	.20*

Note. Activity is the composite measure used to divide the women into higher and lower activity groups. PASTAS – Physical Appearance State Trait Anxiety Scale (Trait form); BAS – Body Appreciation Scale; ASDs – General appearance related self-discrepancies; WSDs – Weight, shape and tone self-discrepancies; BMI – Body Mass Index. $N = 215$, apart from BMI correlations ($N = 198$). * $p < .05$
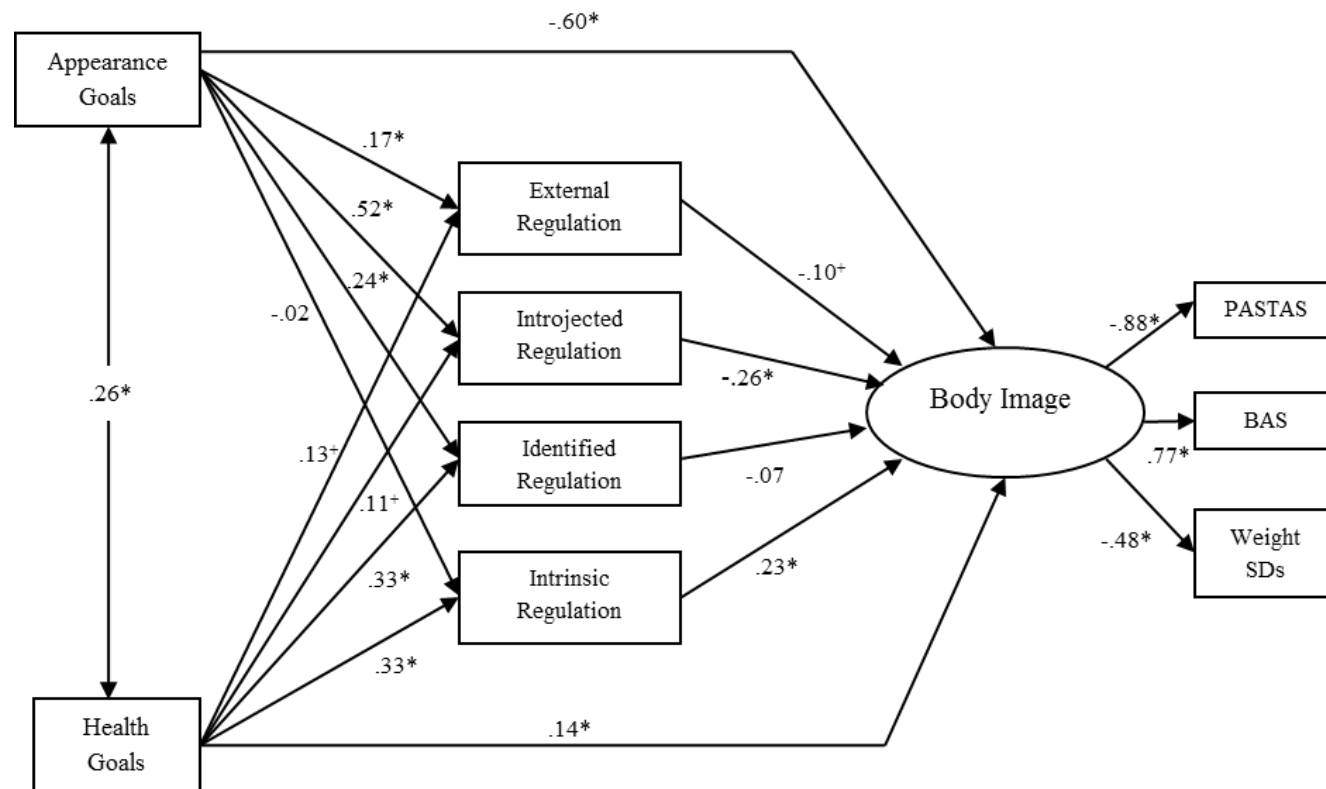
Figure 1. Structural model of relationships between goals for exercise, regulations for exercise and body image (Study 1).

Note to Figure 1. + $p < .10$, * $p < .05$.
BMI and activity were modelled to predict all variables in the model, in order to control for their effects in the analysis. Moderate-strenuous activity was positively associated with introjected ($\beta = .12$), identified ($\beta = .39$) and intrinsic regulation ($\beta = .35$), and both types of goals (appearance: $\beta = .13$; health: $\beta = .18$; all $ps < .05$). BMI was positively associated with external regulation ($\beta = .18$) and appearance goals ($\beta = .14$). It was negatively associated with body image ($\beta = -.15$) and health goals ($\beta = -.14$; all $ps < .05$).

2.3.3. Discussion

These findings suggest that regulations for exercise behaviour mediate the association between women's goals for exercise and their body image. Introjected regulation mediated the negative association between appearance goals for exercise and body image, whereas intrinsic regulation mediated the positive association between health goals for exercise and body image. The individual importance of introjected and intrinsic regulation for exercise as associates of body image has been highlighted previously (e.g., Brunet et al., 2012; Thøgersen-Ntoumani, & Ntoumanis, 2007); however, previous research has not identified either of these regulations' importance in linking goals for exercise to body image.

These findings provide a framework within which to place previous research relating appearance and health reasons for exercise to body image (Furnham et al., 2002; Strelan et al., 2003; Tiggemann & Williamson, 2000), by considering these as domain-specific extrinsic and intrinsic goals, which are differentially associated with the regulation of exercise behaviour and, in turn, body image. However, from this cross-sectional work, it is not possible to draw conclusions about the direction of this effect. Only experimental manipulation of variables, including the proposed mediator, in this case, introjected regulation, can lend support to arguments of causation.

2.4. Study 2

The initial cross-sectional study suggests that introjected and intrinsic regulation play important mediating roles in the association between goals and body image, for appearance and health goals, respectively. However, the difficulties of establishing causal mediation via correlational data are well discussed in the statistical literature (see Bullock, Green, & Ha, 2010, for a thorough review): in a structural equation model, the residuals of the mediator and the dependent variable are modelled not to be associated

with one another; however, with cross-sectional data, it is not possible to guarantee that these error terms are not associated in this way (Antonakis et al., 2010), raising the issue of mis-specification in the model, and an inaccurately represented indirect effect between the independent variable and the dependent variable. To fully test mediation, the proposed mediator should be manipulated orthogonally from the proposed independent variable. Thus, in the second study of this chapter guilt in relation to exercise, the proposed mediator, was manipulated orthogonally from appearance goals, the proposed independent variable.

In testing the potential mediation identified in Study 1, Study 2 focuses on the pathway between appearance goals, introjected regulation, and body image. There is considerable cultural promotion of the goals of appearance weight loss for women: a content analysis of women's health and fitness magazines found that over 50% of main features were presented in an appearance or weight loss frame (Aubrey, 2010). Furthermore, the initial study found that the total association of appearance goals with body image was considerably greater than that of health goals with body image ($\beta = -.78$ vs. $\beta = .15$), suggesting the importance of understanding this effect and developing means to disrupt it in order to improve women's well-being.

Previous research has successfully primed appearance vs. health goals for exercise by asking participants to read health and exercise advice framed in one of these two ways (Aubrey, 2010, Study 2). This research also found a significant effect of appearance framing on body shame, which focuses on guilt and shame relating to not meeting cultural standards of attractiveness. Interestingly, this suggests an influence of the manipulation on guilt relating to exercise: a number of questions in the body shame scale used (Objectified Body Consciousness Scale, McKinley & Hyde, 1996) refer explicitly to feeling like a bad person when not exercising enough. This approach was

adapted to the present research questions, seeking to establish causal evidence for the mediational chain of appearance goals for exercise resulting in greater introjected regulation and thus worse body image. The second study thus implements a 2 x 2 design, where appearance vs. health frames for exercise are manipulated at the same time as inducing guilt vs. no guilt regarding exercise behaviour.

Given Aubrey's (2010) manipulation's effect on body shame, there was good reason to believe that such a text-based manipulation would be capable of priming the exercise goal of appearance and simultaneously inducing guilt relating to exercise. Previous studies seeking to manipulate guilt in general have required participants to describe in detail an experience where they felt guilty, ashamed, or self-blaming (e.g., Ketelaar & Au, 2003); however, such a manipulation would potentially increase only general guilt, rather than the specific form this study was interested in: guilt in relation to, and as motivation for, exercise. Additionally, the control condition for many of these studies (describing a typical day) may have allowed the appearance manipulation to still impact on post-test guilt, by not sufficiently negating the association observed in previous studies (Aubrey, 2010; Study 1). Asking participants to empathise with an author of a personal story text modelled on women's magazines, who expressed either guilt specifically relating to exercise or no guilt specifically relating to exercise, was viewed as a stronger manipulation for the purposes of the present research. Measures of guilt and shame often use responses to scenarios or situations to assess these emotions (see Robins, Noftle, & Tracy, 2007, for a full review), and thus this was considered an appropriate technique with which to manipulate guilt.

In establishing an effect of the guilt manipulation, there is the challenge of individual variation in responses to it: among those in the guilt condition, there is likely to be variation in how susceptible participants are to the manipulation, with some

participants feeling guiltier than others as a result. As such, it would be plausible to predict a mediation effect, with the guilt manipulation predicting increases in post-test guilt and this, in turn, predicting body anxiety. In other words, the impacts of a guilt manipulation on body anxiety can be expected *to the extent that* the manipulation succeeds in inducing guilt.

It was hypothesised that participants in both of the guilt conditions (health and guilt; appearance and guilt) would experience more post-test guilt than participants in the no guilt conditions, but that post-test guilt would not be influenced by the appearance vs. health manipulation. It was predicted that the guilt manipulation would predict post-test body anxiety, via post-test guilt. By experimentally manipulating the proposed mediator in addition to the independent variable, this study offers a strong test of introjected regulation (guilt-based exercise motivation) as the underlying mechanism through which appearance goals influence body image.

2.4.1. Method

Participants and Design

One hundred and sixty-five female university students (aged $18 - 27$ years, $M = 19.44$, $SD = 1.40$) were randomly assigned to a 2 (appearance vs. health frame) x 2 (no guilt vs. guilt) between-subjects design. Participants were recruited through a university participation pool, with the majority participating for course credit in Psychology. Participants were predominantly white (77.7%), and mainly within the normal range for BMI (75% between 18.5 and 25, $M = 21.31$, $SD = 3.59$). Ethical approval for the experiment was granted by the ethics committee of the University, and the research process met APA and BPS ethical standards.

Procedure

Participants attended group testing sessions, which ranged in size from 1 to 10 participants. These sessions took participants between 20 and 35 minutes to complete. Participants were provided with an information sheet, which stated the study related to magazine preferences among female students and requested that they read the article carefully and take their time with it. After reading the information sheet and providing informed consent, participants worked through the pack at their own pace.

Appearance vs. health manipulation. All participants were given a passage of text reportedly written by 'Helen', another student at the university. The passage outlined three tips for fitting exercise into a busy schedule. In the "appearance" conditions, the appearance and weight-related benefits of these tips were highlighted, such as toning and calorie burning, whereas in the "health" conditions, the health benefits of these tips were highlighted, such as cardiovascular health and injury prevention. The texts were as closely matched as possible in length and sentence construction, to ensure that the only substantive difference was the framing of the tips provided (see Appendix B for manipulations).

Guilt manipulation. The final paragraph of the text then differed by guilt condition. In both conditions, the author acknowledged that she did not always do as much exercise as she would like to. In the 'no guilt' condition, this was followed by a self-compassionate statement about not feeling guilty for not doing enough:

> "Even with these tricks, I sometimes find I don't do as much exercise as I *would like*. *But* I know it's hard to fit exercise into a busy schedule *and so mostly I'm happy with the amount I do*. Exercise can be done in short bursts and still be effective, *but I don't need to beat myself up about missing the odd session*."
>
> [emphasis added]

In the 'guilt' condition, this was followed by a statement about feeling guilt for not doing enough:

"Even with these tricks, I sometimes find I don't do as much exercise as I *should*. I know it's hard to fit exercise into a busy schedule, *but sometimes I just feel so guilty about the amount I do*. Exercise can be done in short bursts and still be effective, *so I know that I really don't have a great excuse when I miss opportunities to work out*." [emphasis added]

The second stage of this manipulation asked all participants to reread the final paragraph of the magazine text and to imagine they were the author. Participants were then asked to write down five reasons why they might feel as described in the guilt paragraph. The majority of participants provided 5 reasons (84.3%), with only 4 participants providing 2 or fewer.

Post-test measures. Full details of all measures used in this study are available in Appendix B. In addition to measures reported below, the post-test and follow-up measures also included material not relevant to the hypotheses of this Chapter, relating to constructs from objectification theory.

Questions on the article. Participants were asked to describe briefly the material to confirm they had read the article; all participants accurately described the content. They also were asked how similar they thought the author was to them and how likeable the author was. There were no significant main effects or interactions between conditions on perceptions of author likeability and similarity to participants (appearance vs. health, guilt vs. no guilt, appearance x guilt; all ps > .05; descriptive statistics in Table 2). Participants were also asked how health- and appearance-focused they thought the author was, as manipulation checks; the results of these are discussed in detail later.

Post-test guilt and negative emotion. Post-test guilt was assessed using a short form of the Positive and Negative Affect Scale (I-PANAS-SF, Thompson, 2007), with one additional item (guilty) included. This item was included as a manipulation check for the guilt conditions and was the key item from this scale. Participants were asked to what extent they were experiencing each of 11 mood adjectives *right now* and responded on a seven-point likert scale (*not at all* to *very much*). In addition to guilt, the mean of the four other negative emotion terms (hostile, upset, nervous, afraid)[6] was used to control for a general negative response to the article ($\alpha = .79$).

Body anxiety (state). The Physical Appearance State Trait Anxiety Scale (PASTAS, Reed et al., 1991) was used to measure body anxiety. Participants were asked how anxious they were about a range of elements of their lives *right now* and responded on a five-point likert scale (*not at all anxious* to *very anxious*). Embedded within the 20-item scale were 7 items relating to appearance issues, such as "my weight", "my size" and "the extent to which I look overweight". These 7 items demonstrated excellent reliability ($\alpha = .85$).

Regulation of exercise behaviour (state). An adapted, shortened version of the Behavioural Regulation of Exercise Questionnaire 2 (BREQ-2, Markland & Tobin, 2004) was used to measure participants' immediate motivation for exercise. In the post-test measures, the introductory text was rephrased to ask participants to think about exercising today and to consider why they would be exercising today if they did so, to attain a 'state' measure of exercise regulation. The original 19-item questionnaire was shortened to 12 items, by removing the amotivation subscale and the weakest loading item from the other subscales, as found in Study 1. The analysis here focuses on the

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[6] The fifth negative emotion from the PANAS-I, 'ashamed', was excluded from the negative emotion composite, because of the strong association between shame and guilt in the emotions literature. However, as the manipulation was targeted specifically at guilt, rather than shame, the analysis focused on the single item guilt rather than combining guilt and shame.

introjected regulation subscale (example item: "I would be exercising today because I feel guilty when I don't exercise"; α = .85).

Demographic information, BMI, and Demand Characteristics. At the end of the study, participants were asked for their age, ethnicity, height, and weight. Height and weight were used to calculate body mass index (available for 150 participants). Participants were also asked what they thought the study was related to, or to guess if they had not previously thought about this. No participants recognised that they had experienced a guilt manipulation.

Trait Measures. Participants gave an email address to be contacted in two weeks, when they were emailed a further questionnaire assessing trait levels of key variables, allowing us to check for trait differences between participants in the different conditions and, if necessary, to control for these in later analyses. Participants were emailed a link to an online survey and provided their trait measures via this portal (n = 130). As the effects of the exposure manipulation (a 660 word piece of text) were expected to be relatively short-lived, it was considered appropriate to use a two-week follow-up questionnaire to assess trait measures of the variables involved, especially as previous published research within an exposure paradigm (e.g., Ashikali, Dittmar, & Ayers, 2014) has included trait measures after both the exposure and post-test state measures, emphasising the rephrasing of these questions from 'right now' to 'in general' or 'over the last 6 months'.

Body anxiety (trait). Participants completed the PASTAS (Reed et al., 1994) a second time, but this time were asked how anxious they were about a range of elements of their lives *in general*. The measure once more demonstrated high reliability (α = .92).

Self-objectification. The Trait Self-Objectification Questionnaire (Noll & Fredrickson, 1998) assesses the importance of body appearance, rather than function, to

participants. Participants rank 12 body characteristics in order of importance, with the most important given the highest score (11) and the least important the lowest (0). Half of these characteristics are related to body appearance (e.g., physical attractiveness, muscle tone), with the other half related to body function or performance (e.g., physical fitness, health). Appearance ranks are weighted with 1, and function/performance ranks with –1, then summed, resulting in a score ranging from -36 (lowest level of self-objectification) to 36 (highest level of self-objectification).

Goals for exercise. A shortened, 15 item form of the Goal Content for Exercise Questionnaire (GCEQ, Sebire, Standage, & Vansteenkiste, 2008) was used to measure participants' endorsement of appearance and health goals for exercise, with three items for each goal. Participants rated to what extent various goals for exercise were important to them on a five-point likert scale (*not at all important* to *very important*). The appearance subscale and the health subscale had high reliability (αs = .85 and .82, respectively).

Regulation of exercise behaviour (trait). The shortened BREQ-2 (Markland & Tobin, 2004) was again used to assess regulation of exercise behaviour, but rephrased to represent why participants generally engage in exercise behaviour. The introjected regulation subscale again demonstrated excellent reliability (α = .84).

2.4.2. Results

Random assignment checks

To confirm that random allocation to conditions had resulted in comparable levels of key trait variables across the four conditions, a series of ANOVAs were conducted to assess whether these variables were significantly different between any of the conditions; Table 2 shows descriptive statistics for trait and post-test measures by condition. Only trait levels of body anxiety significantly varied between conditions;

specifically, participants in the health conditions had higher trait levels of body anxiety than those in the appearance conditions ($F(1, 125) = 7.19$, $p = .01$; health conditions: $M = 2.87$, $SD = 1.09$; appearance conditions: $M = 2.40$, $SD = 0.98$). As state body anxiety was the outcome of interest in the experiment, trait levels of this variable were controlled for throughout the analyses. No other potential covariates varied significantly between conditions (age, BMI, trait endorsement of health or appearance goals, trait introjected regulation; all $ps > .05$).

Manipulation checks

  Health and appearance focus. ANOVAs were conducted to establish whether participants perceived the authors of the appearance or health articles as differing in their focus on health or appearance and thus whether the articles primed the intended concerns (see Table 2 for full descriptive statistics). Participants perceived the author in the appearance conditions as significantly more appearance-focused than the author in the health conditions ($F(1, 161) = 31.62$, $p < .001$; health conditions: $M = 3.33$, $SD = 0.81$; appearance conditions: $M = 4.05$, $SD = 0.82$), but perceived the two authors as equally health-focused ($F(1, 161) = 1.44$, $p = .23$; health conditions: $M = 3.75$, $SD = 0.79$; appearance conditions: $M = 3.59$, $SD = 0.93$). This would suggest that both articles primed health concerns, rather than only the health condition, potentially due to the discussion of a health-related behaviour (exercise) in both. However, the clear perception of the appearance author as more appearance-focused suggests that the manipulation was successful in its main purpose of highlighting appearance concerns.

Table 2. Descriptive statistics for the four experimental conditions (Study 2).

| | Guilt | | No Guilt | |
	Appearance *n = 40*	Health *n = 41*	Appearance *n = 41*	Health *n = 43*
Perceptions of author				
Likeable	3.63 (0.98)	3.76 (0.83)	3.76 (0.99)	3.79 (0.91)
Similar	3.33 (0.33)	3.10 (1.00)	2.90 (1.04)	2.98 (1.06)
Health-focused	3.53 (0.88)	3.56 (0.77)	3.65 (0.99)	3.91 (0.78)
Appearance-focused	3.95 (0.81)	3.46 (0.67)	4.15 (0.82)	3.21 (0.91)
Post-test measures				
Guilt	2.93 (1.72)	2.98 (1.70)	2.02 (1.54)	2.02 (1.64)
Body anxiety	2.68 (0.98)	2.75 (0.93)	2.38 (0.85)	2.65 (1.13)
Introjected regulation	2.27 (1.10)	2.54 (0.95)	2.29 (0.93)	2.34 (1.18)
Trait measures	*n = 31*	*n = 32*	*n = 34*	*n = 32*
Body anxiety	2.40 (0.97)	2.87 (1.03)	2.39 (1.01)	2.87 (1.16)
Introjected regulation	2.51 (1.00)	2.85 (1.14)	2.33 (0.87)	2.51 (1.13)
Appearance goals for exercise	3.85 (0.78)	3.82 (0.88)	3.89 (1.00)	4.21 (0.76)
Health goals for exercise	3.56 (0.99)	3.76 (0.91)	3.80 (0.83)	3.60 (1.04)
Body mass index	21.54 (3.22)	20.76 (2.61)	21.47 (4.37)	21.50 (3.92)

Note: N for body mass index: health-no guilt = 38; health-guilt = 38; appearance-no guilt = 40; appearance-guilt = 34.

Guilt inducement. The success of the guilt manipulation was assessed with two measures: the immediate post-test rating of guilt and the state measure of introjected regulation. Table 2 shows means and standard deviations by condition. In the case of post-test guilt, a 2 x 2 ANOVA indicated that the guilt manipulation had a significant effect on participants' immediate emotional reports of guilt ($F(1, 161) = 13.02$, $p < .001$; guilt conditions: $M = 2.95$, $SD = 1.69$; no guilt conditions: $M = 2.02$, $SD = 1.58$), but that there was no main effect of appearance condition, or of the interaction between the two conditions, on this measure (both ps > .05). In the case of introjected regulation, or 'guilt as motivation', neither the guilt nor appearance manipulation had a significant

effect on this outcome. The interaction between conditions was similarly non-significant (all ps > .05).

Overall effects of manipulations on body anxiety

A 2 x 2 ANOVA was conducted to assess whether the guilt manipulation, the appearance vs. health manipulation, or the interaction between the two predicted post-test state body anxiety (PASTAS), using trait body anxiety as a covariate. There were no main effects and no interaction effect, but trait body anxiety had a strong effect on state scores, as would be expected ($F(1, 123) = 197.90$, $p < .001$).

Indirect effects via post-test guilt

Preliminary analyses of correlations between post-test variables suggested that the single item of post-test guilt correlated significantly with post-test body anxiety ($r = .39$, $p < .001$). A path analysis was conducted in MPlus 6 (Muthén & Muthén, 2011) to assess the possibility of post-test guilt mediating the association between the guilt manipulation and the outcomes of post-test body anxiety.[7] Post-test guilt was predicted from the appearance manipulation, the guilt manipulation, and the interaction between them, to replicate the ANOVA.[8] Post-test guilt and these three variables then predicted post-test body anxiety in a fully saturated model (see Figure 2). Trait body anxiety was again included as a covariate, predicting both post-test guilt and body anxiety.

The guilt manipulation significantly predicted the post-test guilt measure, with participants in the guilt condition scoring over one point higher on the seven point post-test guilt scale those in the no guilt condition ($B = 1.01$; $\beta = .30$, $se = .08$, $p < .001$).

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[7] The traditional Baron and Kenny (1986) method of testing for mediation requires a significant total effect of the independent (guilt condition) on the dependent (body anxiety) variables. However, recent work argues that this should not be a prerequisite for testing mediation, given the possibility of multiple mediation effects which work against each other as suppressors (competitive mediation; Zhao, Lynch, & Chen, 2010).

[8] Effect size coding (-1 and 1) was used to compute this interaction term, due to dummy coding (0 and 1) producing a non-orthogonal term, which would be particularly problematic given the unequal distribution of participants across conditions.

Post-test guilt significantly and positively predicted post-test body anxiety (β = .23, *se* = .06, *p* < .001), even accounting for trait body anxiety's significant association with both of these measures (β = .26 and .73 respectively, *p*s < .001). There was a significant indirect effect of the guilt manipulation, via post-test guilt, on post-test body anxiety, supporting the hypothesis that the guilt manipulation would influence body anxiety via this pathway (β = .07, *se* = .03, *p* = .01). The effects of the guilt manipulation on post-test guilt, post-test guilt on body anxiety, and the indirect effect of the guilt manipulation on body anxiety all remained significant when negative emotions were included in the model as a covariate (*p* < .001, *p* = .003 and *p* = .02, respectively), suggesting the critical role of guilt rather than negative emotion more generally.
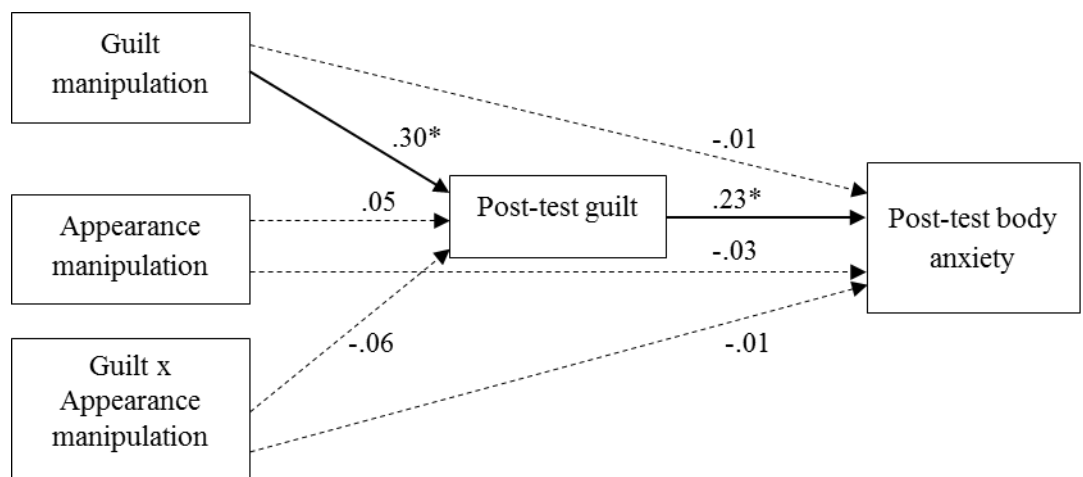
Figure 2. Post-test guilt as a mediator of the effect of the guilt manipulation on post-test body anxiety.

Notes. * *p* < .05. Dashed lines indicate non-significant pathways. Trait body anxiety (not pictured) predicts post-test guilt and body anxiety as a covariate, and correlates with the three independent variables. *N* = 129.

As post-test introjected regulation and post-test body anxiety were significantly correlated (*r* = .58, *p* < .001), a further path analysis was conducted to investigate whether part of the effect of the guilt manipulation via post-test guilt on body anxiety was due to an association with post-test introjected regulation. Thus, post-test

introjected regulation was added to the model as a further mediator, between post-test guilt and body anxiety. Post-test introjected regulation was predicted significantly by post-test guilt (β = .28, *se* = .08, *p* = .001), and, in turn, significantly predicted post-test body anxiety (β = .28, *se* = .05, *p* < .001). The guilt manipulation had an indirect effect on body anxiety via post-test guilt (β = .09, *se* = .04, *p* = .02), and the dual mediated pathway of post-test guilt and introjected regulation (β = .05, *se* = .02, *p* = .02). When controlling for negative post-test emotions other than guilt, the latter pathway was less robust, becoming non-significant (*p* = .11). However, there remained a significant association between post-test introjected regulation and post-test body anxiety (β = .27, *se* = .06, *p* < .001).

Moderation of post-test guilt by guilt condition

The contrast between the significant indirect effect of the guilt manipulation on body anxiety and the non-significant main effect in the initial ANOVA is interesting, suggesting potential suppressor effects or moderators. One potential reason behind this difference in effects is that post-test guilt does not represent the same type of guilt in each condition: 'guilty' participants in the guilt condition should theoretically be feeling this way due to the manipulation; their guilt should be specifically associated with not exercising enough. In contrast, variation in the guilt ratings of participants in the no guilt condition will not necessarily be associated with guilt regarding exercise (which this condition specifically aims to reduce), but rather should represent 'random noise' in the sample. The next analysis therefore tested whether the guilt manipulation moderated the link between post-test guilt and body anxiety, using a multiple regression with effect coding terms for the appearance and guilt manipulations, their interaction term, post-test guilt, and trait body anxiety as predictors, with the final addition of an interaction term between post-test guilt and guilt condition. As theorised, the interaction between guilt

condition and post-test guilt was significant ($B = .13$, $se = .06$, $p = .04$). From simple slopes analysis (Figure 3), it emerged that in the no guilt condition, there was no significant effect of post-test guilt on body anxiety ($B = .06$, $se = .05$, $p = .18$), whereas in the guilt condition, there was a significant effect of post-test guilt on body anxiety ($B = .19$, $se = .05$, $p < .001$). Thus, participants who felt guiltier *as a result of the manipulation* subsequently felt greater anxiety about their bodies.

This interaction effect remained significant when negative post-test emotions were added as a covariate ($B = .12$, $se = .06$, $p = .05$). Furthermore, this interaction effect was not replicated when post-test guilt was replaced by negative post-test emotions in general ($B = .01$, $se = .10$, $p = .94$), again demonstrating the specific importance of guilt, rather than of a negative emotional response overall.
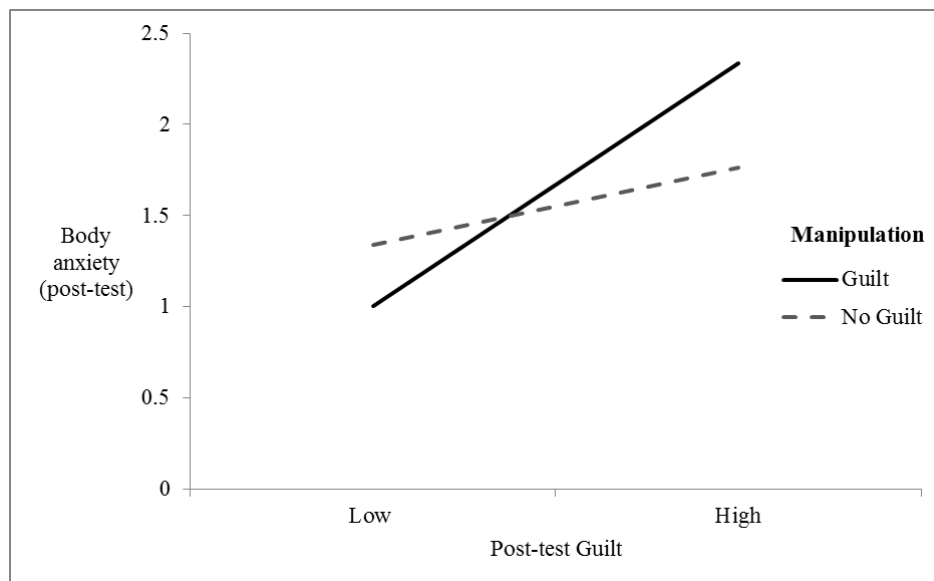

Figure 3. Simple slopes plot of the effect of post-test guilt on body anxiety by guilt manipulation condition (Study 2).

2.4.3. Discussion

The finding that women who experienced experimentally-induced guilt relating to exercise had higher levels of body anxiety suggests that guilt related to exercise is a

mechanism through which appearance goals influence body image. Interestingly, the effect of appearance vs. health framing observed by Aubrey (2010) appears to be superseded by the guilt manipulation introduced in this experiment: appearance goal priming was not problematic for body image when combined with the no guilt manipulation. Additionally, only in the condition where guilt relating to exercise was specifically primed was post-test guilt associated with post-test body anxiety, thus suggesting this *specific* form of guilt as problematic. In contrast, post-test guilt in the condition where a self-compassionate, no-guilt response was primed was not associated with post-test body anxiety. Finally, the mediation by post-test guilt and the moderation relating to it remain significant when controlling for other negative emotions at post-test. This demonstrates the specific role of guilt and the divergent validity that considering guilt provides: when guilt and negative emotion are included in the same model and modelled to be associated with post-test body anxiety, post-test guilt emerges as the strongest, and only significant, association.

The finding of a significant relationship between post-test guilt and post-test body anxiety for the women who were in the guilt condition suggests that women who experience guilt related to not exercising enough subsequently experience greater body anxiety. However, the non-significant total effect of guilt condition on body anxiety suggests that not all women responded to the guilt manipulation with feelings of guilt. This is not entirely surprising, however, as previous exposure experiments relating to cultural ideals and images of attractiveness have not focused on, or found, solely main effects, but have considered factors which make women and girls more vulnerable to the negative effects of such stimuli, such as initial body dissatisfaction and internalisation of the thin ideal (e.g., Dittmar & Howard, 2004; Stice, Spangler, & Agras, 2001). In spite of these variations in the effectiveness of the manipulation, the moderation and

mediation analyses reported here show that when the manipulation did result in greater guilt relating to exercise, it had the effect predicted. Future work could therefore investigate factors which render women more vulnerable, both to this manipulation and to naturally occurring feelings of guilt within the exercise domain.

The findings relating to post-test introjected regulation provide tentative support that this form of regulation may be causally linked to body image: women who felt guiltier post-test were more likely to say that they would be motivated to exercise that day in order to avoid feeling guilty, ashamed, or bad about themselves, and this, in turn, was associated with higher levels of post-test body anxiety. However, immediate post-test guilt, how guilty they felt at that moment in time, appeared to be a stronger unique mediator of the effect of the guilt manipulation than introjected regulation, how much they would be motivated to exercise to avoid guilt later that day: the indirect pathway via immediate guilt was larger than that via introjected regulation ($\beta = .09$ vs. $.04$), and was more robust when immediate negative emotions were controlled for ($p = .05$ vs. $.11$). This may be due to the temporal match between post-test negative emotions (how guilty do you feel *right now*?) and post-test body anxiety (how anxious do you feel [about your body] *right now*?), compared to the more distant, future-orientated measure of post-test introjected regulation (if you were exercising *later today…*). Of the immediate emotional responses to the manipulation, however, guilt clearly emerged as the strongest, unique predictor of post-test body anxiety, further highlighting the importance of guilt relating to exercise in motivational processes linking appearance goals and body image.

2.5. General Discussion

Across the two studies, there is support for the importance of guilt, in the form of motivation for exercise (introjected regulation) in Study 1 and in the form of an

emotional response in Study 2, as a key process through which appearance goals for exercise influence body image. Although the direction of the model constructed in Study 1 could be disputed due to the data's cross-sectional nature, the results from the experimental manipulation of these variables in Study 2 provide support for the proposition that guilt relating to exercise results in increased body anxiety.

These findings support the theoretical proposal that regulation of exercise behaviour may mediate the association between women's goals for exercise and their body image, as predicted by self-determination theory (Deci & Ryan, 2000), given the consistent association of extrinsic goals with controlled regulations (e.g., Gillison et al., 2006; Ingledew & Markland, 2008) and of controlled regulations with worse body image (e.g., Brunet & Sabiston, 2009; Markland, 2009; Thøgersen-Ntoumani & Ntoumanis, 2007). However, although the results replicate the broad theoretical predictions of less self-determined regulation being associated with lower well-being (e.g., Sheldon et al., 2004), these findings also provide a challenge for self-determination theory: it is not simply the case that the most controlled form of regulation, external, is the worst. Introjected regulation emerges as the key regulatory pathway linking appearance goals and negative body image, and future theoretical and empirical work should seek to understand why guilt as a motivation for exercise behaviour may have more negative consequences than more external pressures.

In the cognition and emotion literature, guilt is often discussed as a positive motivator, driving us to reparatory action to fix a perceived wrong (e.g., Hoffman, 1982); the evidence presented here and the growing body of work in the body image domain (e.g., Brunet & Sabiston, 2009; Calogero & Pina, 2011) suggests that this may not be the case, as guilt emerges as an important emotional response and motivational process resulting from exposure to or endorsement of the extrinsic goal of attractiveness.

That guilt relating to exercise behaviour has such negative implications for body image is an important finding, as it opens up a new avenue of interventions, suggesting that the negative association between appearance goals and body image could be mitigated by decoupling these goals from the guilt associated with not exercising enough. This provides a potential solution for researchers seeking to reduce the negative impact of appearance goals on women's body image, without reducing participants' autonomy by invalidating their personal reasons for exercise: by introducing interventions aimed at reducing guilt-based motivation for exercise, practitioners can potentially disrupt one of the negative pathways from appearance goals to body image. From a public health perspective, this form of intervention could have a double reward, reducing the associated health issues of negative body image, but also increasing long-term exercise persistence, which has been negatively associated with introjected regulation (Pelletier, Fortier, Vallerand, & Briere, 2001).

The research's evidence of causality stems from the experimental work in Study 2, which has the obvious limitation of being a one-off exposure experiment, performed in controlled, laboratory conditions. Findings here may not generalise to either real world exposure to such materials, or to long-term associations between these variables. However, a considerable strength of the manipulation is that it closely imitated the actual materials women are regularly exposed to in fashion magazines, blogs, and health and fitness media. Guilt was induced not through a complex deception or by subliminal process, such as a scrambled sentences task (e.g., Zemack-Rugar, Bettman, & Fitzsimons, 2007), but by an active discussion of guilt by the author, an event that regularly occurs in the real-life media exposures that women experience (e.g., 'true life testimonials' in magazines such as Heat and OK!). This similarity gives the second

study a much greater degree of ecological validity than might otherwise be expected of a lab-based experiment.

Furthermore, Aubrey (2010) argues that this form of exposure represents a single 'meal' in women's 'media diets': this is only a single text endorsing appearance goals, but given the cultural prominence of these messages, it is likely that women are exposed repeatedly to these, experiencing these state effects on body image multiple times a day, and that over an extended period these effects may become cumulative, altering trait levels. Indeed, recent work by Karazsia, van Dulmen, Wong, and Crowther (2013) theorises exactly this, in relation to links between thin ideal internalisation and body dissatisfaction, with influence at the state level spilling over to the trait level over time. Future work should consider these relationships longitudinally, in order to confirm the effects of appearance goals for exercise on body image, via introjected regulation, in a naturalistic environment.

A second issue limiting the extent to which these findings may be generalised is the nature of the sample: female undergraduate students in the UK. Although there is clear justification for selecting the particular samples of young women in the present work, future research should focus on extending such work to other groups, especially young men, among whom rising body image concerns have been documented in recent years (e.g., Pope et al., 2000). Given the importance these results place on guilt as a potentially damaging motivator for exercise, expanding the sample to consider men may be particularly important: research has found that women are more prone to experiencing guilt than men, particularly in individualistic cultures, such as the UK and US (Fischer & Manstead, 2000; Silfver, 2007; Tangney & Dearing, 2002). Roberts and Goldenberg (2007), in fact, explicitly link women's increased propensity to shame and guilt to the objectification of women's bodies by society, and suggest that there should

be an even greater gender divide in self-conscious emotions when their bodies are made salient, such as in the exercise environment. Thus, future research should investigate whether the importance of guilt as motivation for exercise is an issue unique to women, or whether it can be generalised to men as well.

Finally, the theoretical model could be expanded to include additional goals for exercise, with a particular focus on the potential positive effects of intrinsic goals such as social connection, personal development and mastery of new skills (Sebire et al., 2008). While this would provide a further test of self-determination theory in the exercise and body image context, it would also expand the intervention-related possibilities of this research, by providing positive alternatives to exercising for appearance reasons for exercise professionals to highlight for their clients. Exercise and physical activity have been suggested as powerful ways for women and girls to resist Western cultural pressures relating to appearance (Fredrickson & Roberts, 1997), and work relating to the positive influence of intrinsic goals for exercise could be critical in realising this potential.

These results set an agenda for further work to evaluate the unfolding causal relations between motivations for exercise and well-being over time. Of course, with a cross-sectional sample, the present research's goal was simply to test the hypothesis that body image and appearance goals for exercise are linked due to their joint association with regulations. Having established initial evidence for causality, with guilt relating to exercise resulting in increased body anxiety in the experimental study, it remains a critical task for further research, employing longitudinal designs, to determine whether this causal relationship holds true over a longer period of time, and in a more naturalistic exercise setting.

Chapter 3:

Body image in an exercise context: Longitudinal analyses of introjected regulation and self-objectification

Body image in an exercise context: Longitudinal analyses of introjected regulation and self-objectification

3.1. Abstract

Appearance goals for exercise are consistently linked with negative body image outcomes for the women who endorse them. However, research has yet to consider the processes underlying this relationship. This study addresses this issue with a longitudinal design, considering regulation of exercise behaviour and self-objectification as potential processes by which appearance goals negatively impact on body image. A community sample of 190 women completed measures of goals for exercise, regulation of exercise behaviour, and body image, in an initial questionnaire, weekly for 10 weeks, and at 3 and 6 month follow-ups. Overall, the multilevel and cross-lagged analyses suggest an important role for introjected regulation (exercise motivated by guilt avoidance) in linking appearance goals to a more negative body image over time, and a smaller role of intrinsic regulation (exercise motivated by enjoyment) as influential at the weekly level. These results are discussed in relation to their implications for self-determination theory, in general and specifically in the sport and exercise domain, and their practical implications for exercise professionals.

3.2. Introduction

Individuals engage in exercise with a wide variety of goals, but research suggests that these reasons for exercise are strongly divided by gender: women are considerably more likely to exercise for appearance, weight, or toning reasons than men are (McDonald & Thompson, 1992; Tiggemann & Williamson, 2000), and a content analysis of women's health and fitness magazines from the USA found that the headlines of these magazines contained as many appearance-focused main features as health-focused ones, a surprising finding perhaps given the genre of magazines (Aubrey, 2010).

However, the same studies that find that women are more likely to exercise for appearance reasons also reveal a concerning finding: higher endorsement of appearance as a reason for exercise is associated with lower levels of satisfaction with their bodies (Furnham, Badmin, & Sneade, 2002; McDonald & Thompson, 1992; Tiggemann & Williamson, 2000). One obvious explanation for this association is that women who are dissatisfied with their bodies are more likely to engage in body modification practices, such as exercise, in order to 'fix' them and, indeed, this suggestion would find strong support from research into disordered eating behaviours (e.g., Stice & Shaw, 2002). However, a second possibility is that exercising for appearance reasons has a detrimental impact on body image. Researchers found that after exercise sessions where women reported higher endorsement of appearance reasons for exercise, women also reported worse state body image, even though exercise sessions overall had a positive effect (Le Page & Crowther, 2010), lending some credence to this suggestion.

Self-determination theory (SDT, Deci & Ryan, 2000) offers a framework which both supports this conceptualisation of the relationship between appearance goals for exercise and body image, and provides a potential mechanism which may be able to

explain the relationship. Self-determination theory proposes that goals can be more or less extrinsic in their nature; that is, they vary in the extent to which they are dependent on external evaluation of success. The goal of appearance is generally considered to fall within this extrinsic frame (e.g., Kasser & Ryan, 1996), as, to use the old saying, 'beauty is in the eye of the beholder': whether we achieve this goal depends on an external attribute (attractiveness) being improved, and this is confirmed primarily through others' reactions to our appearance. Such extrinsic goals have been consistently associated with lower personal well-being (Kasser & Ryan, 1996; Sheldon, Ryan, Deci, & Kasser, 2004; Twenge et al., 2010) and one proposed reason behind this is how we experience the motivation behind these goals on a day to day basis, or our 'regulation' of our behaviour.

Regulation of behaviour falls along a continuum from controlled, where individuals experience little to no control over their actions, to autonomous, where individuals experience their actions as stemming from their own interests, enjoyment, or values (Ryan & Deci, 2000). In both the domain of exercise and more broadly, extrinsic goals have been strongly associated with controlled forms of regulation, such as external regulation, where an individual engages in a behaviour due to external pressures, such as from friends and family, and introjected regulation, which in the exercise domain is commonly conceptualised and measured as engaging in physical activity to avoid feeling guilty or ashamed (Gillison, Standage, & Skevington, 2006; Ingledew & Markland, 2008); in contrast, intrinsic goals have been associated with autonomous forms of regulation, such as identified regulation, exercising due to valuing the benefits of exercise, and intrinsic regulation, exercising due to enjoyment of the activity itself.

Self-determination theory proposes that autonomous regulation should support the fulfilment of basic psychological needs, resulting in better well-being outcomes, whereas controlled regulation should result in lower well-being due to psychological need thwarting. This link to well-being from regulation is supported both in terms of general well-being (Sheldon et al., 2004) and in terms of body image: women's general sense of self-determination (autonomous vs. controlled regulation) protects against negative cultural influences on body image (Kopp & Zimmer-Gembeck, 2011; Pelletier & Dion, 2007), and controlled regulation of exercise specifically is also associated with negative body image outcomes such as social physique anxiety, and body-related shame and guilt (e.g., Brunet, Sabiston, Castonguay, Ferguson, & Bessette, 2012; Sabiston et al., 2010).

When research examines each type of regulation separately, there appears to be particular importance attached to introjected and intrinsic regulation in their associations with body image. Cross-sectional work has found that introjected regulation is associated with body dissatisfaction, social physique anxiety, and drive for thinness, whereas intrinsic regulation is associated with greater feelings of physical self-worth (Thørgersen-Ntoumani & Ntoumanis, 2007). A qualitative study interviewing exercisers who report high levels of controlled regulation (Fortier & Farrell, 2009) provides further support for the importance of introjected regulation: these men and women drew links between their guilt over missing a workout (the basis of introjected regulation as assessed by exercise regulation measures) and resulting negative feelings about their bodies. From the evidence linking goals to regulations, and regulations to body image, it is possible to conceptualise the link between appearance goals and negative body image as being driven by their joint association with controlled forms of regulation: women who exercise for appearance reasons are likely to feel more controlled by external

pressures or personal guilt, and this results in more negative body image outcomes. Regulations for exercise, particularly introjected and intrinsic regulation, therefore have the potential to explain the association between appearance goals for exercise and body image. However, other theoretical perspectives, beyond self-determination theory, may also offer insight into the detrimental associations of appearance goals and women's feelings about their bodies.

A second potential process comes from objectification theory (Fredrickson & Roberts, 1997). This theory argues that women are socialised in Western cultures to value their body's appearance over its function, and that this is associated with a raft of negative mental health consequences, including body image disturbance. Trait self-objectification, the internalisation of valuing appearance over function or health, could potentially be positioned as being a higher-order value or goal, which then influences domain-specific goals, such as goals for exercise or eating regulation: this suggestion has support from work with aerobics instructors and participants, where women higher in self-objectification reported greater endorsement of appearance goals for exercise, which, in turn, decreased their body esteem (Strelan, Mehaffrey, & Tiggemann, 2003).

However, self-objectification theory also conceptualises self-objectification as a *state* variable: in certain situations, women may engage in more body surveillance and experience greater awareness of their body's appearance rather than its function (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Moffitt & Szymanski, 2011). As well as leading to state body image disturbance, repeated experiences of state objectification, or self-objectification, are proposed to be the *process* by which women internalise the objectification of their bodies, and to result in increases in trait self-objectification (Frederickson & Roberts, 1997; Moradi, 2010). In support of this cumulative effect, research has found that the effects of objectifying situations on

appearance concerns persist after women have left them (Quinn, Kallen, &

Cathey,2006), and exercise environments may be one such 'objectifying situation': the

act of running on a treadmill resulted in increases in self-objectifying thoughts among

college women (Wolfe, 1998), and other researchers have discussed at length the

potential objectifying factors of gym facilities, such as mirrors, highly available social

comparisons with other women's bodies, and revealing clothing (Ginis, Prapavessis, &

Haase, 2008; Prichard & Tiggemann, 2005). Women exercising with appearance goals

may be at particular risk of these negative influences, as they are more likely to engage

in exercise activities that encourage social comparisons and focus on body appearance,

such as aerobics cardio classes, and less likely to engage in exercise activities that

increase focus on body states and function, such as yoga (Prichard & Tiggemann, 2008).

In turn, these increased possibilities for state self-objectification may have a cumulative

effect on appearance-goal focused women's trait self-objectification over time.

Therefore, as well as trait self-objectification being the basis of appearance goals for

exercise at any given time point, increased experiences of state self-objectification (and

subsequently trait self-objectification over time) may be another process through which

appearance goals for exercise undermine women's body image.

All of the studies described above are cross-sectional in nature, raising the issue

of the direction of these relationships and of causality. Indeed, within the self-

determination theory studies, there exist a number of theoretical models, with some

containing contradictory pathways. Within some research groups (e.g., Brunet et al.,

2012; Sabiston et al., 2010), regulations are considered *outcomes* of body image, with

these researchers arguing, entirely plausibly, that women who are already experiencing

body image concerns are more likely to feel controlled in their exercise behaviour.

However, in turn, research from a nearby field, that of eating regulation, presents

models whereby regulations (of eating behaviour in this case) *predict* body image and eating behaviour outcomes (e.g., Verstuyf, Patrick, Vansteenkiste, & Teixeira, 2012), and in the broader context, self-determination theory tends to frame life goals as being predictive of well-being (e.g., Kasser & Ryan, 1996; Twenge et al., 2010), or indeed of body image (e.g., Thørgersen-Ntoumani, Ntoumanis, & Nikitaras, 2010). All of these published articles present good fit indices from their models, but their cross-sectional data cannot demonstrate causality, or even temporal antecedence, a pre-requisite of establishing a causal connection. Therefore, research which examines the relationships between appearance goals, regulations for exercise, and body image over a period of time, and over several different periods of time, could significantly contribute to the understanding of these relationships.

The Present Research

Given the dearth of research considering the processes by which appearance goals and body image are linked, the present research aims to expand understanding of these factors by considering regulation of exercise behaviour and self-objectification as potential processes, both cross-sectionally and longitudinally. These issues were examined in a diverse sample of women, recruiting participants from women exercising in the community, in association with gyms and leisure centres. Using a broader age range of women across the community, rather than the more typical university student sample, provides a robust and conservative test of the hypotheses of the study. Young adults, particularly university students, are potentially one of the most vulnerable groups to negative body image influences, with research suggesting a peak in body image concerns in this transition to adulthood (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013). The present study offers the opportunity to test the links

between exercise motivation and body image in a sample more representative of the general population.

The present research involves a single sample of participants, but three separate methods of data collection and analysis, reported as Studies 1, 2 and 3 below. In Study 1, the relations among trait self-objectification, goals for exercise, regulations, and body image are examined, using structural equation modelling to assess the indirect effects of appearance and health goals for exercise on body image, via regulations for exercise. Second, participants completed weekly reports of their body image, regulations, and physical activity levels for ten weeks, allowing Study 2 to model the weekly and overall fluctuations in body image and regulations, and the impact of appearance goals on these variables over a period of time. Finally, participants completed follow-up surveys after three and six months. Study 3 considers whether appearance goals, introjected regulation, self-objectification, and body image predict one another over time, allowing conclusions to be drawn relating to the likely causal direction of these relationships, something not previously attempted in the literature.

Overall, it was predicted that regulations will mediate the association between women's goals for exercise and their body image at the cross-sectional level, over 10 weeks of exercise, and over a longer period of three to six months. Specifically, it was expected that introjected regulation will be a key indirect pathway between appearance goals and more negative body image. Additionally, at the cross-sectional level, it was predicted that trait self-objectification would be associated positively with women's endorsement of appearance goals for exercise, and negatively with endorsement of health goals. Over three to six months, it was predicted that this relationship would be replicated, but also the reverse. Thus, bidirectional associations were predicted over

time between higher endorsement of appearance goals and greater trait self-objectification.

3.3. Study 1

The initial cross-sectional questionnaire was participants' point of entry into the study, introducing them to the research, and gaining baseline measures of key psychological variables: the measures described in this section are used throughout the analyses of the weekly and longitudinal data, as both controls and predictors over time. The aim of analyses in Study 1 was to model the associations between self-objectification, goals for exercise, regulation of exercise behaviour, and body image, in a sample of women exercising in the community. Structural equation modelling was used to examine these relationships, controlling for participants' levels of physical activity and their age.

As per previous research, self-objectification was expected to positively predict appearance goals for exercise, and negatively predict health goals for exercise. It was anticipated that appearance goals for exercise would be associated with external and introjected regulation, whereas health goals would be associated with identified and intrinsic regulation. The more controlled regulations (external and introjected) were anticipated to negatively predict body image, whereas the more autonomous regulations (identified and intrinsic) were anticipated to positively predict women's body image. Lastly, it was predicted that appearance and health goals would have indirect effects on body image, via the controlled regulations for appearance goals and the autonomous regulations for health goals. These predictions are represented in Figure 1 below.
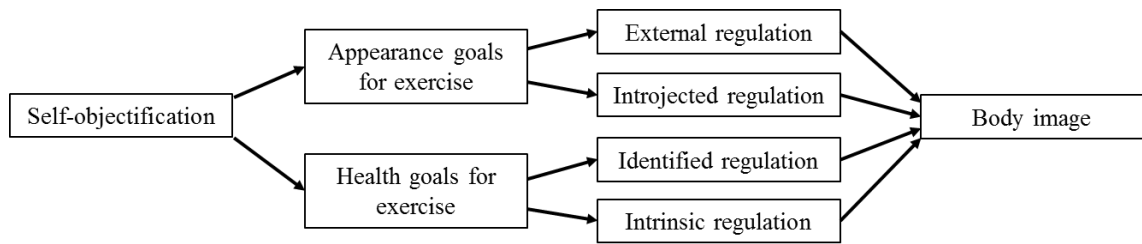
Figure 1. Hypothesised relationships between self-objectification, goals for exercise, regulation of exercise behaviour, and body image.

3.3.1. Method

Participants

One-hundred and ninety women were recruited from advertisements online and in fitness centres in the wider Sussex area (UK). The sample was diverse in age (range = 18 – 72; M = 35.5, SD = 12.0), and in occupation: the largest occupational group was those who worked in office jobs (31.4%), but the sample also included teachers (14.5%), students (14.5%), healthcare professionals (11.9%), and a variety of other occupations. The median income band for the sample was from £20,000 to £30,000. The sample was predominantly White British (93.2%), with the remaining participants reporting a variety of other ethnic group memberships. Just over half (53.7%) of the women had gym memberships when they completed the initial questionnaire and began participation in the study.

Measures

The full versions of measures used in this research can be found in Appendix C. In addition to the measures reported below, the full questionnaire included several measures not relevant to the current hypotheses, relating to other motivational processes and behavioural intentions.

Goals for exercise. Participants' goals for exercise were measured using the Goal Content for Exercise Questionnaire (GCEQ, Sebire, Standage, & Vansteenkiste, 2008). This measure has demonstrated good internal psychometric properties (such as a consistent factorial structure and high reliability) and high external validity, successfully predicting theoretically related constructs such as need satisfaction and autonomous regulation (Sebire, Standage, & Vansteenkiste, 2008, 2011). The GCEQ measures participants' endorsement of a variety of goals for exercise, by asking participants to rate the extent to which each statement reflects their own reasons for exercising on a five-point likert scale (*not at all* to *very much*). These analyses focus on health goals (4 items, "I exercise to improve my overall health", $\alpha = .79$) and appearance goals (4 items, "I exercise to improve my appearance", $\alpha = .87$).[9]

Regulation of exercise behaviour. Participants' regulation of their exercise behaviour was measured using the Behavioural Regulation of Exercise Questionnaire 2 (BREQ-2, Markland & Tobin, 2004). Participants indicated the extent to which items described their underlying regulation of exercise behaviour on a five-point likert scale (*not at all true for me* to *very true for me*). This 19-item questionnaire measures the 5 subtypes of regulation suggested by self-determination theory: amotivation (4 items, "I don't see why I should have to exercise", $\alpha = .82$), external (4 items, "I exercise because other people say I should", $\alpha = .77$), introjected (3 items, "I feel guilty when I don't exercise", $\alpha = .86$), identified (4 items, "It's important to me to exercise regularly", $\alpha = .85$) and intrinsic (4 items, "I exercise because it's fun", $\alpha = .95$). As the sample was recruited via fitness centres and from an exercising population, the amotivation subscale was not used in further analyses, due to the low mean score and limited variation ($M = 1.13$, $SD = 0.42$).

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[9] The GCEQ also measures intrinsic goals for Affiliation and Development, and the extrinsic goal of Social Recognition. Given the hypotheses for this research relate to goals for appearance, the analyses focused on these goals, and their counterpoint of health goals.

Body image. Given the multi-faceted nature of body image as a construct, three measures were utilised, focusing on different aspects. First, a measure of negative affect relating to the body was included, in an assessment of anxiety associated with specific body parts. Second, a global positive measure of body image was used. Third, an idiographic measure of participants' self-discrepancies relating to their bodies was employed, which implicitly assesses participants' dissatisfaction and concern over their bodies.

Body anxiety. Participants completed a trait version of the Physical Appearance State Trait Anxiety Scale (PASTAS, Reed, Thompson, Brannick, & Sacco, 1991). Eight body anxiety items (legs, waist, stomach, muscle tone, buttocks, hips, size, weight) are presented alongside 12 filler items about other areas of life that may generate anxiety. Participants rated how anxious they had felt over the past six months about each item on a five-point likert scale, (*not at all* to *extremely so*). The PASTAS demonstrated high reliability ($\alpha = .92$).

Body acceptance. The Body Appreciation Scale (BAS, Avalos, Tylka, & Wood-Barcalow, 2005) was included as a positive measure of body image (12 items, "On the whole, I am satisfied with my body", $\alpha = .93$). The original scale includes 13 items, which assess participants' overall satisfaction with their bodies and their satisfaction with their bodies in spite of its appearance, using a five-point likert scale (*not at all true for me* to *very true for me*). For the present study, one item was omitted due to its explicit association of the media with body image ("I do not allow unrealistically thin images of women presented in the media to affect my attitudes toward my body").[10] The BAS has demonstrated high reliability in similar samples in both the United States and

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[10] It was posited that this item (appearing early in the questionnaire) might prime a resistance to the cultural importance of attractiveness, and influence women's responses to later scales such as appearance goals for exercise. The scale had good reliability without this item and thus it was deemed appropriate to exclude it.

in Europe and has demonstrated construct validity, being consistently positively associated with body image measures such as body esteem and positive appearance evaluation, and negatively associated with negative body image, such as body dissatisfaction ($\alpha > .90$; Avalos et al., 2005; Swami, Stieger, Haubner, & Voracek, 2008).

Weight, shape, and tone discrepancies. The Self-Discrepancy Index (Halliwell & Dittmar, 2006) was used as a third measure of body image. Participants are asked to list four different things about themselves they would like to change, and in what way, with no specific reference to appearance, weight, or exercise. Participants rate from one to six how concerned they are about each of these discrepancies (importance) and how different they are now from their ideal (size). Participants' responses were coded as weight, shape, or tone discrepancies ("I am a size 12, but I would like to be a size 8"), appearance-related discrepancies that could not be altered by exercise ("I have a big nose, but I would like it to be smaller"), or neither ("I am lazy in the mornings, but I would like to get up and go running"). A second researcher coded a subset of the discrepancies (25%) and inter-rater agreement on the identification of general appearance vs. weight-related discrepancies was reported at 98.3%, confirming the distinction between the two appearance-related categories.

As per the published guidelines, size and importance of discrepancy were multiplied together and summed for 'weight, shape, and tone' discrepancies to provide a composite score. Previous work has found that this composite variable correlates significantly with other measures of body image, such as body-focused affect, body dissatisfaction, body anxiety, and body esteem (Dittmar & Halliwell, 2008; Halliwell & Dittmar, 2006), and with relevant exercise variables of interest in this research (Chapter 2, this thesis). Inter-correlations between the weight, shape, and tone discrepancy scores

for participants and their scores on the PASTAS and the BAS further supported the validity of this measure, with correlations of $r = .51$ and $-.36$ respectively (ps < .05).

Self-objectification. The Self-Objectification Questionnaire (Noll & Fredrickson, 1998) assesses the importance of body appearance, rather than function, to participants, without an evaluative element. Participants were asked to rank 12 body 'traits' in order of importance, with the most important being given the highest score (11) and the least important given the lowest (0). Half of these traits are related to body appearance (physical attractiveness, skin tone, weight, sex appeal, measurements, muscle tone), with the other half related to body function or performance (physical fitness, health, stamina, physical energy level, physical condition, muscular strength). Appearance ranks are weighted with 1, and function/performance ranks with -1, then summed, resulting in a score ranging from -36 (lowest level of self-objectification) to 36 (highest level of self-objectification). A negative score represents a higher focus on functionality than appearance; a positive score suggests the opposite.

Physical activity. Participants' general physical activity levels were measured using the Leisure Time Exercise Questionnaire (LTEQ, Godin & Shephard, 1985). This self-report measure has been widely used in both the self-determination and body image literature concerning exercise (e.g., Gillison, Standage, & Skevington, 2006; Markland, 2009) to assess participants' activity and has been found to be moderately correlated with objective measures of activity such as pedometers (Godin & Shephard, 1985; Sebire et al., 2011). Participants recorded how many times within an average week they engage in mild, moderate, or strenuous physical activity for more than 15 minutes. A combined moderate-strenuous 'METs' score is computed from these figures (a moderate exercise session contributed 5 units; a session of strenuous exercise contributed 9).

Procedure

In order to take part in the study, participants were given a web address at which they could access the initial questionnaire. This web address was included on all of the hard-copy advertising materials and also advertised on fitness centre websites. The questionnaire was completed online and took approximately 30 minutes to complete. Participants were entered into a prize draw for completing the first questionnaire, regardless of whether they participated in any further elements of the research. Ethical approval for this research was obtained from the appropriate committee for the School of Psychology at the University, and the research complied fully with APA and BPS ethical guidelines.

3.3.2. Results

Table 1 provides the descriptive statistics for key measures and the zero order correlations between them. MPlus 6 (Muthén & Muthén, 2011) was used to estimate a path model, with self-objectification predicting appearance and health goals, which, in turn, predicted the four regulations (external, introjected, identified and intrinsic), whose error terms were allowed to covary, in order to represent their shared variance and to estimate their unique influence on body image. The regulations then predicted body image. With the exception of body image, variables were modelled as observed variables, and represented by their scale means. Body image was represented as a dependent latent variable with three indicators: PASTAS scale mean (used as reference indicator with a fixed loading of -1), BAS scale mean and weight, shape, and tone discrepancies score. Health and appearance goals and self-objectification also predicted body image directly. Physical activity and age were included as covariates. The measurement model, with covariances between all of the variables (excluding the indicators of body image) had excellent fit indices, indicating this was an acceptable

modelling of the body image construct ($\chi^2 = 26.86$, $df = 18$, $p = .08$; CFI = .99, RMSEA = .05; SRMR = .03).

The initial structural model displayed good fit indices ($\chi^2 = 35.70$, $df = 22$, $p = .03$; CFI = .98, RMSEA = .06; SRMR = .04), but contained a considerable number of non-significant paths. For clarity and parsimony, these paths were removed,[11] which did not result in a significantly worse fitting model (Figure 2, $\Delta\chi^2 = 3.86$, $\Delta df = 6$, $p = .70$; CFI = .98; RMSEA = .05; SRMR = .04). Self-objectification was positively associated with appearance goals for exercise, and negatively associated with health goals for exercise. External and introjected regulation were associated with appearance goals, and identified and intrinsic regulation were associated with health goals, as predicted. However, appearance goals were also negatively associated with intrinsic regulation. Body image was negatively associated with introjected regulation and positively associated with identified regulation. Both health goals and appearance goals had a significant direct association with body image, but also indirect associations via specific regulations. For appearance goals, this was via introjected regulation ($\beta = -.11$, $se = .03$, $p = .001$). For health goals, this was via identified regulation ($\beta = .09$, $se = .03$, $p = .001$). Self-objectification had no direct association with body image, but a significant overall indirect association, via appearance goals' direct association and the introjected pathway mentioned above ($\beta = -.36$, $se = .05$, $p < .001$). This model explained 42.3% of the variation in body image.

3.3.3. Discussion

Overall, the results regarding the associations of appearance and health goals with regulations and with body image support and build upon the findings of the previous literature: intrinsic and extrinsic goals for exercise predict autonomous and

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[11] Paths predicting body image from self-objectification, external and intrinsic regulation were removed, along with the influence of health goals on external and introjected regulation, and appearance goals' influence on identified regulation.

controlled regulation respectively (Ingledew & Markland, 2008); autonomous regulation (in the form of identified regulation) is associated with better body image, whereas controlled regulation (in the form of introjected regulation) is associated with worse body image (Brunet & Sabiston, 2009; Thøgersen-Ntoumani & Ntoumanis, 2007). Additionally, these findings mirror the results of Strelan et al. (2003), with self-objectification associated with appearance goals, and thus indirectly with body image.

The novel findings of this analysis relate to its consideration of the process behind the link between goals for exercise and body image: goals are both directly and indirectly associated with body image via regulations. From these analyses, introjected regulation emerges as an important associate of body image, and as a potential process through which appearance goals may result in worse body image. This association corresponds with the previous findings relating to the introjected regulation and body image (Thøgersen-Ntoumani & Ntoumanis, 2007; Markland, 2009) and highlights the importance of considering the regulations individually, given the absence of an indirect effect via external regulation.

Table 1. Zero-order correlations and descriptive statistics for Time 1 questionnaire (Study 1).

	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11
1. Self-objectification	-6.37 (19.61)	-										
2. Health goals	4.21 (0.69)	-.22*	[.79]									
3. Appearance goals	3.65 (1.03)	.58*	.16*	[.87]								
4. External regulation	1.27 (0.52)	.28*	-.04	.22*	[.77]							
5. Introjected regulation	2.89 (1.19)	.35*	.10	.45*	.23*	[.86]						
6. Identified regulation	3.93 (0.96)	-.10	.36*	.07	-.22*	.36*	[.85]					
7. Intrinsic regulation	3.65 (1.20)	-.18*	.32*	-.05	-.27*	.15*	.75*	[.95]				
8. PASTAS	2.85 (1.01)	.41*	-.12+	.50*	.24*	.34*	-.22*	-.29*	[.92]			
9. BAS	2.88 (0.85)	-.28*	.20*	-.32*	-.22*	-.18*	.30*	.37*	-.70*	[.93]		
10. Weight, shape, tone SDs	20.68 (22.55)	.27*	-.13+	.30*	.08	.09	-.11	-.14+	.51*	-.36*	-	
11. Age	35.52 (12.00)	-.41*	.16*	-.31*	-.09	-.32*	-.07	-.06	-.13+	-.02	-.13+	-
12. Moderate-strenuous activity	30.84 (25.62)	-.03	.09	-.02	-.11	.08	.38*	.33*	-.17*	.16*	-.08	-.03

Notes. Cronbach's alpha displayed in square brackets along the diagonal. + $p < .10$, * $p < .05$. n = 190.
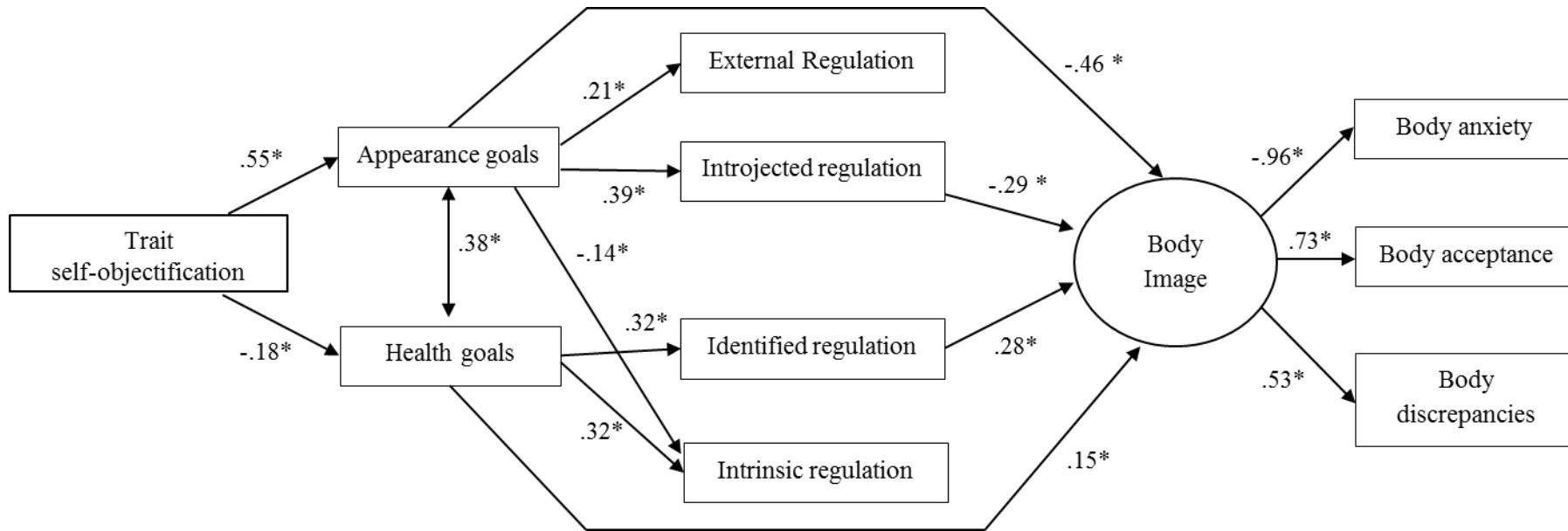
Figure 2. Cross-sectional relationships between self-objectification, goals, regulations and body image: Path analysis (Study 1).

Notes. Standardised estimates shown. * *p* < .05. Correlations between regulation error terms included in analysis, by not shown.

3.4. Study 2

Having found support for the importance of regulations, particularly introjected regulation, at the cross-sectional level, this research now considers whether this pattern holds over an extended period of time, and whether participants' goals for exercise (measured at the beginning of the study) can predict their regulations and body image over the subsequent weeks. Questionnaire measures, such as the BREQ-2, assess introjected regulation for exercise at a general level, using 'in general' or 'over the last three months' as the timeframe provided for participants, but qualitative work with exercisers who demonstrate high levels of controlled regulation (external and introjected) suggests that guilt may have an impact over a much shorter period (Fortier & Farrell, 2009). These participants reported feeling guilt almost immediately after missing an exercise session, which strongly motivated them to attend the next, a description which corresponds with how introjected regulation is measured in the BREQ-2 ("I exercise because I feel guilty if I don't"). Interestingly, they also linked this feeling of guilt to negative feelings about their bodies, further supporting the examination of the effects of guilt as a motivational style on body image.

Previous research has found that single exercise sessions are associated with lower levels of state body dissatisfaction, and that this state body dissatisfaction was also influenced by the reasons that women reported for that specific exercise session: participants who had just exercised for appearance reasons were more likely to report greater body dissatisfaction, whereas health reasons for exercise were associated with lower body dissatisfaction (Le Page & Crowther, 2010). However, research has not considered the influence of regulations of exercise behaviour on body image over a shorter timeframe, or how these might be predicted by participants' goals for exercise.

In order to test the potential for goals for exercise to influence weekly regulation, and thus weekly body image, a website optimised for smartphones was used to collect weekly data on physical activity, regulation of exercise behaviour, and body image from participants over 10 weeks, starting one week after the initial questionnaire was completed. These data were modelled using a multi-level structure, with weeks of data nested within participants, allowing the consideration of both between- and within-individual variation. It was predicted that regulations would vary weekly over the 10 weeks and that these fluctuations in exercise regulations would be associated with weekly fluctuations in body image. Specifically, it was predicted that introjected regulation would negatively predict body image. Finally, it was predicted that appearance goals for exercise, measured in the initial questionnaire, would predict introjected regulation over the 10 weeks, and that this regulation, in turn, would result in more negative body image over this time period. Weekly physical activity was included as a covariate, due to its positive association with body image in previous research (Fortier & Farrell, 2009; Le Page & Crowther, 2010).

3.4.1. Method

Participants

Of the 190 women who completed the initial questionnaire, 155 provided at least one week of data in the following 10 weeks of the study, generating 929 weekly submissions of data (mean = 5.99 weeks per participant). The predictors of dropout were assessed by comparing participants who provided no data to the weekly element of the study (0 weeks) to those who did (1+ weeks) across key variables from the initial questionnaire, using t-tests and logistic regression, and by assessing the extent to which these key variables could predict how many weeks of data participants provided, using

multiple regression. [12] Participants who provided data for the weekly collection did not differ from those who did not, according to their responses to the initial questionnaire: binary logistic regression found that none of these variables predicted whether participants took part in the weekly data collection (all $ps > .05$) and t-tests showed no significant differences between the two groups on any of the variables (Bonferroni corrected to $p = .05$). Furthermore, none of these variables predicted how many weeks of data were provided by each participant when all were entered into a multiple regression, either when considering only those who provided any data (1-10 weeks) or when considering the full sample (0-10 weeks of data provided; all $ps > .05$).

Procedure

Pilot Study. An opportunity sample was recruited via social media and university participant pools, primarily to test the feasibility of collecting data via the website. Twenty-three participants completed the initial questionnaire and 1 week of data collection via the mobile website. No substantial issues were found with the online data collection (full details of scale development and the pilot study are available in Appendix D).

Data collection. Participants in the main study submitted an email address at the beginning of the initial cross-sectional questionnaire, which was used to contact them regarding subsequent data collection and to match their responses across the elements of the study. One week after completing the initial questionnaire, participants were sent an email inviting them to access the weekly website, specifically designed for the project to be easily accessible on mobile phone browsers. Participants provided their email address on the first page, and completed the measures outlined below, which took approximately 10 minutes each week. Each Monday for the next 10 weeks, participants

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[12] These variables were appearance and health goals, all four regulations, the three body image variables, and trait self-objectification. The covariates of age, income, and physical activity level were also considered.

were emailed a reminder for that week's data entry, with a link to the survey. For every week that participants completed, they were entered into a prize draw for £10, and participants were reminded of this each week when asked to complete that week of data collection.

Data cleaning. Any entries which were completed in retrospect, which was defined as being one week late (i.e., the next reminder had been sent to participants), were deleted. This resulted in 69 weeks of data being removed from the analysis. Any duplicate submission for a single week was deleted, with the first entry always retained, resulting in the removal of 15 weeks of data.[13] Most email addresses which did not match previous entries were the result of small errors by participants when entering their email address (e.g., .co vs. .com), and so were easily corrected. Four weeks of data were deleted (from 3 email addresses) which could not be matched to the original email address provided in the first questionnaire. Two participants asked to be removed from the study and thus their data were removed from all further analyses. The figures reported above (929 weeks of data, from 155 women) represent the final dataset used in the analyses, after this data cleaning had been conducted.

Measures

Weekly physical activity. Participants completed a weekly version of the Leisure Time Exercise Questionnaire (LTEQ, Godin & Shephard, 1985). This asked participants to note how many times in the previous week they had engaged in mild, moderate and strenuous physical activity for more than 15 minutes. From this, a moderate-strenuous 'METs' score was calculated for each week, with moderate activity

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[13] Due to the format of the website, it was possible to submit a duplicate response by double clicking on the final 'submit' button. This was identified in 10 cases, due to identical timestamp and data. The five remaining cases did not have identical timestamps or data, and may have been the result of participants forgetting that they had already participated that week.

multiplied by 5 and strenuous by 9, as in previous research and the cross-sectional element of this study.

Weekly regulation of exercise behaviour. A 4-item measure of regulation was developed from the Behavioural Regulation of Exercise Questionnaire-2 (BREQ-2, Markland & Tobin, 2004), with one item representing each of the regulations (external, introjected, identified, and intrinsic). Using data from a student sample collected for a previous piece of research (Chapter 2, this thesis), a confirmatory factor analysis was run with the complete pool of 15 items representing these four subscales (see Appendix D). From this the item for each subscale which had a combination of the highest factor loading and the least covariance with items from other subscales was selected; the aim was to select the 'purest' item from each subscale. The items appeared on their own page in the online weekly survey. Each item followed the stem of "This week, I exercised because…" and were as follows: "my friends, family or partner say I should" (external); "I feel guilty when I don't exercise" (introjected); "I think it's important to make the effort to exercise regularly" (identified); and "I find exercise a pleasurable activity" (intrinsic). Participants rated each item on a five-point likert scale (*not at all true* to *very true*). These single items correlated with one another in expected ways, with regulations near to one another on the continuum of self-determined regulation more strongly correlated (e.g., introjected and identified regulation, $r = .33$, $p < .001$) than regulations further from one another on this continuum (e.g., introjected and intrinsic regulation, $r = .14$, $p = .04$). Furthermore, with the exception of external regulation, these weekly regulations were significantly correlated with the full subscales of the BREQ-2 from the initial questionnaire (see Appendix D for full correlation matrices).

Weekly body image. Three weekly measures of body image were included. Of these, two were single items. The first asked whether the participant had been anxious

about their body weight, shape, or size in the last week (five-point likert scale from *not at all anxious* to *very anxious*); the second asked how happy women had felt with their body in the last week (five-point likert scale from *not at all happy* to *very happy*). In addition to these single items, a checklist of 10 items was included, based on the Physical Appearance State Trait Anxiety Scale (Reed et al., 1994). Four of the items were body anxiety items from the PASTAS scale from the original 8 (legs, waist, muscle tone, stomach; see Appendix D for details) with the remaining six included as filler items. Women were asked to check the box beside any item that they had worried about in the past week, and scored 1 point for any body-related item that they selected, resulting in scores ranging from 0 to 4 for this measure. These three measures were highly correlated, with the happiness item negatively correlating with the other two (all $|r|$/s > .50; mean α over 10 weeks = .81, α_{SD} = .03).

3.4.2. Results

MPlus 6 was used to estimate a series of multi-level analyses, where each week of data (Level 1) was nested within the individual it came from (Level 2).

Weekly Variation in Regulation. MPlus was used to estimate the intraclass correlation for the four regulations, displayed in Table 2. This measure reflects how strongly items within a cluster are related to each other. In this case, it reflects how similar each week of data is to the other weeks of data, within a given participant. Thus, a very high intraclass correlation would imply that all of the variation is at the participant level (Level 2) and suggest that analysis of individual weeks (Level 1) would not be productive. The intraclass correlations for the regulations ranged from .38 to .70, indicating that between 38% and 70% of the variation between weekly data points was due to them being nested within individuals. However, this range also indicates that

significant variance (30 – 62%) exists at the weekly level, indicating there is value in considering the weekly data.[14]

Table 2. Intraclass Correlations in the Weekly Data (Study 2).

Variable	Intra-Class Correlation
Moderate-strenuous physical activity	.82
External regulation	.38
Introjected regulation	.54
Identified regulation	.49
Intrinsic regulation	.70
Body image – anxiety item	.59
Body image – happy item	.67
Body image – checklist score	.66

Body image outcome. Mirroring the analysis in Study 1, body image was modelled as a latent variable, indicated by the anxiety item (as the reference indictor with a loading of -1), the happy item, and the number of body-related anxiety items women selected. In line with Muthén's recommendations (1994), a single-level confirmatory factor analysis was initially performed on the weekly data, adjusting standard errors for the fact that the individual data points were not independent, with multiple reports from the same individuals. All three indicators had factor loadings above .70 (anxiety item: -.85; happy item: .75; checklist: -.71) and were significantly associated with the latent construct of body image. A two-level confirmatory factor

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[14] Kline (2011) sets a threshold for considering a particular level (1 or 2) at 10% of variance explained by that level; using this rule of thumb, these figures highlight the importance of considering both the participant and weekly level.

analysis was then performed, to confirm a similar factor structure at the within- and between-individual levels (Figure 3). The three indicator variables were represented as the observed score at the within-individual (weekly) level, and as random intercepts at the between-individual (person) level. All three items loaded significantly onto the factor at each level, in this fully saturated confirmatory factor analysis model. However, the within-individual factor loadings (anxiety item: -.84; happy item: .47; checklist: -.45) were considerably lower than the between-individual factor loadings (anxiety item: -.91; happy item: .84; checklist: -.82), suggesting that although these factors were associated at the weekly level, this was not as strong as their association over the ten weeks. Given the significant and considerable factor loadings (all above .45 at both levels), body image was represented as a latent variable, indicated by these three variables, in the analysis reported below.
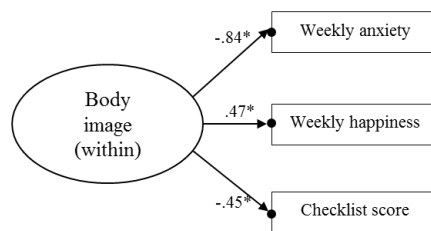
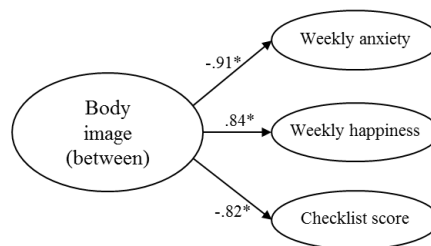

Figure 3. Body image as a construct over 10 weeks: Multi-level confirmatory factor analysis (Study 2).

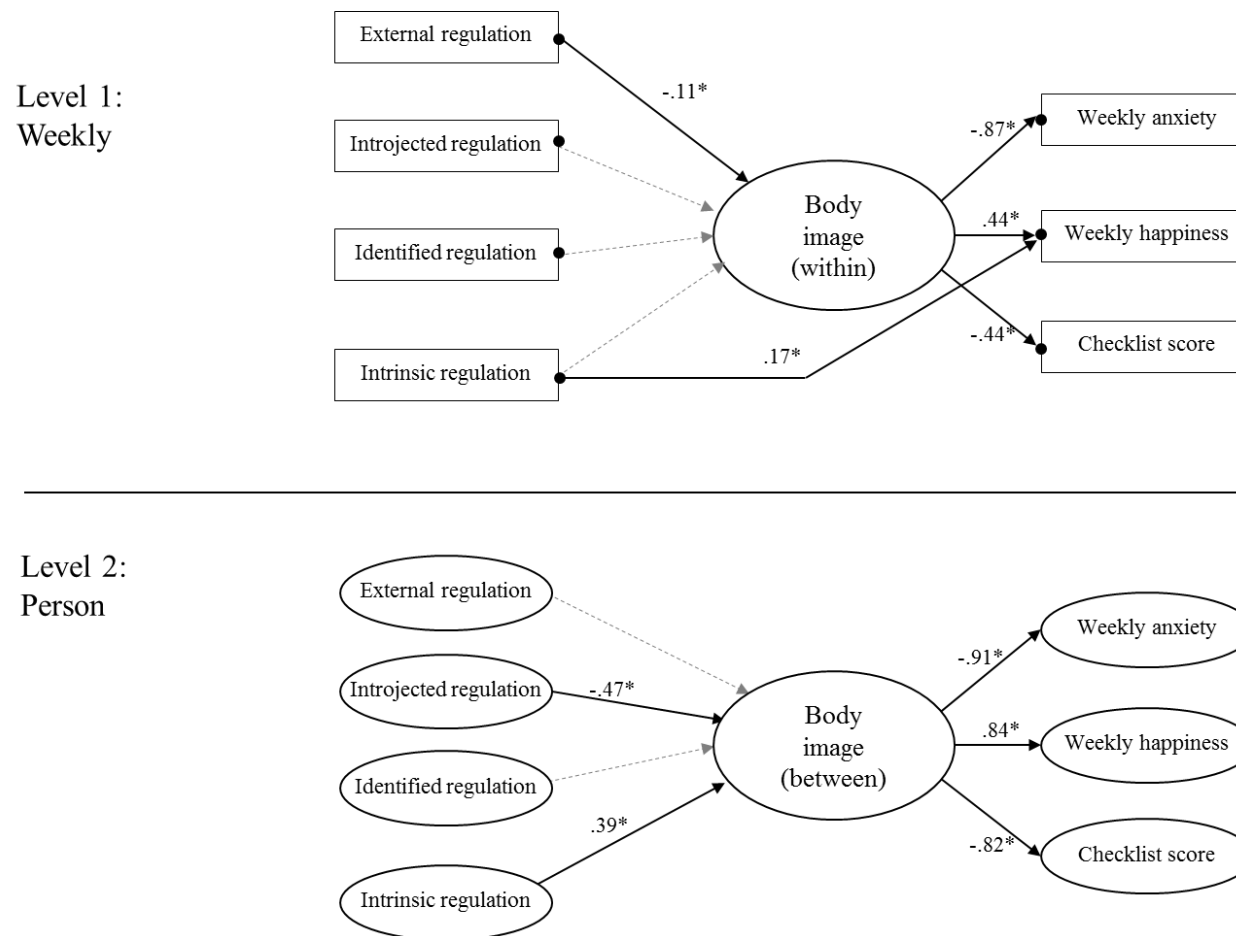*Notes*. Standardised estimates shown. * $p < .05$.

Weekly regulations as predictors of body anxiety. The four regulations (external, introjected, identified, and intrinsic) were modelled to predict the body image factor at each level, with regulations represented by their observed score at the weekly level, and by their latent average at the person level. The four regulations were permitted to correlate with one another and with moderate-strenuous activity at each level of the model. The initial fit indices were outside of ideal levels, suggesting a consideration of modification indices and standardized residual covariances ($\chi^2 = 96.24$, $df = 20$, $p < .001$; CFI = .84; RMSEA = .06; SRMR$_{within}$ = .05, SRMR$_{between}$ = .06). From considering these, an additional two paths were inserted at the within-level: intrinsic regulation and quantity of moderate-strenuous exercise positively predicted happiness with the body that week. These alterations resulted in good model fit ($\chi^2 = 38.75$, $df = 18$, $p = .003$; CFI = .96; RMSEA = .04; SRMR$_{within}$ = .02, SRMR$_{between}$ = .06; Figure 4). Of the links between the four regulations and the body image factor at the weekly level, only the link with external regulation was significant, with higher levels of external regulation in a given week associated with worse body image. However, this predictor explained only 1.8% of the variation in body anxiety at the weekly level, with significant residual variance remaining. At the person level, introjected regulation over the ten weeks negatively predicted body image, whereas intrinsic regulation and moderate-strenuous activity over the ten weeks positively predicted this latent factor. These predictors explained 38% of the variation in body image at the person level, with significant residual variance remaining.

Goals as Level 2 predictors. In the next model, appearance and health goals, measured in the initial questionnaire, were added to the person level, predicting individuals' levels of regulation over the 10 weeks and the between-person latent variable of body image. These goals were modelled as correlated with moderate-

strenuous activity over the 10 weeks. This model fit the data well ($\chi^2 = 50.79$, $df = 22$, $p < .001$; CFI = .97; RMSEA = .04; SRMR$_{within}$ = .02, SRMR$_{between}$ = .05; Figure 5). As in the cross-sectional analysis in Study 1, appearance goals for exercise predicted external and introjected regulation, at the person level (over the 10 weeks), and health goals predicted identified and intrinsic regulation. Appearance goals for exercise also negatively predicted intrinsic regulation over the ten weeks. The four regulations, at the participant level, had similar effects to the previous model: introjected and intrinsic regulation were still significantly associated with body image, in the same directions as before; the only difference was that the pathway between external regulation and body image was now significant and positive ($\beta = .17$, se = .08, $p = .02$).

Goals for exercise, measured in the initial questionnaire, exerted an indirect influence on body image over the next ten weeks, via introjected regulation in the case of appearance goals ($\beta = -.10$, se = .05, $p = .04$), and intrinsic regulation for health goals ($\beta = .11$, se = .05, $p = .04$). In addition to this, appearance goals for exercise directly predicted body image ($\beta = -.32$, se = .07, $p < .001$). This model remained the same as the previous model at the weekly level, and thus explained 1.8% of the variation in body image at this level. With the addition of goals at the participant level, the model explained 47.4% of the variation in body image between individuals. Significant variance remained in body image at each level.

Figure 4. Two-level modelling of regulations and exercise's influence on body image over 10 weeks: Multi-level path analysis (Study 2).

Notes. Standardised estimates shown. * *p* < .05. Non-significant paths indicated by dashed lines. Covariate moderate-strenuous physical activity not shown.

Figure 5. Goals for exercise as level 2 predictors of regulations and body image over 10 weeks: Multi-level path analysis (Study 2).
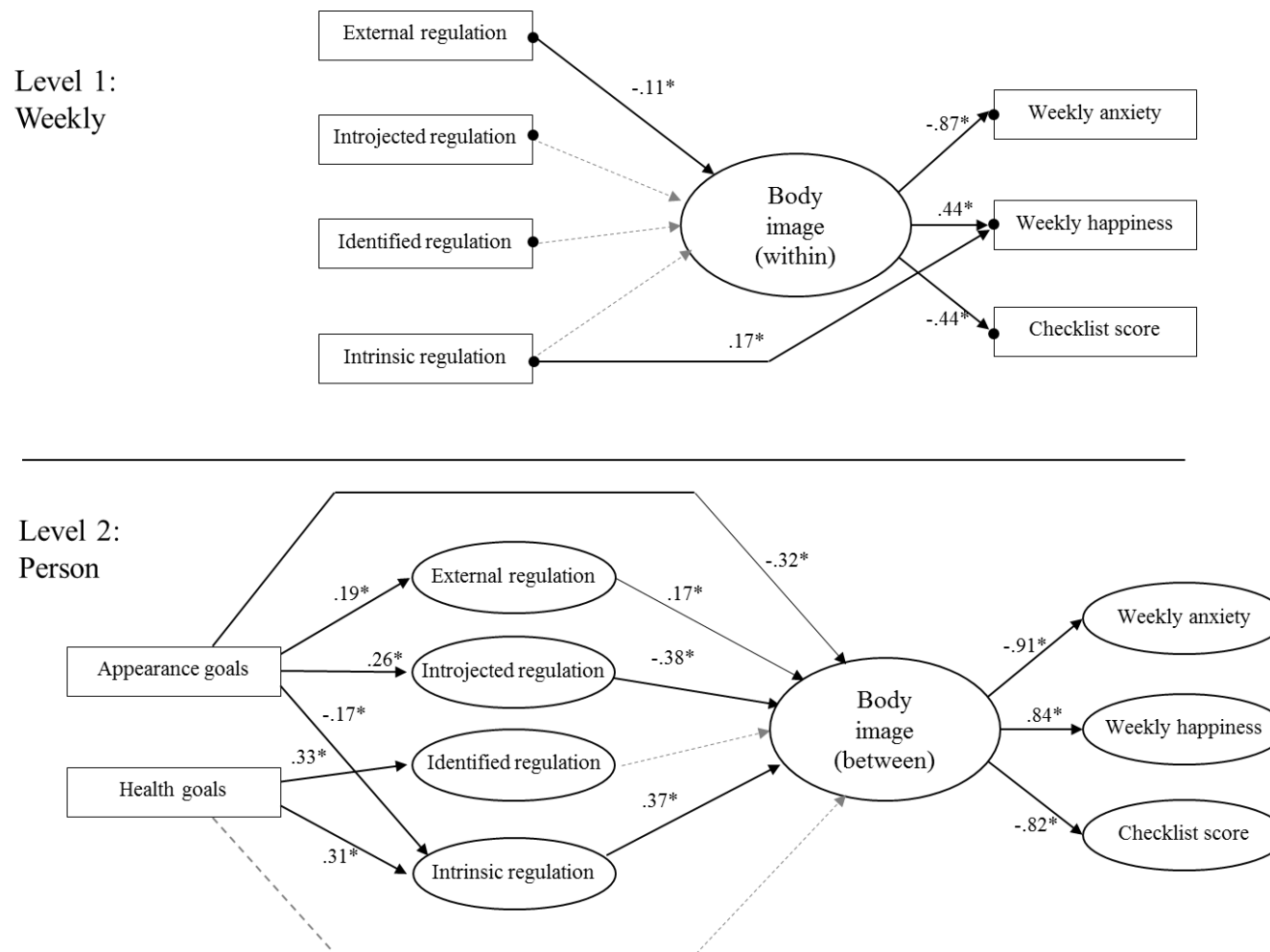
Notes. Standardised estimates shown. * *p* < .05. Non-significant paths indicated by dashed lines. Covariate moderate-strenuous physical activity not shown.

3.4.3. Discussion

This analysis provides evidence of weekly fluctuation in the regulation of exercise behaviour, and that this, both at the weekly level and over the 10 weeks, predicted body image. On a week-to-week basis, participants' body image was negatively predicted by their experience of external regulation that week, with participants who felt that they exercised due to pressure from friends and family experiencing worse body image. However, intrinsic regulation and exercise also predicted specifically how happy women felt with their body that week. Over the 10 weeks, introjected and intrinsic regulation emerged as important influences on women's body image, and these were the pathways through which women's initial goals for exercise influenced their body image over these 10 weeks, as well as directly in the case of appearance goals.

Of particular interest are the different influences of regulations on body image, at a weekly level and across the 10 weeks. External regulation appears least consistent of these associations, with a negative association at the weekly level, and a positive association over the 10 weeks. This may be due to where the variability in each of the types of regulation lies: external regulation appeared to be the form of regulation most prone to weekly fluctuation, with the lowest intraclass correlation coefficient (.38); thus, 62% of the variability in this regulation occurred at the weekly level, rather than between participants. However, the contradictory findings for external regulation may, in fact, be an artefact of measurement issues, and the low numbers of women experiencing this form of regulation: of the 929 weekly responses, 86.7% reported an external regulation score of 1, or 'not at all'.

There were, however, differences between intrinsic regulation and introjected regulation with respect to their level of influence. Although both had effects consistent

with self-determination theory's predictions, they differed in their influence across the two levels. Intrinsic regulation predicted body image at both levels, directly predicting body happiness at the weekly level, and predicting the latent construct of body image over the 10 weeks. In contrast, introjected regulation negatively predicted body image only over the 10 weeks, and not on a week-to-week basis. These findings suggest that intrinsic regulation may have a more immediate impact on feelings about women's bodies, with feelings of being motivated by enjoyment in one's exercise positively affecting body image within the same week. Introjected regulation, on the other hand, appears to influence body image over a longer timeframe, with a gradual accumulation of the effects of guilt over the course of 10 weeks. The immediate positive influence of intrinsic regulation (and of physical activity) on women's feelings about their bodies supports Le Page and Crowther's (2010) findings about the potential benefits of a single exercise session, and is an encouraging finding from an applied perspective, suggesting that exercise practitioners can help to reduce women's body anxiety in a session by encouraging this enjoyment-based motivation. The importance of interventions such as this will be discussed in the broader context of self-determination theory in the general discussion section.

From a theoretical perspective, the influence of goals for exercise on regulations and body image over the subsequent 10 weeks provides support for the modelling of this direction of relationships in the initial cross-sectional study, and for this conceptualisation of the link in general. However, the body image and regulation variables were still collected concurrently, meaning that it is still not possible to differentiate between a model where regulations predict body image and one where the reverse is true. Thus, in the final data collection and analyses, the influence of regulation and body image on one another is assessed over a longer period of time,

considering the pathways from each of these in the initial questionnaire to the later collections.

3.5. Study 3

The preceding analyses have suggested the importance of regulation of exercise behaviour as a mediator of the link between appearance goals for exercise and body image. However, thus far, the research has assessed regulation and body image at the same time point, either within the initial questionnaire or within the weekly measures; as such, it is not possible to definitively conclude that it is regulation of exercise behaviour that predicts body image, rather than vice versa.

Previous research has positioned body image as an outcome of regulations of exercise behaviour, as in the cross-sectional analysis in Study 1 (e.g., Thøgersen-Ntoumani & Ntoumanis, 2007), but also as a predictor of regulations (e.g., Markland, 2009; Brunet & Sabiston, 2009). Both of these directions of effect have sound theoretical backing, from within self-determination theory: body dissatisfaction has been proposed as being experienced by women as an autonomy frustrating factor in work relating specifically to regulations regarding eating behaviour (Pelletier & Dion, 2007), but regulations for behaviour have also been proposed to influence well-being, of which body image could be considered an important aspect (Sheldon et al., 2004). In order to differentiate between these suggestions, research must move beyond using concurrent measures of regulations and body image, and implement longitudinal data collection and modelling techniques. By measuring regulations and body image at repeated time points, it is possible to consider whether changes in one of these variables can be predicted by temporally prior levels of the other, thus establishing temporal antecedence, and a necessary (but not sufficient) condition for establishing causality.

Longitudinal analysis is therefore critical to supporting any causal claims regarding the role of introjected regulation as a mechanism that shapes body image.

It is also possible to use longitudinal analysis to evaluate another theoretically plausible bidirectional relationship between variables. Specifically, this form of reciprocal relationship is precisely what might be expected between trait self-objectification and appearance goals for exercise. In Study 1, trait self-objectification was modelled as an overarching value, which influenced domain-specific goals for exercise, as proposed by hierarchical models of goals (Vallerand, 1997). However, previous research also suggests the possibility that women who exercise for appearance reasons may actually increase in trait self-objectification over time. Wolfe (1998) found that women who more strongly endorsed appearance reasons for exercise were more likely to experience self-objectifying thoughts during an exercise session, and further work has shown that exercising for appearance reasons is associated with activities which are more likely to encourage self-objectification, such as cardio-classes rather than yoga (Prichard & Tiggemann, 2008); in turn, these state experiences of self-objectification are proposed by objectification theory to increase trait levels of self-objectification over time (Fredrickson & Roberts, 1997; Moradi, 2010). Karazsia, van Dulmen, Wong, and Crowther (2013) propose a similar process in a recent review of work on internalisation of the thin ideal and its association with body image, with state experiences of internalisation leading to changes in trait internalisation of the thin ideal. However, no previous empirical work has considered appearance goals for exercise and trait self-objectification over time, with previous work considering only cross-sectional associations (e.g., Strelan et al., 2003).

Given these strong arguments for the use of longitudinal data collection and analysis, in the third element of the current research, participants completed the original

survey again after 3 and 6 months, to assess how appearance goals, self-objectification, regulations, and body image changed together over time. This analysis allowed the examination of the core sequences of interest outlined above: the relationship between regulations for exercise and body image over time, and the relationship between appearance goals for exercise and self-objectification. Ideally, with three time points, it would be possible to test the full meditational pathway over time, from self-objectification, through goals, and regulations, to body image, but due to issues with participant attrition, this form of analysis was not supported by the sample size. As such, the analyses focused on the two key relationships outlined above.

It was predicted that regulations would predict relative changes in body image over the 3 and 6 month lags. Specifically, a negative effect of initial introjected regulation was predicted, such that it would be associated with declines in body image, and a positive effect of initial intrinsic regulation, which was predicted to be associated with improvements in body image. It was also predicted that introjected regulation would mediate the effect of appearance goals from the initial questionnaire on body image at later time points. In relation to self-objectification and appearance goals, it was expected that initial levels of each variable would be associated with increases in the other over the 3 and 6 month lags.

3.5.1. Method

Participants

Ninety women participated in the second round of questionnaires (Time 2; 3 months later) and 86 in the third round (Time 3; 6 months later). Most people who participated at Time 2 and Time 3 participated at both of these time points (75 women), and all but one of these women contributed at least one week of data to the weekly element of the study. These women also contributed more weeks to the weekly data

collection than women who did not complete all three rounds of questionnaires (three rounds: $M = 7.89$, $SD = 2.44$; one or two rounds: $M = 3.12$, $SD = 3.19$), suggesting that they may have been more committed to the research.

Using logistic regression, whether participants provided data in the two follow-up questionnaires was predicted using key variables from the initial questionnaire (see footnote 12 for full list of variables). Missing data at the first follow-up (3 months later) was predicted by age, with older participants more likely to respond to the follow-up ($B = .04$, $se = .02$, $p = .006$; M (provided data) $= 38.64$; M (did not provide data) $= 32.34$), and by external regulation, with participants higher in external regulation less likely to respond to the follow-up ($B = -.75$, $se = .38$, $p = .05$; M (provided data) $= 1.18$; M (did not provide data) $= 1.36$). Participation at the second follow-up (6 months) was only predicted by age, with older participants again being more likely to provide a response ($B = .04$, $se = .02$, $p = .005$; M (provided data) $= 38.78$; M (did not provide data) $= 32.83$). The methods employed for dealing with missing data and with the issue of age-related attrition are discussed in the Analysis strategy section below.

Procedure and Measures

Three months after completing the initial questionnaire, participants received an email asking them to complete the next questionnaire, with a link to the appropriate web address. The follow-up questionnaire used identical measures to those reported in the initial questionnaire, except for the addition of Body Mass Index as a measurement, which was calculated from participants' self-reported height and weight. Participants were offered entry into another prize draw for completing the second questionnaire. This process was repeated again after another three months, with a further prize draw entry offered.

Table 3. Zero-order correlations for key variables across 3 and 6 months (Study 3).

	3 months later (n = 96)					6 months later (n = 86)				
Time 1 variable	Appearance goals	Self-objectification	Introjected regulation	Body Image	Reliability (α)	Appearance goals	Self-objectification	Introjected Regulation	Body Image	Reliability (α)
Appearance goals	.75*	.50*	.26*	-.38*	.84	.82*	.47*	.48*	-.38*	.82
Self-objectification	.45*	.71*	.27*	-.24*	-	.54*	.65*	.38*	-.31*	-
Introjected regulation	.43*	.45*	.68*	-.39*	.92	.31*	.26*	.62*	-.33*	.83
Body Image	-.33*	-.45*	-.09	.79*	-	-.28*	-.38*	-.28*	.79*	-

Notes. Body image represents composite positive body image variable created from standardized measures (zBAS – zPASTAS – zSDIw). *$p < .05$.

3.5.2. Results

Analysis strategy

Table 3 shows the zero order correlations between self-objectification, body image, appearance goals, and introjected regulation across the three time points. To reduce the parameters estimated in the models, and avoid overstretching the relatively small sample, a single composite body image variable was computed by standardising the PASTAS, BAS and weight, shape, and tone (WST) discrepancy scores and summing them (with PASTAS and WST discrepancies negatively weighted).[15] In all of the models outlined below, MPlus6 was used to run cross-lagged analyses, with full information maximum likelihood estimation to deal with missing data.

To test the first hypothesis, relating to the relationships between regulations and body image over time, eight cross-lagged models were run, with a model examining relationships between Time 1 and Time 2, and Time 1 and Time 3, for each form of regulation (external, introjected, identified, and intrinsic). Regulation at Time 1 was modelled as correlated with the composite body image variable at Time 1, and to predict regulation and body image at Time 2 (or 3). Body image at Time 1 also predicted regulation and body image at Time 2 (or 3), and the Time 2 (or 3) variables correlated with one another. The introjected regulation models were then extended by adding appearance goals for exercise at Time 1 at the front of this model, as a predictor of introjected regulation and body image at Time 1. This allowed the consideration of the indirect effect of appearance goals for exercise on body image, via introjected regulation, over time.

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[15] Using a composite variable for body image was deemed appropriate as the cross-sectional analysis (Study 1) confirmed that these represented a single latent variable, and confirmatory factor analyses of these three variables at 3 and 6 month follow up demonstrated significant, substantial factor loadings (all loadings > .50).

Two further cross-lagged models were used to examine the reciprocal relationship between self-objectification and appearance goals for exercise over the three and six month time periods. Appearance goals for exercise and self-objectification were modelled to be correlated at Time 1. Appearance goals for exercise at Time 1 then predicted self-objectification and appearance goals at Time 2 (or 3), as did self-objectification from Time 1. Again, the Time 2 variables were correlated with one another.

These streamlined models were adopted to avoid overstretching the sample, which had suffered from attrition (50% from Time 1 to Time 2; 55% from Time 1 to Time 3; 39% completed all three time points). Kline (2011) recommends a minimum of 5 cases per parameter estimated; the cross-lagged models outlined above involve between 14 and 17 parameters, meaning that the lowest sample size (86 participants who completed the third time point) was sufficient to provide robust estimates.

As older participants were more likely to remain in the study, it would have been appropriate to use age as a covariate in these analyses, predicting all other variables; however this raised the free parameters to 20, risking the statistical precision of the models. These models were still run in all cases as a precaution, but there were no substantial differences (minimal changes in standardized estimates, and no changes in significance of paths) when age was included as a covariate. Thus, the analyses below are reported without age as a covariate, in order to retain an acceptable parameters-to-participants ratio, and therefore provide more robust and precise estimates.

Regulations and Body Image

When external, identified, or intrinsic regulation scores from the initial questionnaire were used to predict composite body image three months later, there were no significant effects in the models, beyond the autoregressive pathways (variables

predicting themselves over time points, or temporal stability). However, introjected regulation from the initial questionnaire significantly and negatively predicted body image three months later (β = -.24, *se* = .06, *p* < .001; Figure 6). The reverse causality was not the case: body image from the initial questionnaire did not predict introjected regulation at the three-month follow-up.

Figure 6. Introjected regulation's influence on body image over 3 and 6 months: Cross-lagged analysis (Study 3).

Notes. Standardised estimates shown. + *p* < .10 * *p* < .05. Estimates for 3 and 6 months shown before and after the backslash.

When these analyses were extended to six months, with initial regulations predicting body image at the second follow up, introjected regulation still had a significant effect on body image (β = -.16, *se* = .07, *p* = .02; Figure 6). The models using external and intrinsic regulation still provided no predictive value beyond the autoregressive paths. However, identified regulation provided an interesting counterpoint to the prediction of body image by introjected regulation: in this model, identified regulation had no effect on body image over time (*p* = .57), but body image from the initial questionnaire positively predicted identified regulation at the six month follow-up (β = .16, *se* = .07, *p* = .02).

When appearance goals from the initial questionnaire were added as a predictor of initial body image and introjected regulation (replicating the cross-sectional analysis; see Figure 7), appearance goals did not directly predict changes in body image over this period (non-significant direct paths to body image at Time 2 or 3; eliminated from further analysis).[16] However, appearance goals had a significant indirect effect on body image at both 3 and 6 months. This occurred via two significant pathways: most importantly for the present research interest, one of these pathways was via introjected regulation from the initial questionnaire (3 months: β = -.11, *se* = .03, *p* < .001; 6 months: β = -.07, *se* = .03, *p* = .02).[17] This finding supports the importance of introjected regulation in linking appearance goals to negative body image over time.
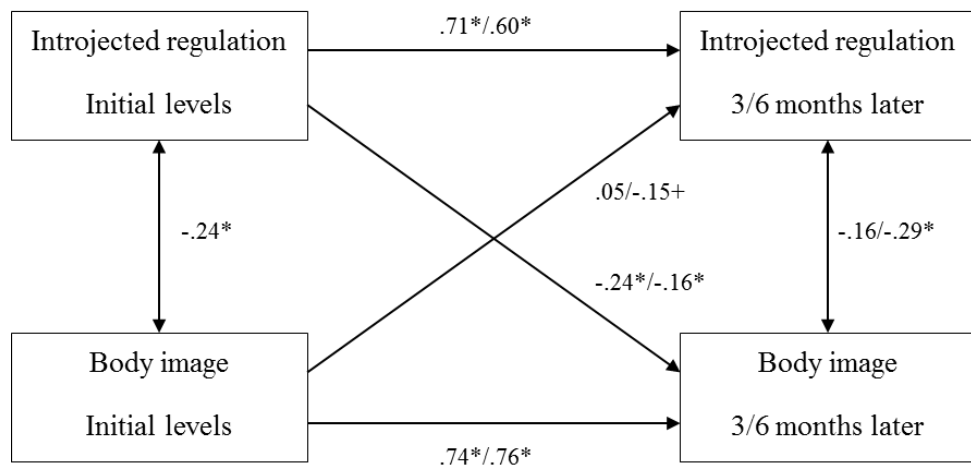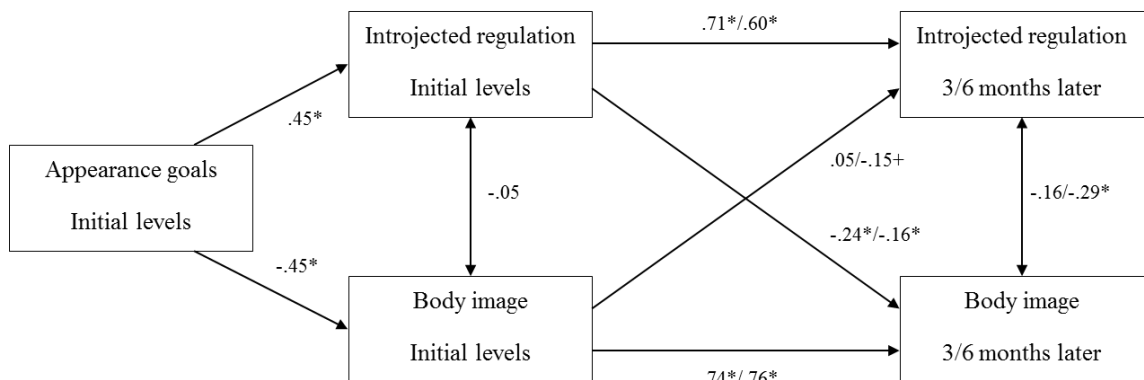

Figure 7. Appearance goals' indirect influence on body image via introjected regulation over 3 and 6 months: Cross-lagged analysis (Study 3).

Notes. Standardised estimates shown. + *p* < .10 * *p* < .05. Estimates for 3 and 6 months shown before and after the backslash. Direct path from appearance goals to introjected regulation in the 6 month model not shown for clarity.

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[16] To reduce the number of estimated parameters and achieve robust estimates, the non-significant pathways from appearance goals at Time 1 to the later variables were removed. In the 3 month model, the paths to both introjected regulation and body image at Time 2 were non-significant, and model fit was excellent without these paths (χ^2 = 0.07, *df* = 2, *p* = .97; CFI = 1.00, RMSEA = .00; SRMR = .00). In the 6 month model, the path to introjected regulation was significant, and so was retained; the path to body image was not significant and thus removed, leaving excellent fit indices (χ^2 = 0.96, *df* = 1, *p* = .33; CFI = 1.00, RMSEA = .00; SRMR = .01).
[17] The second of these pathways was via the autoregressive pathway (body image's correlation across timepoints; 3 months: β = -.33, se = .05, *p* < .001; 6 months: β = -.34, se = .05, *p* < .001).

Appearance goals and self-objectification

Over the three month period, appearance goals predicted relative increases in trait self-objectification: in addition to the autoregressive pathways, a model involving self-objectification and appearance goals showed a significant predictive effect of appearance goals from the initial questionnaire on self-objectification 3 months later (β = .17, se = .08, p = .03; Figure 8). However, the reciprocal relationship predicted did not occur over this period of time: self-objectification did not predict significant changes in appearance goals (p = .38).

Over 6 months, however, there was evidence for this reciprocal relationship. Appearance goals from the initial questionnaire marginally predicted relative increases in self-objectification over this period (β = .17, se = .09, p = .06; Figure 8), and initial trait self-objectification predicted relative increases in appearance goals for exercise (β = .16, se = .08, p = .03).
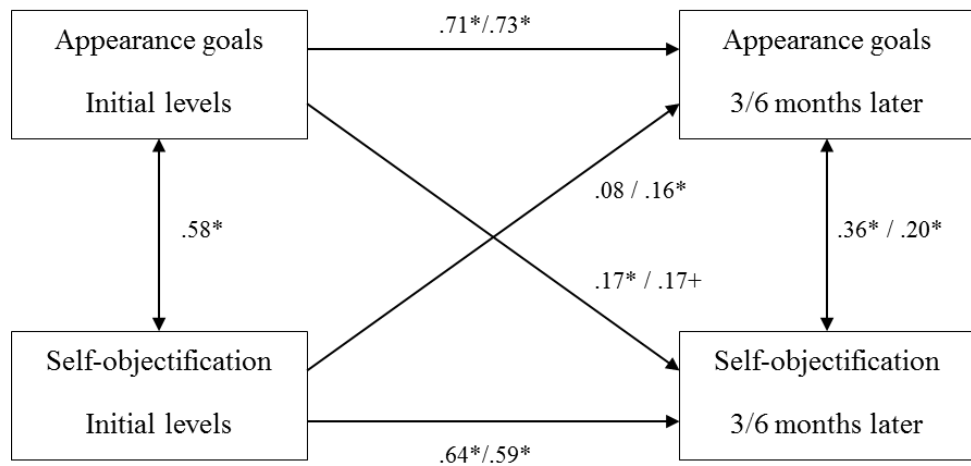
Figure 8. Appearance goals and self-objectification's reciprocal relationships over 3 and 6 months: Cross-lagged analysis (Study 3).

Notes. Standardised estimates shown. + p < .10 * p < .05. Estimates for 3 and 6 months shown before and after the backslash.

3.5.3. Discussion

Over three to six months, the analyses support the proposal that increases in introjected regulation will precede declines in body image, rather than the reverse. This finding provides further support for the importance of introjected regulation and its causal influence on body image, by demonstrating the temporal sequence of effects: introjected regulation at Time 1 predicted relative declines in body image over three to six months. Furthermore, the results did not support the suggestion of some previous researchers that it is poor body image that leads to controlled regulation (e.g., Brunet & Sabiston, 2009): there was not support for this reversed association in the longitudinal analyses. The results also support the proposition that introjected regulation mediates the association between appearance goals and body image over time, in the model involving appearance goals, body image and introjected regulation at Time 1.

Interestingly, there was minimal evidence for body image influencing later regulations: over six months, higher levels of initial body image resulted in increases in identified regulation, that is experiencing exercise as motivated by the benefits associated with it. It may be that women who are satisfied with their bodies are more likely to increasingly view exercise as beneficial, given the satisfaction they are experiencing with their own bodies. Conversely, women who are relatively lower in body satisfaction may gradually devalue exercise, due to not experiencing beneficial effects. It is not clear from these results, given the multi-faceted body image measure, whether it is women high or low in body image driving this trend; future research could investigate the value that women place on exercise, and how this is associated with their own feelings about their bodies.

Additionally, these results support the suggestion that appearance goals and trait self-objectification share a reciprocal relationship over time. Over 3 months, appearance

goals were associated with increases in trait self-objectification; over 6 months, the analyses provide evidence for the bidirectional nature of this relationship, with appearance goals and self-objectification both influencing one another over this time period. This is a particularly interesting and novel finding. Considering the motivational effects of self-objectification suggests that women who have internalised the sociocultural pressures relating to the importance of appearance are more likely to pursue particular goals relating to them (appearance goals for exercise). However, the pursuit of these goals can also reinforce those cultural pressures, as seen in the longitudinal analyses. This finding gives critical insight into how women are influenced by sociocultural pressures and how these pressures renew themselves, as well as opening up future avenues of research, such as investigating the processes involved in this reinforcement of self-objectification by appearance goals.

The main limitation of this study is that attrition within the sample restricted the analyses to simple cross-lagged models, focused on the core processes of interest in this work. The inclusion of age, which was associated with attrition, as a covariate in these longitudinal analyses did not, however, alter the findings, and this mirrors the findings of statistical simulations of attrition: although estimates of *means* are easily influenced by attrition rates in longitudinal studies, estimates of *relationships* between variables are considerably more robust (Gustavson, von Soest, Karevold, & Røysamb, 2012). However, future work with a more substantial sample across three time points would allow more intricate and fine-grained analyses, such as using all four regulations over time to predict body image as mediators of earlier exercise goals. As the regulations are significantly correlated with one another, it may be that, assessed in combination, other regulations emerge as unique predictors of body image change over time.

3.6. General Discussion

Across the three elements of the research, there is evidence of regulations' effects on body image, and particularly the importance of introjected regulation. At the cross-sectional level and over a 10 week period, introjected regulation emerges as a mediator of the relationship between appearance goals and body image; over three and six months, it significantly predicts declines in body image. There is also evidence that intrinsic regulation has an influence at the weekly level on women's happiness with their bodies, and that it affects body image over a longer, 10 week period. Finally, there is also evidence of a reciprocal relationship between appearance goals for exercise and self-objectification over three to six months.

One of the most novel elements of this research is its ability to assess the timescales over which different regulations operate. External regulation appeared to function predominantly at the weekly level, with higher levels of external regulation in a given week associated with lower levels of body image. Introjected regulation, in contrast, was associated negatively with women's body image cross-sectionally (in Study 1), over a 10 week period (in Study 2), and over three to six months (in Study 3), but not at the weekly level. Intrinsic regulation was associated with more positive body image at the weekly level, and over 10 weeks. Thus, in spite of introjected regulation's overall more consistent association with body image, it appears to function over a longer period of time than external or intrinsic regulation. This is an important finding for self-determination theory, as it provides insight into the timeframes within which specific regulations affect body image. Previous work has considered the influence of daily variations in need frustration and satisfaction on binge eating behaviour and well-being, using diary studies (e.g., Gagné, Ryan, & Bargmann, 2003; Verstuyf, Vansteenkiste, Soenens, Boone, & Mouratidis, 2013), but little to no previous work has

focused specifically on body image. A diary study of gymnasts which examined their regulation before attending practice suggests the importance of intrinsic regulation for general well-being, over a period of four weeks, and at the level of the daily practice (Gagné et al., 2003), supporting the findings relating to the importance of intrinsic regulation at both a longer and a more immediate timeframe. This study found weak support however for the importance of external or introjected regulation, at both the daily level and over the four weeks; this contrasts with the present research's findings regarding the importance of external regulation at the weekly level, and introjected regulation over the 10 weeks of the weekly data collection. This contradiction suggests that controlled regulation may be a more important associate of body image than of more general measures of psychological well-being, such as positive affect, vitality or self-esteem.

The consistency and primacy of introjected regulation's influence on body image raises an important theoretical question for self-determination theory: the theory proposes that more controlled forms of regulation should be more detrimental to well-being (Deci & Ryan, 2000), but the present findings clearly demonstrate a much more damaging effect of introjected regulation than external regulation on body image. Clearly, there is more contained within this assessment of regulations for exercise behaviour than whether someone is more or less self-determined in their behaviours, and it appears to be this alternative distinction between external and introjected regulation that is predicting body image outcomes. Research from the broader literature on body image suggests that the emotional content of these measures may be critical in explaining their different associations with body image. Within the last five years, considerable research has been conducted relating 'guilt', as measured in a whole range of ways, to negative body image outcomes for women: self-objectification theory has

expanded to encompass not just body shame, but also body guilt (Calogero & Pina, 2011), and there is a growing body of research into self-focused body-related emotions such as guilt and shame (e.g., Crocker et al., 2014; Sabiston et al., 2010). In the context of this wider research, it may be that the guilt-based measurement of introjected regulation, via measures such as the Behavioural Regulation of Exercise Questionnaire (BREQ-2, Markland & Tobin, 2004), is a critical influence in its link with body image, compared to the less emotional measurement of external regulation. Self-determination theory may therefore benefit from expanding theories relating to regulation to encompass their emotional correlates, such as guilt in the case of introjected or more positive emotion in the case of intrinsic regulation, in order to fully understand their relationships with well-being outcomes.

This raises a methodological consideration for self-determination theory researchers in general, but also more specifically those researching regulation in an exercise context. First, if all regulations do not appear to be equally valuable in predicting or influencing outcomes of interest, in this case, body image, the common practice of collapsing the four separate regulations (external, introjected, identified and intrinsic) into autonomous and controlled regulation, or even as far as a single 'relative autonomy index' (e.g., Gillison et al., 2006; Markland & Ingledew, 2007) may need to be reconsidered, if there are greater differences between the subscales for these regulations than simply where they fall on a continuum of self-determination.

Second, the measure of exercise regulation employed in this research (BREQ-2, Markland & Tobin, 2004) operationalises introjected regulation as motivation based on the avoidance of guilt or shame, rather than the more approach-orientated elements of introjected regulation which self-determination theory also proposes, such as pride and self-esteem enhancement. Interviews with adolescent exercisers regarding introjected

regulation suggests that this guilt-based, avoidance measurement of introjected regulation may only be appropriate for women: young women reported experiencing introjected regulation as a partially internalised health and fitness rationale for exercise, focusing on what they 'should' and 'ought' to do, and so conceptually close to the avoidant style measurement of this form of regulation (Gillison, Osborn, Standage, & Skevington, 2009). However, young men reported experiencing the more approach-focused elements of introjected regulation, discussing their participation in sport and physical activity as an opportunity to show sporting prowess, and gain social appreciation and status. Thus, the finding that introjected regulation is particularly negative for women's body image may be due to a) the importance of guilt in women's body image specifically, and b) the congruence between the BREQ-2 measure of introjected regulation and their personal experience of it. These issues suggest that further investigation and theoretical work is required regarding introjected regulation, in order to integrate these findings into a self-determination theory framework that holds true for both men and women.

With regards to objectification theory, this research provides a novel integration of self-objectification into a motivational framework, explaining its association with body image as being due in part to its negative associations with motivation in the exercise domain. These findings suggest that trait self-objectification begins a chain of negative motivational consequences, by increasing women's endorsement and pursuit of appearance goals for exercise, which, in turn, increase their experiences of introjected regulation, and negatively affect their body image. However, the longitudinal analyses also suggest that self-objectification is influenced by the pursuit of these appearance goals for exercise over time. This framework and the evidence provided in support of it allow women's motivation to be conceptualised as both influenced by and influencing

their experiences of self-objectification, and to understand the timescale over which these relationships occur. These findings also highlight the importance of recognising not only the role of cultural messages relating to appearance or body perfect ideals in influencing self-objectification, but also the role of women's own motivations in reinforcing the internalisation of these pressures.

Overall, these findings, particularly those relating to regulation of exercise behaviour, have considerable practical implications for the promotion and framing of exercise for women. The finding that intrinsic regulation influences women's positive feelings about their bodies, even accounting for their overall goals, and general levels of regulations, may provide the beginnings of an answer to a persistent dilemma for self-determination theory: research consistently shows that extrinsic goals are detrimental to individuals' health and well-being (Dittmar, Bond, Hurst, & Kasser, in press), but instructing people that their own reasons for exercising are 'wrong' could potentially result in reducing these individuals' feelings of self-determination, as it could be perceived as instructing someone on what their values *should* be. Given intrinsic regulation's positive effect at a weekly level, regardless of participants' goals, researchers and practitioners could investigate the potential of using a 'fun-boosting' exercise intervention to combat the potential negative effects of participants' overarching goals. The inclusion of such elements in existing exercise interventions to improve body image could increase the beneficial impact of these interventions; indeed, existing interventions which specifically aim to include this element have reported some of the strongest effects on body image (e.g., Burgess, Grogan, & Burwitz, 2006).

The consistent negative association of body image and introjected regulation over a longer timeframe, from 10 weeks up to six months, raises a further practical implication: exercise professionals should take care to avoid the use of guilt-based

motivation to promote exercise, and should seek to reduce this form of regulation among exercisers, in order to promote positive body image. Again, given the importance of introjected regulation in linking appearance goals to negative body image, established in the cross-sectional data, over 10 weeks, and over six months, targeting this form of regulation could be an excellent way to neutralise the negative effects of appearance goals for exercise without explicitly instructing participants not to exercise for appearance reasons.

In spite of its significant theoretical and practical contributions, there are two key limitations to this research, relating to sample attrition in the third study and to causality more generally. This issue of sample attrition between the initial questionnaire and the follow up questionnaires has been discussed previously as a key limitation of the research, given the restrictions this placed on the longitudinal analyses. A remaining issue to discuss is that of causality. From correlational data, it is of course not possible to determine causality for certain: even with the relationships identified in the longitudinal data, and their specific directions, it may be that unmeasured variables are the true cause of these associations. Future research should seek to confirm the direction and the nature of these relationships, by experimentally manipulating the variables of body image and introjected regulation separately and examining their effects on one another.

A final suggestion relating to future research concerns the measurement of self-objectification at the trait level. The results regarding trait self-objectification and its reciprocal links with appearance goals for exercise are particularly interesting, and warrant further investigation of the intervening processes, something it was not possible to do in this research. Experiences of state self-objectification may play a critical role in linking appearance goals to both more negative body image and increases in trait self-

objectification. Appearance goals may increase state experiences of self-objectification, resulting in increased body surveillance or body objectifying thoughts (Wolfe, 1998), which, in turn, result in state body dissatisfaction and over time, trait increases in self-objectification, in a process similar to that modelled by Karazsia et al. (2013) for internalisation of the thin ideal. Future work could utilise measures that are suited to assessing state or context-specific objectification, such as the body surveillance subscale of the Objectified Body Consciousness Scale (McKinley & Hyde, 1996) and the objectifying thoughts during exercise checklist utilised by Wolfe (1998), in order to fully explore these relationships.

In spite of its limitations, this research provides support for the proposal that regulations for exercise behaviour are a key mechanism connecting women's endorsement of appearance goals for exercise with changes in their body image, and suggest self-objectification as a further avenue of study. These findings highlight the importance of considering the individual regulations, particularly introjected and intrinsic, and through this provide a possible means for women to realise the positive potential of exercise and its influence on their body image, by focusing on reducing guilt-based, and increasing fun-based, motivations for exercise.

Chapter 4:

Teacher practices and perspectives on student disengagement from Physical Education: A qualitative study

Teacher practices and perspectives on student disengagement from Physical Education: A qualitative study

4.1. Abstract

Declines in engagement in physical education (PE) are well-documented over adolescence, particularly for girls. Building on previous work on young people's attitudes towards PE, PE teacher perspectives on practices relating to student disengagement could provide critical insight into these processes and suggest potential avenues of intervention. Within the frameworks of self-determination theory and objectification theory, this research examined PE teachers' explanations of, and methods for reducing, disengagement among their students. Eight teachers from three UK secondary schools participated in semi-structured interviews regarding student disengagement and their current teaching practices. Semantic thematic analysis suggested that teachers perceived four main influences on motivation in PE: personal interest, sociocultural pressures, a lack of confidence in abilities, and appearance concerns. PE teacher practices related to disengagement corresponded with these influences, focusing on choice and variety of activities, challenging stereotypes, building confidence, and adjusting PE uniform rules. These themes are discussed in relation to self-determination theory, objectification theory, and practical implications for schools and PE teachers.

4.2. Introduction

Engagement in and enjoyment of physical education (PE) has been consistently associated with higher levels of physical activity outside of school, both during adolescence and into adulthood (e.g., Shephard & Trudeau, 2000; Wechsler, Devereaux, Davis, & Collins, 2000). These associations could be of great importance in tackling growing levels of obesity and declines in physical activity in developed countries, as research has found strong associations between declines in physical activity over adolescence and increasing body mass index (Kimm et al., 2005). Unfortunately, across Westernised countries, evidence suggests that as children age, disengagement from PE becomes increasingly the norm: in the UK, 94% of children engage in 120 minutes of physical education per week in their last year of primary school (age 10-11), but this reduces to 65% in their GCSE years (age 14-16; Quick, Simon, & Thornton, 2010).

This trend is particularly evident among girls, whose physical activity levels have been repeatedly found to decline more sharply than those of boys over adolescence across the UK, North America, and Australia (Australian Bureau of Statistics, 2012; Brooks, Magnusson, Klemera, Spencer, & Morgan, 2011; Freeman, King, & Pickett, 2011). Girls also experience greater decreases in participation in school PE and in enjoyment of this subject than boys over their time at secondary school (Cairney et al., 2012; Quick et al., 2010). Research eliciting adolescent girls' views on why they disengage from PE and what would re-engage them has burgeoned in recent years (e.g., Flintoff & Scraton, 2001; Slater & Tiggemann, 2010; Yungblut, Schinke, & McGannon, 2012), but research has not explored teacher perspectives on student disengagement from PE, or considered how these relate to their strategies for increasing student motivation.

This work will first consider a broad theoretical framework of motivation, self-determination theory (Deci & Ryan, 2000), and its resulting explanations of disengagement from physical education. It will then consider the potential contribution of examining teacher perspectives on disengagement and practices relating to these in advancing understanding of motivation and disengagement among students and in developing interventions to address these issues.

Self-determination theory: Facilitating intrinsic motivation

Self-determination theory (SDT, Deci & Ryan, 2000), as a motivational framework, can assist us in conceptualising students' engagement in, or disengagement from, physical education. Deci and Ryan (2000) suggest that individuals have three basic psychological needs: autonomy, relatedness, and competence. Autonomy relates to the feeling of volition and choice in one's actions, whereas competence relates to the need to feel effective in dealing with challenges and the environment. Finally, relatedness is concerned with the need to experience meaningful connections with, and support from, other people. Self-determination theory proposes that the satisfaction of these needs within a particular setting is crucial for adaptive and positive motivation towards the activities within it, as well as for positive emotional experiences in this environment (Deci & Vansteenkiste, 2004). Adaptive and positive motivation is construed by this theory to stem from a sense of self-determination in our behaviours, with engagement in behaviours experienced as coming from the interests, values, or enjoyment of the individual, rather than from external pressures (Ryan & Deci, 2000, 2006). Thus, in the case of education, learning environments which satisfy students' basic psychological needs of autonomy, competence, and relatedness will facilitate self-determined motivation towards, and enjoyment of, activities within them (see Niemiec & Ryan, 2009, for a review).

Within a physical education context, there is considerable support for the importance of the satisfaction of these needs in promoting self-determined regulation. Student perceptions of their PE teachers' support for autonomy, competence, and relatedness predict their self-determined motivation within PE classes (Standage, Duda, & Ntoumanis, 2005; Taylor & Ntoumanis, 2007), and reviews of this area have consistently supported this motivational sequence (Ntoumanis & Standage, 2009; Van den Berghe, Vansteenkiste, Cardon, Kirk, & Haerens, 2014). These cross-sectional findings are supported by intervention work, where positive changes in self-determined motivation result from giving students choice in activities, and the ability to work together in meaningful groups (Mouratidis, Vansteenkiste, Sideridis, & Lens, 2011; Prusak, 2000). Beyond self-determination theory work, research into adolescent girls' reasons for disengagement from PE, and physical activity more generally, consistently reports the importance that girls themselves place on a choice of activities, skill learning opportunities, and the ability to work with friends (Flintoff & Scraton, 2001; Gibbons & Humbert, 2008; Yungblut et al., 2012). Evaluations of interventions aimed at increasing girls' engagement in PE and physical activity also include the teaching of behavioural skills for sport and choices of activities as key criteria for successfully increasing motivation (e.g., Felton et al., 2005), providing further support for the importance of satisfying these needs in the promotion of motivation in PE.

Objectification and social pressure: extrinsic influences on PE motivation

Whereas support for basic psychological needs promotes self-determined motivation, external pressure can pose a challenge to this form of motivation, resulting in individuals feeling that they are motivated not by their own interests, but by coercive forces around them. Self-determination theory proposes a distinction between extrinsic and intrinsic values or goals: extrinsic goals depend on the responses of others and are

generally a means to an end, in contrast with intrinsic goals which are often valuable outcomes in themselves (Kasser & Ryan, 1996). Kasser and Ryan (1996) identify three extrinsic goals in their work with adults: financial success, image, and fame. These extrinsic goals have been consistently associated with more controlled, or less self-determined, motivation (Carver & Baird, 1998; Sheldon, Ryan, Deci, & Kasser, 2004), and the following section focuses on two extrinsic goals that are particularly relevant to adolescent girls: the importance of appearance and of popularity, or social recognition.

According to sociocultural theories, girls are subject to considerably more cultural messages than boys, from the media and from interpersonal encounters, regarding the importance of their appearance (Fredrickson & Roberts, 1997; Thompson & Stice, 2001). Objectification theory suggests that girls internalise these messages, by valuing their body's appearance over its functionality and by taking on the role of an external observer in order to better monitor their body's appearance (Fredrickson & Roberts, 1997). This 'objectification' is echoed in self-determination theory: self-determination theory proposes that the endorsement of extrinsic goals leads us to objectify others, valuing them only by what they can give us in social status and validation (Kasser, 2002). However, objectification theory argues that girls and women go a step further, beginning to view *themselves* as objects, valuable only in how they appear to others.

By increasing the value they place upon their appearance, girls may experience their behaviours in PE class and beyond as more controlled, rather than self-determined: research with adult women suggests that internalisation of these cultural ideals of attractiveness and of the goal of appearance is associated with less self-determined regulation in general and in exercise contexts in particular (Gillison, Standage, & Skevington, 2006; Ingledew & Markland, 2008; Kopp & Zimmer-Gembeck, 2011;

Pelletier & Dion, 2007). Furthermore, self-objectification suggests a constant awareness of how the body appears to others, suggesting that girls may experience more concerns than boys about being watched while engaging in physical education classes, and thus reduce the effort they put in.

Tentative support for these propositions can be found in a consideration of developmental trends in self-objectification, body image concerns, and participation in physical education: self-objectification and body image concerns increase in early adolescence (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013; Lindberg, Grabe, & Hyde, 2007), and these increases coincide with decreases in physical activity and engagement in physical education among girls (e.g., Brooks et al., 2011; Cairney et al., 2012). Furthermore, research with adolescent girls consistently highlights the importance of appearance-related concerns in girls' disengagement from physical education and activity. Girls repeatedly express concerns regarding their appearance both during and after PE (Flintoff & Scraton, 2001; Fraser-Thomas & Beaudoin, 2004; Olafson, 2002; Slater & Tiggemann, 2010; Yungblut et al., 2012), with particular issues regarding sweat, hair, and makeup, with limited changing time after lessons exacerbating these concerns.

In addition to the importance of appearance concerns in predicting disengagement from PE, the extrinsic concern of social recognition or popularity may also be problematic for girls' engagement in physical education, particularly considering strong gendered norms in Western cultures surrounding physical activity and sport. Choi (2000) argues that sport is constructed by culture as masculine, due to its emphasis on traditionally masculine traits of strength, power, and competitiveness. This notion that sport is not for women can be seen in media depictions of sport, with fewer representations of active women in magazines for adolescent girls (Daniels, 2006)

and fewer female athletes presented on the covers of high profile sports magazines (Martin & McDonald, 2012). These cultural messages appear to be well-internalised by girls: focus groups with adolescent girls have found that many believe that it is difficult to be feminine *and* sporty, and that looking good for others is incompatible with being physically active (Dwyer et al., 2006; Whitehead & Biddle, 2008). Overall, it is therefore possible that external pressures on girls, such as sociocultural pressures relating to the importance of appearance and the acceptability of sports participation for women, may be responsible for declines in engagement in physical activity and education in their adolescent years.

The importance of teacher perspectives on disengagement from Physical Education

The research and theory outlined above provide clear explanations for disengagement from PE among students in general, and among girls in particular. What is unclear from the existing research is the extent to which teachers are aware of these issues, but more importantly what practices they use to address them. If these are the primary issues limiting students', and particularly girls', engagement in physical education classes, the extent to which teachers understand them and target them with their practices will potentially determine how successful they are in engaging all of their students.

Teacher perspectives on disengagement and their practices related to it are important for a number of reasons. First, against the wealth of qualitative research with students and the considerable quantitative research into PE motivation from self-determination theory, there is relatively little work with teachers eliciting their perspectives, particularly in the UK. Existing qualitative research with PE teachers from outside the UK focuses predominantly on urban schools in the US (Ennis et al., 1997).

This work addresses student disengagement within this context of low socioeconomic status and high safety concerns, without a specific consideration of gender-specific issues in disengagement. What work there is within the UK focuses on the influence of job-related pressures, such as the prominence of student assessment, concern regarding evaluations of their own performance as teachers and a lack of time in lessons, and how these pressures influence teachers' use of autonomy-supportive motivational strategies with their students (Taylor, Ntoumanis, & Smith, 2009; Taylor, Ntoumanis, & Standage, 2008). Although work-related pressures are clearly a strong influence on teaching strategies, it is also possible that teachers' views on why students disengage may influence the strategies they use: by considering teachers' explanations and understanding of disengagement, it will be possible to assess whether they target their practices towards what they perceive as the problems.

The focus of this work regarding teaching practices is predominantly on autonomy-supportive teaching practices. However, from the review of the literature above, there is clear justification for broadening the consideration of teaching practices to encompass both additional basic needs from self-determination theory, of competence and relatedness, as well as appearance concerns, given their consistent importance and prominence in the literature considering girls' disengagement. Correspondingly, expanding this work to consider a broader range of teaching practices than autonomy support could be crucial in examining how teachers understand and address student disengagement from PE, particularly among girls.

Second, eliciting teachers' perspectives may allow a broader, higher-order understanding of cultural influences outlined above relating particularly to girls' disengagement from PE. Appearance concerns and the "uncool" nature of sport loom large in girls' reasons behind disengagement from PE (e.g., Olafson, 2002; Slater &

Tiggemann, 2010), and authors' discussions of these concerns often invoke sociocultural theories to explain the context within which these arise (e.g., Fredrickson & Roberts, 1997). It is interesting to note, however, that in the vast majority of studies, girls themselves do not raise sociocultural pressure as an issue; the authors identify the influence of social norms regarding the appropriate sports for girls, the incompatibility of femininity and sport, and the importance of appearance in these findings, but these factors are not discussed explicitly by the girls. Costanzo (1992) argues that in successful socialisation, the cultural norms or behaviours are internalised to such a degree that individuals experience these behaviours as stemming from *personal* choice and volition, meaning that girls themselves may not be able to recognise the influence of culture on their decisions and preferences. PE teachers may be uniquely placed to identify the influence of gender norms in a way that students themselves may not be capable of doing: to a single student, disliking rugby is a matter of personal preference, but to a teacher who experiences the majority of their female students refusing to play rugby, a different explanation may become apparent. Therefore, considering teacher perspectives on girls' disengagement and specifically on the impact of body image may yield insight into the role of sociocultural factors.

As a final point, the need for successful interventions to improve students' enjoyment and engagement in PE presents a compelling argument for considering teacher perspectives on disengagement: many successful interventions rely on alterations to teaching practices or departmental policies in order to improve student experiences, either by increasing need-supportive teaching (e.g., Mouratidis et al., 2011) or by providing better structural support for skill learning and activity choice (Felton et al., 2005). Such interventions will therefore be difficult to implement without the support of teachers, or a strong understanding of their perspectives on disengagement.

Thus, it is vital that research utilises the wealth of teachers' experiences and practices when designing and implementing interventions, which qualitative research regarding their perspectives on student disengagement and their current practices can begin to do.

The Present Study

The present study sought to gain insight into secondary school PE teachers' perspectives on the reasons behind student disengagement from physical education, and the practices they implement to encourage positive motivation among their students, with a particular focus on girls' engagement and the impact of body image concerns. PE teachers from three secondary schools in the UK took part in semi-structured interviews. These schools all had excellent physical education participation rates, with a high proportion of students participating in PE class and in extra-curricular sport; thus, insights gained into their practices related to promoting engagement might be particularly beneficial for future practical applications.

The present research had two main aims. The first aim was to establish what PE teachers view as the key issues relating to disengagement in PE class, particularly teachers' perspectives on the importance and relevance of female students' body image, given this theme's recurrence in girls' explanations of disengagement from physical activity and education (e.g., Flintoff & Scraton, 2001; Olafson, 2002; Yungblut et al., 2012). Second, the research sought to explore the practices teachers currently employ to promote engagement, considering the content of these in general and the extent to which teacher practices focused on addressing the basic needs of autonomy, competence, and relatedness, from self-determination theory, and on addressing or minimising body image concerns among their students, from the literature on girls' engagement and objectification theory.

In seeking to access the expertise and experience of PE teachers, the research adopted an epistemological perspective of critical realism, which treated the interviews as a factual representation of teachers' beliefs and practices, but not as a direct representation of reality (Willig, 2013). Semantic thematic analysis (Braun & Clarke, 2006) was used to identify and code similarities between the interviewees' perspectives, and previous research was used to inform the organisation of these codes into themes. The analysis also remained open to the possibility of other, novel themes, by utilising an interview schedule focusing on the PE context more broadly than the specific research questions and by inductive coding of the interview data (Boyatzis, 1998).

4.3. Method

Participants

Eight teachers from three secondary schools on the south coast of England took part in the interviews (see Table 1 for school details). All three of these schools had high institutional enthusiasm for PE, evidenced in teachers' enthusiasm for improving PE, and in student levels of participation in extra-curricular physical activity. The interviewees had considerable teaching experience: with the exception of two newly qualified teachers (NQTs), they had been teaching between 6 and 10 years (overall $M =$ 6.25 years, $SD = 3.81$). Six women and 2 men were interviewed; the men were both heads of department, and the third school had a male head of department, who was not interviewed, but assisted in organising the research. Teachers were invited, after introduction by the head of department, to take part in interviews regarding their experiences of teaching and current practices. Written consent was given by all participating teachers.

Table 1. Characteristics of participating schools

	Ages	Students	Specialism	Percentage children receiving free school meals	Ofsted Rating* (Date)
School 1	11-16	560	Arts	8.4	1 (2011)
School 2	11-16	1640	Sports	10.3	2 (2013)
School 3	11-18	1055	Performing Arts	14.3	3 (2013)

*Ofsted ratings: 1 – Outstanding, 2 - Good, 3 – Requires Improvement (Satisfactory prior to 2012), 4 – Inadequate.

Interview Schedule

The interview was semi-structured, with open-ended questions beginning each section, and follow-up questions used to gain additional information on particular topics of interest, if these were not mentioned in the flow of conversation by the teachers. In addition to these prescribed follow-up questions, the interviewer also sought clarification of issues that were not immediately clear and asked teachers to expand on their points, as appropriate. The interview schedule sought to promote a broad discussion of PE, while covering the specific areas of interest, so as not to bias responses from teachers.

The interview schedule was developed with two main aims: to gain a PE teacher perspective on student disengagement from PE, including but not limited to how they perceive body image concerns affecting their female students, and to gain insight into current practices in PE classes, and how these may relate to disengagement. To address the first aim, teachers were asked more broadly about the challenges of PE teaching (as student disengagement could potentially be one of these), and to identify specific groups of students who were more at risk of becoming disengaged. Follow-up questions regarding disengaged groups included asking about girls particularly if they were not

mentioned by the teachers as an at-risk group, and asking whether the teacher believed body image played a role in student disengagement. To address the second aim, teachers were asked to discuss how they would run a practical lesson. To increase discussion of specific practices, follow-up questions regarding issues such as skills-game divisions in lessons, mixed sex PE, and PE uniform rules at the school were included (see Table 2 for interview schedule). Teachers were not specifically asked about what they did to promote engagement, in order to avoid them responding based on department protocols or official strategies relating to engagement; it was considered that a more implicit approach, based on asking them to freely discuss (and explain the reasoning behind) current practices, would provide better access to the individual teachers' thoughts and techniques.

Procedure

All participants were interviewed by the first author (a female researcher). Six of the teachers were interviewed in person in quiet areas of their school. Two teachers from a distant school were interviewed via Facetime, from their office at the school. All interviews were conducted individually, without the presence of other staff. Interviewees were given an information sheet prior to the interview, and again at the beginning of the interview, to ensure informed consent. Interview length varied between 15 and 36 minutes depending on teachers' responses ($M = 24.56$ min, $SD = 7.62$). The interviews were recorded using a smartphone, and transcribed verbatim for analysis. As part of their participation in a programme of research into girls' engagement with PE, schools were offered £50 vouchers towards PE equipment, but this was not dependent on the teachers' participation in these interviews. Ethical approval was granted by the University ethics committee, and the research complied with BPS and APA ethical guidelines.

Table 2. Interview Schedule for teachers: initial questions and prompts.

Topic	Questions

Introductory questions

How long have you been a PE teacher?

What kinds of activities and year groups are you teaching just now in the school?

Why did you become a PE teacher?

What do you think the main challenges of being a PE teacher are?

What do you think the main rewards of being a PE teacher are?

Current practices

Initial questions

For the next section, I'd like you to talk me through a typical practical lesson that you might teach.

What do you do to open your lessons, what is the main section usually made up of, and how do you finish lessons?

Additional prompts

Do the boys and girls do PE together in your school?

Do the boys hassle the girls or vice versa in PE?

How much time do you spend on skills coaching in a session?

Is there student choice involved in the activities within sessions?

Are there non-competitive options available?

Do you get individual students to demonstrate skills for the whole class?

How long do the students have to change after PE? Do they have time to shower?

Do the students have a specific PE kit they have to wear?

Student attitudes towards PE

Initial questions

What were your experiences of PE like in school?

Do you think there is a difference between how students viewed PE when you did it and now?

Are there any particularly difficult groups of students to engage in PE?

Additional prompts

What about the girls specifically?

Do you think that body image plays a role in reluctance to engage in PE?

Analysis

This analysis took an epistemological perspective of critical realism, which proposes that data can provide an insight into the reality of the world, but not a direct reflection of it, thus requiring interpretation (Willig, 2013). In seeking to treat the participants as valuable experts, and from this realist perspective, the status of the interview texts was considered to be that of a factual account of reality (Flick, 1998), rather than attempts by the participants to construct reality in a motivated or biased fashion.

When analysing the data, the steps of semantic thematic analysis (Boyatzis, 1998) outlined by Braun and Clarke (2006) were followed. After initial familiarisation with the data, through transcription and repeated reading, the first author examined specific instances in the data where teachers provided explanations or accounts of disengagement among their students, and where teachers linked teaching practices to student engagement, as per the research questions. First, similarities in the accounts of the PE teachers were identified, generating a set of initial codes. Initial coding focused on identifying issues raised across several schools (rather than within a single school). However, in some cases, individual teachers raised particularly interesting points that were relevant to the broader considerations of the project or resonated with other themes. In discussion with the second and third authors, these codes were arranged into overarching themes, informed by self-determination theory (Deci & Vansteenkiste, 2004), sociocultural research on women's appearance concerns and participation in physical activity (e.g., Choi, 2000; Fredrickson & Roberts, 1997), and qualitative accounts from female adolescents of disengagement from PE (e.g., Yungblut et al., 2012).

It is worth noting that the specific consideration of instances related to disengagement and teacher practices associated with it reduces the ability of the research to consider the full range of expertise shared by the PE teachers within the interviews, from the wide-ranging interview schedule. Furthermore, the researcher's own familiarity with sociocultural discussions of women's engagement in sport, from involvement in women's sports coaching and a personal interest in feminist critiques of the media, may have an influence in interpretation of these findings, and the organisation of initial codes into overarching themes. As such, the interpretation of quotations, themes and their relationships to one another was discussed with the second and third authors of the paper, and with a wider group of researchers interested in developmental and social psychology, to ensure that the data were not misrepresented or incorrectly interpreted.

4.4. Results

Across the eight PE teacher interviews, four themes relating to students' motivation in PE were identified: a lack of personal interest, sociocultural influences on interest, low self-esteem or confidence, and appearance concerns. Four themes relating to teachers' descriptions of their practices and how these relate to student engagement were also identified. Interestingly, these practice themes corresponded with the teachers' explanations of disengagement: choice of activities, challenging stereotypes and cultural norms, building competence and confidence, and adjusting PE uniform rules. Thus, these pairs of themes are discussed below, with the causal themes paired with their related practices; a visual representation of these themes can be found in Figure 1. In addition to these paired themes, a 'missing' theme from a self-determination theory perspective was also identified: the impact of relatedness on motivation and practices relating to it.

Personal Interest

Across all three schools, teachers discussed students' interest in physical education as stemming from their personality or identity, with one teacher explicitly stating that some students who did not enjoy PE were simply "not the sporty type" (Daniel).[18]

> Elaine: I think you know, PE is a kind of Marmite subject, naturally, you either choose to do it or you don't.

> Daniel: they're not bad kids, they just, it's just not their interest. […] it's just a personality thing, some people just sport holds no interest for them, some people spend their Sunday going out and playing football, then watch it in the afternoon, some, sounds like their worst nightmare.

> Karen: We've been looking at doing mountain biking with them, and trying to access them and give them more variety, for those boys that aren't particularly the games players.

Karen's quote is particularly interesting, when discussing a group of older male students who are not interested in the traditional offerings the school provides for the boys. In explaining which boys are not interested, she refers to this as a stable identity, similar to Daniel's use of "the sporty type", referring to who they *are* rather than what they *like*: they are not boys who do not like games; they are boys who "aren't particularly the games players".

Students with other interests are also highlighted by teachers as being more at risk of disengaging from PE, with this difference in time spent outside of school on sport influencing a further risk factor for disengagement that will be discussed later: self-esteem and confidence.

> Daniel: We're a performing arts school and we've had the students who, that's the thing they want to do, that's why we're at school, and PE's just something they just need to get passed through, you know, and there's lots of those sort of

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[18] All names are pseudonyms to ensure teacher anonymity. Interviewer speech is marked by 'Int'.

students who just, PE's just something that, just that, a hundred minutes of just grin and bear it.

Elaine: The ones that spend their time doing other things tend to then struggle as they go through PE, because they're not doing anything in their own time, so they tend to fall behind, and then they feel bad about themselves, and lack of self-esteem, and then they don't want to do it.

Providing choices and variety in activities. Teachers discussed disengagement as resulting from a lack of personal interest in PE activities, and thus this potential predictor of disengagement was addressed by teachers with a drive to find a form of physical activity which less interested students *would* enjoy. This theme of offering choice, variety, and lifelong activity was identified in all three of the schools and was very strongly emphasised, particularly by the two heads of department, as a key way of keeping students engaged and motivated in PE.

Max: just constantly sort of giving the kids the variety, so that even the kids who, yeah they'll turn up with their kit and play rugby in lessons, but they don't enjoy it, it's finding things that they all enjoy at least once in the year, if not more hopefully.

Daniel: You have the extremes, sometimes the extremes, who refuse to bring kit, but we've slowly got rid of those over the years. […] we've found those pathways in order to keep those kids engaged

All three schools had instituted elements of choice for students, either within the year or over an entire year, allowing them to select their own 'pathways', or groups of activities. These tended to separate traditional team sports, such as rugby or football, from creative or aesthetic activities, such as gymnastics, dance, or Zumba. The teachers linked these additional and alternative choices given to students with improved engagement, particularly among the least motivated students.

Hannah: since we have been doing Zumba, yoga, and I sell it to them as if it's, these are activities that you'd be doing in a leisure centre, that you could be going into and doing now, […] even the hardest person to engage loved Zumba.

Elaine: I think the ones that don't enjoy PE as much, it's not necessarily so traumatic [as PE when she was a student], because there's something, some sort of niche that they can think, you know, ok, well I can do that.

In Hannah's quote above, the focus on lifelong engagement in physical activity is clear, even in how she presents the activity to the students. Across the schools, teachers placed an emphasis on finding activities for students which they would continue after school, and several cited this as an improvement from their own days in school.

Hannah: I think the only thing we can do is to try and give them as many opportunities to see that it's not the most horrendous thing in the world, and that they will come back to it sometime in their life hopefully, even if it's taking the dog for a walk, which is getting off the sofa. And seeing that that is exercise.

Karen: I could probably put on my hand, the subjects I did, because it was quite narrow the curriculum, and it was based on the games, rather than a participation element, so I think there's probably more and more children that are being inspired now, because there's more and more opportunities for them to find something.

As seen in Karen's comment above, teachers across the schools explicitly linked changes in the PE curriculum over recent years, shifting from specific sports to key skill areas, to being able to provide a more varied range of activities for the students. Additionally, teachers associated this flexibility with being able to give students more opportunities to find something they enjoy in PE, and to take part in lessons.

Karen: Because of the way the national curriculum's going in PE, it's given us a lot of opportunity to open up a lot of doors […] I think that has a huge impact on catering for all needs.

Vicky: It was a very gendered, separated, curriculum that we led.
Int: And do you feel that it's more balanced now?
Vicky: Oh definitely. […] The national curriculum changed a few years ago, so rather than, so you have, it's called outwitting opponents, and you choose activities where you have the challenge of to beat an opponent, so that lends itself to games activities, then we have what we call accurate replication, so that's like, gymnastics trampolining, health and fitness, so we're not restricted to what girls and boys should be able to do.

In spite of these positive changes in the curriculum, one teacher expressed concern over current government preference for traditional team sport over more alternative activities, which she believed were more likely to engage all of her students.

> Rebecca: I think that the sports that are offered within physical education is a key, like obviously it's very hard to hit everyone with the same sport, but as long as you give a range, rather than giving your whole, what Gove wants, like your rugby, your football and your netball and your cricket.

The comments the teacher refers to originally stem from 2010 (BBC News, 2010), three years before the interviews in this research, and relate to the then Secretary of State for Education emphasising the importance of participation in, and teaching of, competitive, traditional team sports in physical education. This teacher explicitly contrasts the principles of participation and engagement of students with the government proposal of more limited activities, supporting the theme of choice and variety in activities, but also highlighting the potential external influences on teachers' and schools' abilities to provide this.

Sociocultural influences on interest

The theme of personal interest, stemming from personality or identity, was particularly prevalent during teachers' *general* discussions of why students disengage from PE. However, across schools, girls were identified as a particularly 'at-risk' group for disengagement.

> Vicky: [on the challenges of being a PE teacher] student apathy. Like behaviour's not, it's not an issue in this place, but student apathy and attitude of some girls, like a handful of girls in years 10 and 11 can be a bit of a struggle.

> Max: there's a sort of a hard core group of about 4 or 5 [girls] in year 11, who seem determined to do, find other things, or find nothing we offer of any interest to them.

In discussing girls' interest in PE and its resulting impact on engagement, teachers noted how this was influenced by sociocultural influences and pressures and were clearly conscious of the cultural messages available for girls in the media and from

their peers. Gender stereotypes, relating to both sport in general and specific activities, were highlighted by teachers as important, negative influences on girls' interest and engagement in physical education.

> Sarah: when you're younger it's not, almost cool to be, you know, extremely talented at a certain sport or anything like that.
> Int: But it would be for the boys?
> Sarah: The boys, I think, completely different. It's a macho thing and they want to be good at it, and they want to prove that they're good at PE.

> Daniel: We started doing some tag rugby with some girls, and originally they were like 'I am not. Doing. Rugby. No way'.

Teachers across the three schools identified the media as an influence on girls' interests, in particular the media's representations (or omissions) of sporting women. When discussing the role of the media in determining girls' interest, teachers discussed both general media and sports-specific representations of women.

> Daniel: When you look at people like Katie Price, and watching TOWIE and things like that, that's almost what the girls are taught to be like when they're older, and whereas, PE doesn't sit in with that. Those girls have got no interest in doing sport, have they, like Amy Childs or Katie Price, or something like that.

> Karen: the only athletes that you hear about are the ones that are either athletics based, tennis based, you know. The way media portrays female athletes at the moment, the girls know the female athletics people, they know the female tennis players, because of the media, portraying body image, body beautiful. They're all out doing modelling, so they're known, and therefore I think that has an impact on how the girls perceive how they should be, and what they should be doing.

The absence of realistic, physically active role models for girls emerges as an issue from both of these teachers. Particularly interesting is Karen's link between the bias of the sports media towards conventionally attractive female athletes and girls' interest in other sports, and girls' body image, a theme to be discussed later. Positive media representations of sport are particularly important to Karen, who later criticised comments from the Minister for Sport relating to women and physical activity which

she perceived as being unsupportive of women's sport, due to the emphasis on

traditionally feminine and appearance-focused activities:

> Karen: It basically ended up being not really supportive towards female sports, and we had two pretty like, you know, athletes involved in sport, competing at a high level, and then she was kind of saying, you know, girls should be doing other things. And it's like, no, you're not kind of setting the right image.

Karen's reference here to two of the school's high achieving female athletes

shows her clear concern about the impact of media discussions of women's sport on her

students' engagement in a very concrete way, and 'setting the right kind of image' again

highlights her view of the importance of role models and responsibility of those in the

media spotlight to challenge the cultural focus on attractiveness. It is interesting to note

that this particular interview occurred over a month after these comments from the

Minister, demonstrating this teacher's particular awareness of these cultural pressures

and her concern over the impact on her students.

Discussions of sociocultural influence on interest and of personal interest were

not mutually exclusive among the teachers; in fact, the teacher who most strongly

referred to the concept of the sporty personality is also one of those who elaborated

most on the difficulties of gender stereotypes for engaging the girls (Daniel).

> Daniel: I think there's also images that come with certain sports, so when you get into things like rugby, students come they come with 'ah girls can play rugby and it must tell you have a particular sexual persuasion' or something like that, […] and it's sort of breaking down those sort of mentalities as well, because there isn't. Anyone can play any sport, it just depends on what your interests are.

Here, Daniel challenges the stereotypes associated with rugby for women from

an argument of personal interest: all that matters is interest in the activity, and he argues

that this is not defined by gender or, in this case, sexuality. This simultaneous

consideration of personal interest and sociocultural influences on interest suggests that

rather than perceiving these as conflicting explanations for student disengagement, it

may be more accurate to consider them as different levels of explanation, with one

focused on the individual (personal interest) and one on cultural factors (gender

stereotypes). In fact, Daniel appears to suggest here that girls' personal interests in

sports may be influenced by these stereotypes.

Challenging gender stereotypes and the potential of physical activity.

Having identified a strong influence of sociocultural pressures, teachers across all three

schools took active measures to reduce the influence of these stereotypes and to enable

the girls to participate across the curriculum of activities in PE. This was achieved

primarily by explicitly, verbally challenging these stereotypes, often with reference to

their own engagement in physical activity, and by encouraging non-gender-typed sports

for both genders.

> Hannah: Stereotypes out the window, it doesn't matter to me, I'm a rugby player,
> I'm a football player, I'm also a horse rider, and I do dance, so it doesn't matter,
> and I put that really kind of, I put them across what I do as well.

> Karen: [on gender stereotyping of activities] that's hopefully something that we
> try not to do here. I'm a rugby player, I am no twinkle toes, I'm not beautiful,
> and I always say to the girls, give it a go. Why shouldn't we give it a try?

> Daniel: We recently had to employ new PE teachers and in my head when I
> thought about who I wanted to employ, it was more I was thinking, PE teachers
> that were prepared not just to do the [mock deep voice] "right boys you're doing
> football, rugby, and girls you're gonna do netball and badminton indoors" and
> that, I wanted to kind of break that down. Because I think the more that girls go
> out and get a bit muddy, or go out in the rain, do tag rugby and experience some
> level of contact, the more you'll start breaking down this sort of persona of if
> you throw a girl a ball, she puts her hands up and screams.

In this last quote, the head of a department's selection of new staff is influenced

by concerns regarding gender-typing of activities. As well as aiming to discourage these

gender-stereotypical views of sport, Daniel here actively suggests that engaging in non-

traditional gendered sport would actually be beneficial for the girls, as it may disrupt

stereotypical disengagement and lack of effort from the girls. This is an interesting

contrast to the importance generally placed on student choice in activities, with the

suggestion that the students may benefit from engaging in activities that they may not

be initially drawn to: stereotypes may prevent girls from engaging in activities they

actually have 'true interest' in. Indeed, Daniel discusses a shift in interest among his

female students after playing rugby without realising what it was:

> Daniel: We started doing some tag rugby with some girls, and originally they were like I am not. Doing. Rugby. No way. You know, and then [.] they loved it, absolutely loved it. What was that? Can we do some more of that? Yeah, it was rugby, and they're like 'Ah, oh, ok, actually we quite like that'.

This positive response to a previously undesirable activity suggests that as well

as giving students the choice of activities, teachers can successfully engage students in

activities that are not stereotypically prescribed for their gender or initially appealing,

although Daniel does not elaborate on *how* they succeeded in engaging the girls. A final

point related to teacher discussion of stereotypes is that even teachers who discussed the

potential for sport to break down stereotypes also talked about girls' interest in ways

which reinforced cultural norms of appearance management as a key reason for girls

and women to participate in physical activity.

> Daniel: it sort of dips off around year 9, year 10 and 11, and then almost comes back a little bit, into using the gym, when they realise that maybe using the gym can improve their self, body image, attractiveness, what actually holds value for them.

> Rebecca: A couple of my year 11 girls, I said to them, as soon as you, if you go to college, and university, you might hate sport now, but as soon as you go to college or university, and you find things like fast food much more often and takeaways and alcohol, and things like that, I said 100% you'll be in that gym, and you'll love that gym, and that'll be the place that you go to all the time.

These quotes are not provided as a criticism of these teachers, but to

demonstrate the difficulty that they face. They are clearly aware of the importance of

finding something of value for their students in PE, and are attempting to provide

activities of interest to all of their students, but are also dealing with the powerful influence of stereotypes and cultural norms on students' interests.

Self-esteem, confidence, and competence

Low self-esteem is cited by several teachers as an influence on students' motivation in PE, with explicit links made between demotivation and low self-esteem. Interestingly, as mentioned earlier in the theme of personal interest, one of these teachers (Elaine) discussed alternative interests outside of school as being linked to less time on sports outside of PE, and subsequently lower skill levels and self-esteem issues. Furthermore, the increasing importance of ability over time is also discussed by another teacher.

> Elaine: Yes, the kind of, demotivated pupils, for whatever reason, it could be, it's mostly self-esteem issues. They've identified really early on, "I can't do that", and I have conversations probably everyday saying "you're only 11, give it a chance".

> Sarah: Particularly if they're low in self-esteem or motivation it can be quite difficult to get them on board in PE sometimes.

> Rebecca: [on link between ability and engagement] Yeah, well, especially in key stage 3 [age 11-14], you get kids that really struggle with most sports, but they just love it, they love giving it a go, and they love it when they get something, they think now I can do that, so they wanna move on to the next thing. But as soon as you get into year 10 and 11 [age 14-16], they don't care, they think if I can't do it now, I'm never going to be able to do it, so why should I bother?

Thus, low ability and low confidence in the ability to improve are key problems for PE teachers to address in PE, and teachers appear to find tackling these issues particularly rewarding. When asked about the main rewards of being a PE teacher, seven of the eight teachers referred to the enjoyment of watching children learn and succeed at tasks they previously struggled with, suggesting a focus in lessons on skill learning and development of individual students, rather than on winning. One teacher,

when describing a child's improvement in gymnastics, clearly shares the joy of her

student at the achievement:

> Hannah: [on the main reward of being a PE teacher] Seeing that kid that
> couldn't do something have a smile on their face because they've managed to
> attempt to do it, or they've done it, for the first [time]. Like I had a year 9 girl
> who hadn't been able to do a forward roll, and she managed at the end of my
> lesson to do a forward roll, and she was like 'yeeeeah' and you just get a big
> buzz from that because she managed to do something she'd never been able to
> do in 3 years, that's so cool, and I was like, go home, get your mattress out, put
> it in your lounge and show your mum and dad. And she did, she was well proud
> of herself, so I love that. That makes me buzz.

This excitement and animation regarding children's improvement was evident in

all of the interviews. The high value that teachers place on children's confidence about

their abilities, demonstrated above, may contribute to teachers' view of low self-esteem

and confidence as particularly problematic for engagement.

Building competence and confidence. Practices relating to building

competence and confidence were discussed by almost all of the teachers, and across all

three schools, with these practices perceived to be associated with improved motivation

and enjoyment among students. Teachers used multiple methods to ensure all of their

students were able to achieve and feel competent. Two common methods which were

apparent across all three schools were the grouping of students and focusing on

individual students, via demonstrations and praise.

Grouping of students. How teachers grouped their students for activities and

games emerged as an important consideration across the schools, and a key way of

ensuring confidence among the students, with similar ability groups seen as allowing

students to perform to the best of their abilities without feeling either frustrated or

intimidated:

> Hannah: [on the benefits of game play] Yeah, it means everyone can achieve
> then as well, and if you're clever with your groupings, and you've got kids that

are similar ability with kids that are similar then they won't feel 'oh I can't tackle'.

Max*:* The setting of pupils helps, so they're not sort of intimidated by better people all the time, they're not held back by other people.

This consideration of grouping also extended to the gender division of classes at the schools, with teachers discussing single sex classes as particularly important in games where the male students could dominate game play if they were mixed, thus diminishing the girls' feelings of competence:

Elaine: The mixed pathway is quite a lot of net and wall games, so things like volleyball, tennis, badminton, table tennis, a bit of orienteering, things that tend to not have gender dominance […] the single sex pathways are the ones where there might be a disadvantage especially at key stage 4 to play boys and girls together at things like football or rugby.

Max: I know [Karen] would say some of the girls come to the fore a bit more when they're in their girls' groups, but the strong girls, we talk about this quite often, but the strong girls, the confident able girls, will still rise to the top in the mixed groups as well, so like I say, it's worth keeping the mixed groups, but we wouldn't want to have all mixed groups, we like having the gender split as well.

Individual demonstrations and praise. Inviting individual demonstrations from students was another method used by the teachers to encourage feelings of competence and confidence. Previous work (Ennis, 1999) has positioned such demonstrations as potentially difficult and unpleasant situations for students, as they may activate social anxiety and fear of failure. However, the teachers were clearly aware of such problems and used a variety of methods to ensure that these demonstrations were a positive, motivating experience. One teacher specifically addressed the fear of failure in her discussion of demonstrations:

Hannah: If no-one will want to do it, then I'll do it, and I mess up on my demonstrations sometimes, and they're like 'oh, she can do it, she'll do it better than you', and I'm like ok, come and have a go. And it's scary the first couple of times you do that, because you're like 'oh, they're gonna think I'm a rubbish teacher', but it doesn't matter, because failure isn't a problem, if they see me fail, then it doesn't matter. So, I do, and sometimes I get the kids that can do it, but I

don't do it all the time. I do those kids that, that can't. And I show them that they can do it with a bit of support as well.

Here, Hannah's willingness to 'mess up' and purposeful modelling of no fear of failure in front of her students reduces their own concerns over the possibility of failing, and results in them being more willing to demonstrate for the class. Other teachers varied their approaches to selecting students as a way of reducing the pressure, with one teacher praising multiple students and leaving the offer to demonstrate open to all of them, diffusing the pressure:

> Elaine: Normally, if I needed a good example, I would say, right, so and so, so and so, so and so, did some fantastic examples, would any of you three like to demonstrate? And normally one of them will volunteer, rather than go, you.

Numerous teachers spoke about the importance of knowing their students, and knowing who would be confident to do a demonstration in front of the class. However, one teacher actively sought to use less confident students when they had excelled in a particular skill, as an opportunity to boost their confidence.

> Daniel: It's nice to pick those [students] out, especially if they're a person that isn't maybe isn't so confident, because they maybe sometimes aren't aware that they're quite talented at something, so it's quite nice to pick them out and give them then the opportunity to say 'hey, look at me, I can actually do this really well'.

In addition to how they selected students for individual demonstrations, several teachers highlighted the importance of praising not just success, but the effort students put in during a session.

> Daniel: it's really nice to praise the ones that perform and do everything that you want them to do, and sort of really work hard during a lesson, but they're maybe not quite as talented in that individual sport, but you can still point out how hard they worked.

> Hannah: I think just encouraging any ability, from a very young age, will mean that they will feel that no matter how good they are throughout their career at [the school], if they try it won't matter. […] I like to encourage, rather than, oh you have to be good at this. Cos I remember those teachers that you had to be good at stuff, and if you weren't good at stuff, you'd stop trying, and that's sad.

Hannah explicitly links teachers who praise only success with a reduction in engagement in those classes, and this clearly influences her use and style of praise with students.

Appearance concerns and PE uniforms

Appearance concerns, particularly as an issue for the female students, were mentioned spontaneously by almost all of the teachers interviewed (6 of 8) when asked about students who were difficult to engage; the two teachers who did not mention appearance concerns spontaneously both acknowledged such concerns to be a significant issue when questioned specifically. In fact, these two teachers proceeded to discuss appearance concerns at length, often returning to these issues without further prompting. Concerns about hair, makeup, and looking their best repeatedly emerged as a perceived barrier to getting the girls to participate fully.

> Elaine: They won't even leave the changing rooms half the time without kind of doing their hair, checking their lipstick […] it's all about what they look like, because they don't wanna get sweaty, don't wanna tie their hair up, don't wanna wear clothes that aren't, you know, that don't make them look attractive.

> Rebecca: Trying to get them even into kit is a struggle, just because [sighs] they don't want to do it, it's not, they're more interested in doing their hair or boys or makeup and things like that.

This explicit reference to interest by Rebecca reflects the restrictive nature of girls' interest in their appearance and how this is linked with reduced personal interest in physical activity. Sweat also emerged as an important concern for the girls, and the discussion of this by two of the teachers demonstrates the role of sociocultural pressures on girls' concerns about their bodies, as an indirect influence on their participation in physical activity. One teacher discussed the current negative impact of the media on appearance concerns among the girls, whereas the other discussed the potential that altering media content could have for reducing these concerns.

Karen: [on the main challenges of being a PE teacher] At the moment, the media is having quite an impact, and the social networking, the impact of body image through that. It's a little bit frustrating when the girls are like, "miss, I'm starting to sweat", and I'm like, that's normal, that's great, that's really positive girls, you shouldn't be freaking out by it, and, yeah, so those impacts of things like Hollyoaks

Hannah: Show more, I don't know, women's basketball, on telly, see them sweaty. And […] [laughs] then the girls would see that that's normal.

Crucially for the research's interest in disengagement, appearance concerns were associated by the teachers with sub-maximum effort from the girls, with one teacher referring to a discussion she had recently had at a parents' evening.

Vicky: I said she doesn't try as hard, and her dad was like, well why not, and she says 'because I don't want my makeup to run'. And that was a genuine reason as to why she doesn't put in as much physical effort.

These concerns over appearance seem to be based on anxiety about others' evaluation of them, rather than being rooted in an intrinsic desire to look attractive. Vicky explicitly elaborates on this, describing the girls' participation in athletics as inhibited by the imagined gaze of their male counterparts.

Vicky: Sprinting, they won't go as fast as they can, because they're worried about what they look like. It's been quite difficult the last few years because we've only had small fields so we've had girls' and boys' groups on the fields quite close to each other, and the hundred metre track cuts right across the middle so they're worried that like all the boys are sat there watching them. They're not, but that's what they're paranoid about. […] They don't like being watched.

Adjustments to PE uniform rules. Allowing adjustments to the students' PE uniform was the main method discussed by teachers for reducing students' appearance concerns. In teachers' discussions of uniform rules, a dislike of the kit in particular was highlighted as being a potential barrier to engagement, and alterations to the uniform were thought by the teachers to have had positive effects on engagement. The adjustments established as popular were ones that made the girls more 'comfortable',

either enabling them to cover up or reducing the perception of how unattractive the kit made them appear.

> Hannah: Since we've been allowing girls to wear leggings, that's improved like the engagement, I think. [...] They don't have to shave their legs, and it's as simple as that [laughs]

> Karen: When I first came in here, it was white t shirts and the girls didn't feel comfortable, so we've changed that to dark navy.

> Hannah: The dance girls, they wear tight fitting tops, black, and they're really happy, and all of them will bring that. So I think maybe if the polo shirt was tailored, or the rugby shirt was a girls' rugby shirt…

> Max: People don't feel comfortable you know, so the girls want to wear trousers, not the skorts or shorts that the girls when they're younger don't mind wearing, they don't wear t-shirts, they wanna wear hoodies, and various things to cover themselves up a bit more, and I don't really want to put that barrier in their way, I want them to just sort of take part. So I'm less of an ogre, the older they get. And they realise that, I think, they appreciate that. I think if I was more strict then I think we'd have less children taking part and less children active.

In the last quote, a head of department links a relaxation of the dress code for older students with increased participation among this group, demonstrating an increased consideration of girls' body image concerns as they move through the school. This corresponds with the trajectory that many teachers discussed, with girls in particular dropping out of PE as concerns over their body image increase.

PE uniform was the only method most teachers discussed using to make the girls more comfortable and reduce their appearance concerns. Although several teachers expressed frustration at the girls' concern with their hair and makeup, only one teacher discussed actively attempting to minimise the girls' concerns.

> Hannah: I make a point not to wear makeup, because I don't think it helps them.
> Int: It kind of, that's the example that you're giving them?
> Hannah: Yeah, and I say, look, I've not got any on, you look beautiful without it on, come on let's go, it doesn't matter.

Here, Hannah models self-confidence without makeup and attempts to give the girls positive affirmation of their attractiveness without it, in order to reduce the

negative impact she thinks it might have on their engagement with PE and with their feelings about themselves generally.

4.5. Discussion

This research was designed to yield insights into PE teachers' perspectives on student disengagement and on the practices currently implemented by these teachers and their departments to increase engagement in PE among students. PE teachers' views on disengagement fell into four broad categories (lack of interest, sociocultural influences on interest, low confidence and competence, and appearance concerns), and teachers also discussed relationships between these influences on motivation. Personal interest and appearance concerns were both considered to be influenced by sociocultural pressures, and confidence and competence were perceived as being reduced by less interested students' lack of out-of-school sports experience. The practices teachers employed specifically targeted these issues, by providing choice and variety, challenging stereotypes, building confidence and adjusting PE uniform rules (Figure 1).

These insights into sociocultural pressures and their influences on adolescent girls' appearance concerns and on their engagement in PE are a key novel contribution of the research: teachers were able to take a broader perspective than the individual student and discuss patterns that emerged across the girls they taught, which has not been possible in previous qualitative work on the subject with adolescent girls (e.g., Yungblut et al., 2012). In their discussions of these factors, teachers drew upon constructs and ideas that are recognisable from objectification theory: both appearance concerns and social norms regarding women's participation in sport were conceptualised by teachers as stemming from sociocultural influences, such as the media, and developmental trends in self-objectification can be seen in teachers' emphasis on the increasing importance of appearance for the girls, and the girls'

Figure 1. Visual representation of themes relating to teacher perspectives on disengagement, and their relationships.
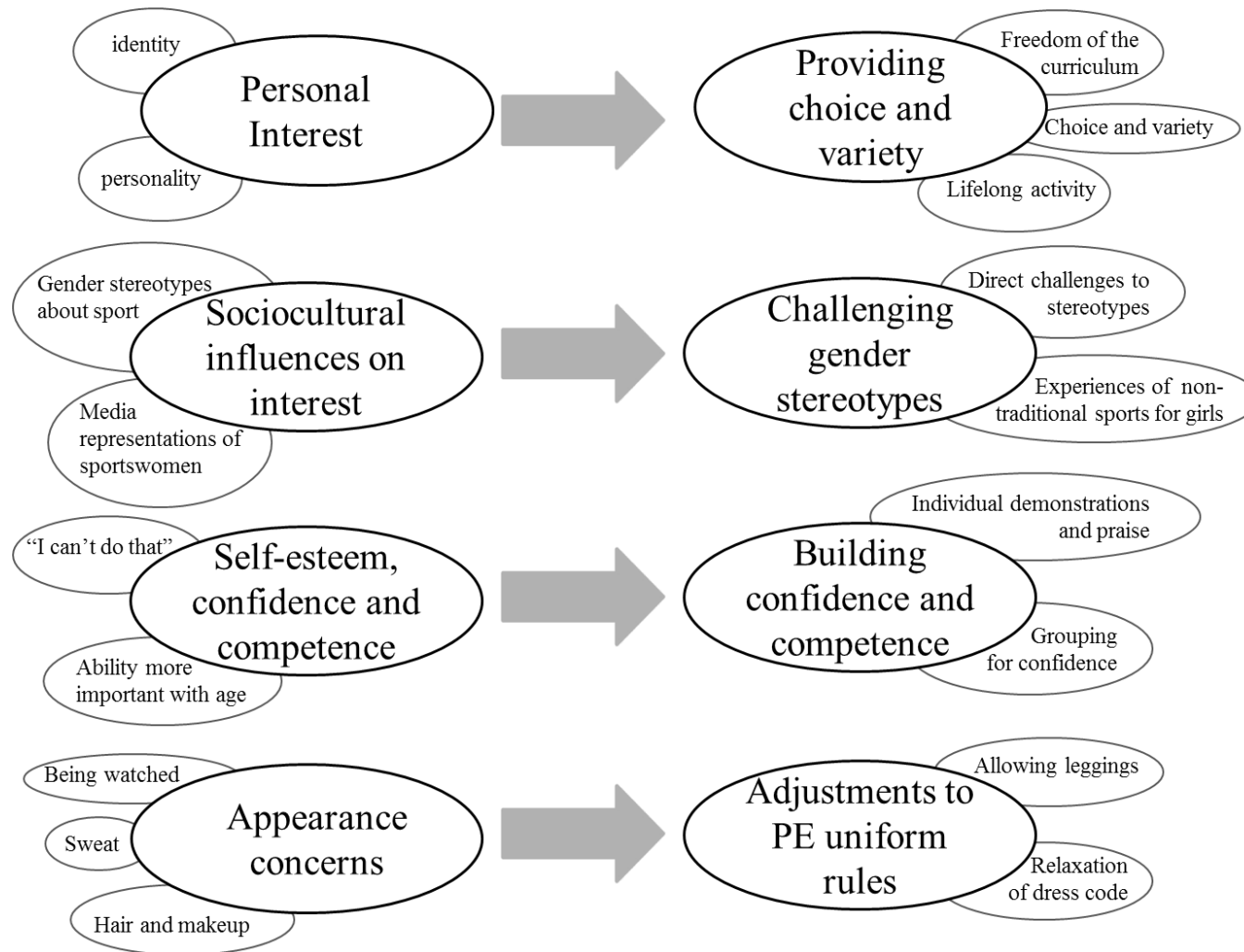
concerns over being observed while physically active. These issues of appearance importance and self-surveillance are crucial to objectification theory (Fredrickson & Roberts, 1997; McKinley & Hyde, 1996), and teachers' reference to them supports the findings of research with adolescent girls themselves (e.g., Olafson, 2002; Slater & Tiggemann, 2010). Furthermore, the association between self-objectification and reduced effort and engagement made by teachers echoes the recent work of Moffitt and Szymanski (2011) on objectifying environments, in which environments associated with greater objectification are thought to result in disengagement. In addition to discussing the influence of sociocultural factors on girls' appearance concerns, teachers were also keenly aware of social influences on girls' views and participation in sport and physical activity. PE teachers across the three schools were working hard to reduce these sociocultural effects, by giving girls a variety of non-traditional experiences, and by directly tackling stereotypes when they encountered them, but clearly understood the considerable cultural forces they were facing. Interestingly, teachers discussed both the potential for engaging in non-stereotypical activities (such as rugby) to break down stereotypes, and reinforced these stereotypes in their discussions of girls' reasons for exercise, focusing on appearance reasons and the value girls placed on these. This echoes Garrett's (2004) discussion of the paradoxical link between physical activity and gender norms: Garrett argues that physical activity has both the ability to reinforce cultural norms (by moving women closer to the ideal body) and to challenge gender stereotypes by allowing women to value different elements of themselves and enact traditionally masculine character traits, such as agency, power and competitiveness. Similarly, PE teachers in this research recognised both the transformative potential of sport and the culturally prescribed reasons for girls' engagement.

The teachers also experienced a subtly different paradox, in both negotiating and attempting to reduce the influence of sociocultural pressure on girls' interests. Teachers recognised the importance of considering their students' preferences and catering to individual interests, but also recognised the influence on these interests of cultural conceptions and representations of women's sport and physical activity. While teachers discussed the improvements to motivation from introducing traditionally feminine and popular activities for their female students, such as dance or Zumba, they also appeared to recognise that this could reinforce cultural norms for their students. Thus, teachers are faced with a challenge of providing activities preferred and enjoyed by female students (which may reinforce cultural norms), while simultaneously encouraging participation in less traditionally feminine sports, as these could be more beneficial in breaking down gender barriers to participation in the long-term. This challenge, of encouraging girls and women to engage in stereotypically masculine activities which may, in fact, be beneficial for them, is one faced in at least two other areas of education: in nursery, or preschool, where children demonstrate strong preferences for gender-typed play, but typically masculine play is associated with increased spatial abilities (e.g., Connor & Serbin, 1977; Raag, 1999); and in late secondary and higher education, where greater engagement in the stereotypically male domain of mathematics is associated with increases in women's earnings (e.g., Rose & Betts, 2001). Identifying the similarity between these situations means it is possible to draw from theory and research in one area to support advances in the others, a concept to be discussed in more depth in relation to the practical implications of these findings.

In addition to themes corresponding to the core constructs of objectification theory, it is also clear that the teachers conceptualised disengagement and motivation in PE in a manner consistent with self-determination theory (Deci & Vansteenkiste, 2004).

The two practices most strongly emphasised across all three schools were those of choice and variety, and building competence and confidence, and these clearly relate to the promotion of the basic needs of autonomy and competence. This correspondence between PE teacher perspectives and the broad tenets of self-determination theory provides further support for this theoretical framework within an educational context and for its relevance in the physical education class specifically. Furthermore, practices relating to choice and opportunities for improving competence are represented as key criteria for successful interventions improving girls' engagement in PE (e.g., Felton et al., 2005) and in girls' own reports of engagement and motivation in PE (Gibbons & Humbert, 2008; Yungblut et al., 2012), and so it is positive to see teachers recognising the importance of these factors. Teachers' emphasis on these factors may also be representative of a shift within British PE teaching towards a 'Sport Education' model, which involves students taking more responsibility for their own learning as well as being offered more choice in activities, compared to traditional multisport activity programmes (Kinchin, Penney, & Clarke, 2001; Kirk, 2004).

Although teachers spontaneously discussed two elements of self-determination theory, only one teacher discussed the importance of relatedness, the need to feel meaningful connections with and support from others, in the context of improving engagement and, interestingly, in reducing body image concerns. Teachers discussed their own relationships with students in positive terms, but there was little consideration in their discussion of disengagement or their practices of students' relationships with one another. This suggests that, within an educational context, relatedness is not as salient a factor for teachers as autonomy and competence. For adolescent girls, however, friendship and relatedness are critical factors that influence their motivation for physical activity and education: unsupportive groups or classes are associated by girls with lower

interest and performance (Gibbons & Humbert, 2008), whereas working with friends is highlighted as a factor that could override the importance of competence in participating in physical activity (Yungblut et al., 2012). These results highlight a potential gap in teachers' consideration of their students' psychological needs.

In addition to providing theoretical insight, considering the practices and perspectives of these particular PE departments has important practical implications: all three schools had excellent participation rates in PE and, as one teacher described it, "pumped up" extra-curricular programmes for physical activity and sport. By considering these high achieving PE departments, it is possible to able to identify potential forms of 'best practice', to inform other teachers and departments seeking to improve participation. How teachers conceptualise and tackle disengagement in schools which are successful at engaging the majority of their students could provide valuable insight for teachers and departments who are currently struggling to achieve this.

The importance of choice emerged across all three schools, with all departmental structures offering students choice in activities at least once a year. Two of the schools ran entire pathways for students to choose between, and teachers associated these with gains in participation year on year. It would appear that choice in activity is a critical element of increasing engagement in PE class, and this is supported by previous intervention work, which has found that offering choice in activities results in improved intrinsic motivation and engagement (Prusak, 2000). Interestingly, the majority of teachers discussed choice at a departmental level: the heads of department had implemented school-wide 'pathways', and this was strongly associated by the teachers with improved engagement. However, previous research (Mouratidis et al., 2011) has shown that offering choice *within* lessons, by allowing students to choose their own rate of progress and the order they do activities, can also have an impact on motivation and

enjoyment. Thus, PE departments may find it beneficial to encourage choice at both a 'pathway' level and within individual classes.

The themes that teachers generated and the time dedicated to them suggest that PE teachers primarily focus on offering choice to their students and on tackling issues of confidence and competence within their classes. The missing discussion by teachers of the importance of peer relationships in promoting engagement however suggests that teachers may need to be reminded of the importance of these for their students. Indeed, a key feature of the Sport Education model's success, for girls in particular, is identified by Ennis (1999) as the change in how students relate to one another: for skilled students, less able members of the class become their pupils and their responsibility, rather than obstacles to be avoided in a competitive game; for the less able members of the class, they are supported in becoming more skilled at the particular activity. Thus, even though it is not recognised by the teachers involved in these interviews, improving student relationships may also be an important element of improving PE engagement, and one that teachers do not consider as intuitively as choice or confidence.

Teachers' discussion of appearance concerns and strategies they found successful at reducing them also offers insight for other schools seeking to improve engagement among their female students in particular. Teacher practices relating to PE focus primarily on making sure the girls are 'comfortable' in their PE uniform: the addition of leggings as an option for PE uniform was highlighted by teachers as significantly reducing girls' resistance to participation in PE. Furthermore, although uniform is frequently discussed as a critical component of improving behaviour in schools (e.g., Gursky, 1996), one teacher linked their school's success in engaging girls in physical activity to the relaxation of the dress code for the older years. Schools seeking to improve girls' participation rates in PE should consider introducing more

flexibility for the girls, in order to allow them to reduce the attention they feel is placed on their bodies.

PE uniforms have been highlighted repeatedly in previous research as a key issue for girls (e.g., Flintoff & Scraton, 2001) and it is encouraging to see this being tackled by teachers with an awareness of the pressures girls face, both in terms of feared objectification by others and self-objectification and valuing appearance. However, given the strong sociocultural influences on body image discussed both by the teachers and in wider literature (see Grabe, Ward, & Hyde, 2008, for a review), broader interventions may be needed. Research suggests that the effects of objectification on women last beyond exposure to the particularly objectifying situation (Quinn, Kallen, & Kathey, 2007). Thus, while it is helpful for teachers to ensure that girls do not experience objectification, or self-objectification, in PE, the cultural milieu of high profile sexualised and idealised women's bodies in which these girls experience the rest of their lives (Fredrickson & Roberts, 1997) may still influence them within the PE class and other physical activity environments. In order to tackle the influence of body image on participation in PE, interventions may be needed on a larger scale than altering PE kit regulations, such as a school-wide positive body image programme or programmes aiming to reduce objectification among students.

In addition to competence building and PE kit alterations, these findings also raise the possibility of interventions targeting girls' engagement in PE by challenging the stereotypes and sociocultural pressures associated with physical activity for girls. The teachers were clear in their lack of tolerance for stereotypes regarding activities among their students, but their discussion of the wider social pressures influencing their students suggests that they may need support in challenging these views among students in the form of interventions specifically targeting these stereotypes. Such work could

draw from body image interventions based on media literacy training, which seek to demonstrate the influences of the media on body image to girls and women in order to help them actively challenge and resist them (see Levine & Murnen, 2009, for a review). Adaptations could consider the media representation of sportswomen and physical activity for women in general, in order to assist girls in recognising the cultural influences which may prevent them from accessing a sport in which they have true interest.

This idea of explicitly teaching girls about stereotypes and their influence is supported by work on stereotype threat, which investigates the impact of negative stereotypes on women's performance and motivation in mathematics. Recent research suggests that explicitly teaching participants about the negative stereotypes they are exposed to, and the influence of these, can reduce their effects (Johns, Schmader & Martens, 2005). Interestingly, other methods which have been identified as means to reduce stereotype threat among women, such as positive role models and same sex environments (Inzlicht & Ben-Zeev, 2000; Marx & Roman, 2002), actually mirror practices that teachers associated with increasing motivation among their female students (i.e., Max's discussion of single sex groups; Hannah's discussion of the importance of positive media role models). Future interventions to improve girls' participation in PE may therefore find it beneficial to consider this area of research, in order to address the issues of stereotypes and demotivation.

In addition to explicit education-based interventions, research on encouraging cross-gender activity in another area also suggests potential means of encouraging female students to try new activities, which are perhaps traditionally male. When Daniel discusses his female students' enjoyment of the rugby lesson, he is not explicit in describing how they successfully engaged the girls. However, from his description of

their response ("What was that?"), it is clear that they did not explicitly describe the activity as 'rugby', thus avoiding the strong gender stereotypes associated with this sport. Research into encouraging cross-gender play among nursery school children provides support for this style of introducing activities in a gender-neutral manner: introducing toys to children as 'for boys' or 'for girls' (sex-stereotyped) subsequently resulted in greater gender-typed play; introducing toys in a non sex-stereotyped way resulted in equal levels of play from boys and girls, even when the toys used had previous gender associations (trucks and dolls; Serbin, Connor & Iler, 1979). Therefore, even though adolescents are likely to already know the majority of sport-related stereotypes, introducing typically gendered activities, such as rugby, without labels and without sex-stereotyping may have potential for increasing girls' cross-gender involvement in sport.

In spite of these insights, the research is limited to some extent by the sample of schools involved. Not only were these schools high in PE engagement, they also had middle class catchment areas, indicated by their low levels of children receiving free school meals (all below 15%). It is likely that schools with lower socioeconomic status (SES) catchment areas will face different challenges to engaging their students and may find success with different techniques. The challenges of engaging girls in particular may be fundamentally different in lower SES schools; Azzarito and Solomon (2005) discuss the importance of considering intersectionality in PE, the interplay between class, race and gender, when examining disengagement. In lower socioeconomic status areas, it may be that sociocultural pressure regarding gender norms and cultural ideals is experienced more strongly by adolescents. The teacher who discussed strong sociocultural norms against girls' involvement in sport linked this to her own experiences at a 'rough' school (Sarah), and research from self-determination theory

suggests that young adults from materially deprived backgrounds are more likely to internalise culturally endorsed, extrinsic goals, such as financial success (Kasser, Ryan, Zax, & Sameroff, 1995). Perhaps in these neighbourhoods, where social and cultural capital is more difficult to come by, adolescents orientate towards sources of social capital indicated by popular cultural messages, such as material wealth, or cultural standards of attractiveness. Thus, future research should consider these issues in a wider range of schools, and explicitly consider the different challenges faced by schools with lower socioeconomic status catchment areas.

A second issue, regarding the study's contribution to understanding of 'good practice' in PE, relates to concerns about causality. The schools in this study are highlighted as 'good PE schools' and teacher practices were examined that potentially contribute to this; however, previous research suggests that the school environment can strongly influence teachers' choice of teaching and motivational strategies. Interviews by Taylor et al. (2009) found that PE teachers' use of autonomy-supportive strategies, such as offering choice in activity and progression, was restricted by work-related pressures such as a school focus on student assessments and progress, pressures to adopt common methods, and time constraints. Further work has found that motivational strategy choice is influenced by teachers' own need satisfaction, which may be frustrated by a controlling work environment (Taylor et al., 2008). Issues such as student disengagement and poor student behaviour may, in fact, be causal influences on PE teaching practices, as opposed to the outcomes. Longitudinal research at a broader range of schools would enable a consideration of these processes and their directions.

The work reported here provides a robust foundation for pursuing these important research objectives. This research aimed to provide insight into how PE teachers conceptualise disengagement and the practices they use to promote motivation

and engagement among their students. These results suggest that teachers conceptualise disengagement in a manner consistent with self-determination and objectification theories, and that interventions tackling these issues may be well-received by teachers.

Chapter 5:

Experiences of self-objectification in Physical Education: Associations with motivation and enjoyment in adolescent girls

Experiences of self-objectification in Physical Education: Associations with motivation and enjoyment in adolescent girls

5.1. Abstract

Girls experience greater decreases in engagement in physical education and activity than boys over the course of adolescence. This study explores the possibility that there may be individual differences in girls' experiences of school PE as an objectifying environment (Moffitt & Szymanski, 2011), and employs the construct of regulation from self-determination theory to examine the mechanism through which these experiences negatively influence girls' PE engagement and enjoyment and their body image. Six-hundred-and-ninety-one girls (aged 12 – 14) from 4 UK schools completed questionnaire measures assessing their perceptions of the PE environment, PE engagement and enjoyment, body image, regulation of behaviour in PE, and self-objectifying thoughts in PE. Body commentary from other students was associated with self-objectifying thoughts in PE, and thus with girls' body image, and PE engagement and enjoyment. Teacher gender bias was negatively associated with identified regulation in PE, and therefore with lower PE engagement and enjoyment. In contrast, opportunities for skill learning and lifetime activities were associated with greater identified and intrinsic regulation and thus better PE outcomes. Self-objectifying thoughts were associated with external, introjected and intrinsic regulation, and intrinsic regulation mediated their association with PE engagement and enjoyment. These findings are discussed in relation to their theoretical implications for the integration of objectification theory and self-determination theory, their practical implications for PE professionals, and future directions for research into the PE environment.

5.2. Introduction

Physical education (PE) has been highlighted as an important foundation for future exercise engagement, with motivation in, and enjoyment, of PE strongly predicting leisure time physical activity in adolescence and beyond (Moreno-Murcia & Huéscar Hernández, 2012; Shephard & Trudeau, 2000; Standage, Gillison, Ntoumanis, & Treasure, 2012). However, girls in Western countries, such as the US, UK, and Australia, demonstrate a significant downward trajectory in both engagement in, and enjoyment of, PE classes over the course of secondary education, a trend not replicated among their male counterparts (Cairney et al., 2012; Quick, Simon, & Thornton, 2010). Furthermore, girls in these countries show a similar trend in physical activity in general, with steep declines between the ages of 11 and 15 years (Australian Bureau of Statistics, 2012; Brooks, Magnusson, Klemera, Spencer, & Morgan, 2011; Freeman, King, & Pickett, 2011). Given the importance of physical activity for mental and physical health, both in adolescence and beyond (Babiss & Gangwisch, 2009; Berlin & Colditz, 1990; Brand et al., 2010; Petty et al., 2009; Siscovick, Laporte, & Newman, 1985), understanding and eventually reversing this trend is an important public health issue.

Conceptualising girls' disengagement from physical education as a motivational issue allows us to draw on motivational theories to explain it. Self-determination theory (SDT, Ryan & Deci, 2000) provides an overarching framework of human motivation which may help to explain why individuals become demotivated. Motivation for behaviours can be internalised to varying extents, and self-determination theory proposes that the more the regulation of a behaviour is internalised, or the motivation for it stems from within the self, the more likely an individual is to engage in that behaviour, and the better the consequences for their well-being (Ryan & Deci, 2006). Within self-determination theory, the regulation of behaviour can range from

amotivation, where an individual does not see any point to the activity at all, to fully

self-determined intrinsic regulation, where an individual engages in the behaviour due

to their enjoyment of the activity itself. Between these two extremes, individuals may

also engage in a behaviour due to external regulation (to avoid punishment or for

external rewards), introjected regulation (to avoid feeling bad about themselves if they

do not), or identified regulation (where they value the benefits of the behaviour). More

self-determined regulation, such as identified or intrinsic regulation, has more positive

consequences for behaviour: in the case of exercise in general, identified and intrinsic

regulation are associated with higher levels of physical activity, and with long-term

persistence with leisure time physical activity (Gillison, Standage, & Skevington, 2011;

Pelletier, Fortier, Vallerand, & Briere, 2001). In physical education, self-determined

regulation regarding PE has been associated with enrolment in non-compulsory physical

education (Lodewyk & Pybus, 2013; Ntoumanis, 2005), as well as with greater effort

and higher levels of physical activity within compulsory classes (Taylor, Ntoumanis,

Standage, & Spray, 2010; Ullrich-French & Cox, 2009; Zhang, 2009). As well as

increased engagement, self-determined regulation also predicts greater enjoyment of

physical education classes, and more experiences of positive emotions and vitality

within them (Mouratidis, Vansteenkiste, Sideridis, & Lens, 2011; Ullrich-French & Cox,

2009; Vlachopoulos, 2012; Zhang, 2009).

Self-determination theory suggests that self-determined regulation can be

fostered by a need-supportive environment: environments which support students' basic

psychological needs of autonomy (the feeling of volition and choice), competence (the

feeling of self-efficacy), and relatedness (the feeling of connectedness to others), are

more likely to promote self-determined regulation of behaviour within them (Niemiec &

Ryan, 2009). In contrast, environments which frustrate students' needs will result in

higher levels of controlled regulation, and therefore less engagement in the activities within them. Research with secondary school students has provided considerable support for this proposed sequence of events: longitudinal work has shown that declines in student motivation between age 10 and 15 are due in part to reduced perceptions of teacher support and declines in competence and relatedness satisfaction (Ullrich-French & Cox, 2014). Furthermore, classes focused on satisfying students' needs for autonomy and relatedness result in more self-determined regulation for students, and consequently greater vitality and interest-enjoyment of that PE class, than 'standard' lessons (Mouratidis et al., 2011).

Evidence for the importance of satisfying these needs can be seen beyond self-determination theory research, and in the body of work on girls' experiences of PE: in qualitative interviews, girls repeatedly emphasise the importance of opportunities for learning the skills associated with sports (competence), the ability to work with friends (relatedness), and choice in activities (autonomy) within the PE environment (e.g., Gibbons & Humbert, 2008; Yungblut, McGannon, & Schinke, 2012). Evaluations of school-based interventions to improve girls' levels of physical activity further highlight the importance of the teaching of sport-specific skills and activity choice for these programmes' success (e.g., Felton et al., 2005). It is possible, therefore, that student engagement and enjoyment in PE could stem from how well their needs for autonomy, competence, and relatedness are met in their PE classes, and the resulting impact of this on their regulation of behaviour. Self-determination theory appears to suggest that the declines in motivation discussed earlier in girls' motivation may be due to differences in how the PE environment supports their basic psychological needs and intrinsic motivation for PE.

Although self-determination theory can explain the potential mechanisms behind girls' disengagement, from reduced identified and intrinsic regulation, it does not provide a clear explanation for *why* girls experience a different PE environment compared to boys, often within the same physical environment and with the same, supportive or unsupportive, teacher. However, moving from the mechanics of individuals' motivation to a broader consideration of Western culture may provide an explanation of this specifically gendered phenomenon. The oft-cited and concerning statistics regarding declines in girls' participation in physical activity over adolescence occur in tandem with another developmental trend: girls' satisfaction with their bodies decreases significantly during adolescence and incidences of disordered eating behaviours increase (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013; Patton, Selzer, Coffey, Carlin, & Wolfe, 1999). These two trends may, in fact, be linked: girls frequently raise the issue of appearance concerns and fear of being watched in relation to their participation (or not) in physical activity and education (Flintoff & Scraton, 2001; Slater & Tiggemann, 2010; Yungblut et al., 2012). Objectification theory (Fredrickson & Roberts, 1997) offers a theoretical framework within which to explain this association, and the initial downward trend in body image among adolescent girls. According to this theory, women and girls are socialised by culture to view themselves as external observers, prioritising appearance over other bodily and personal attributes, through sexually objectifying interactions with others and through idealised representations of women's bodies in the media. Crucially, from a developmental viewpoint, as girls' bodies change and develop through puberty, they experience an increase in objectifying experiences, from both peers and adults, and these increased interpersonal experiences of sexual objectification by others serve to impress upon girls the fact that their body is for the visual entertainment of others, rather than their own

use. In turn, this results in the post-pubertal increases in self-objectification found among adolescent girls, and, consequent increases in body image disturbance (Lindberg, Grabe, & Hyde, 2007; Slater & Tiggemann, 2012).

However, most relevant to discussions of physical education and activity is self-objectification's ability to disrupt women's cognitive focus and their ability to achieve peak motivational states, sometimes referred to as 'flow' (Fredrickson & Roberts, 1997; Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998). Women higher in self-objectification are less aware of how their bodies feel, less responsive to their bodies, and are less likely to be absorbed in a physical task (Impett, Daubenmier, & Hirschman, 2006; Tiggemann & Kuring, 2004; Tiggemann & Slater, 2001). The impact of this disruption can be seen in poorer performance on a throwing task for 8- to 15-year-old girls who scored more highly on a combined measure of trait and state self-objectification (Fredrickson & Harrison, 2005). Girls who are experiencing either immediate or chronic self-objectification may therefore experience more difficulties in fully engaging with activities in PE class, due to concerns over their observation by others.

In physical education class, where the body is the focus of activity, and students may be wearing clothing more revealing than their usual uniform, girls may be more likely to experience *state* self-objectification than boys. Indeed, in addition to being higher in trait levels of self-objectification, women are also more likely to experience *state* self-objectification than men, which is likely to occur in situations which make salient the gaze or others, or of appearance in general, such as unscrambling appearance-based sentences (Roberts & Gettman, 2004) or wearing a swimsuit, as opposed to a sweater (Fredrickson et al., 1998). Physical activity has also been highlighted as having the potential to induce a state of self-objectification: participants

who engaged in an exercise activity reported more self-objectifying thoughts during the task, compared to those in a sedentary activity control group (Wolfe, 1998). Crucially in relation to enjoyment and engagement in physical education, participants who experienced more objectifying thoughts during the activity also reported more negative affect afterwards. Girls who experience greater state self-objectification may therefore not only perform worse and disengage from physical education, but may also experience negative emotional consequences.

Recent developments in objectification theory, specifically the expansion of the theory to discuss objectifying environments (Moffitt & Szymanski, 2011; Moradi, 2011), may further assist us in understanding why girls might experience state objectification in PE. Originally developed from consideration of women's experiences in appearance-focused restaurants in the United States, such as Hooters, this work focuses on the elements of particular environments which result in increased state objectification within them. Moffitt and Szymanski (2011) set out five key criteria for an objectifying environment: in such an environment, a) traditional gender roles exist, b) women's bodies are more salient and more attention is drawn to them, c) there is a high likelihood of male contact, d) there is a power imbalance in favour of males, and e) the male gaze is approved or encouraged. Notably, the key consequences of such environments identified by Moffitt and Szymanski (2011) are increased body surveillance in the environment, more negative body image, and disengagement from that environment and activities within it. Although seemingly a world away from a Hooters restaurant, feminist critiques of PE and detailed reports of girls' experiences in PE suggest that, for some girls at least, the PE class may meet the criteria for an objectifying environment (Garrett, 2004; Wright, 1996).

In the case of gender roles, the characteristics of a successful athlete, such as agency, power and strength, are still constructed by society as male (Choi, 2000), and physical activity and its associated consequences, such as sweat and muscle development, are seen as unfeminine (Garrett, 2004; Krane, Choi, Baird, Aimar, & Kauer, 2004). In a PE class, or any other physical environment, there may be strong gender norms and expectations regarding participation and skill, with girls expected to be less competent and less engaged (Garrett, 2004; Wright, 1996). Work by feminist critics also highlights the power imbalance resulting from the combination of a sports-based curriculum for PE and boys' greater socialisation in physical activity, in comparison to girls (Wright, 1996; Garrett, 2004). In a mixed PE class, this combination allows boys to dominate the games, reducing girls' chances to be involved (Ennis, 1999; Wright, 1996). Furthermore, girls report frustration at the apparent favouritism often shown to boys by the teachers: in interviews, girls complained of their choices of activities being disrupted by the boys in their class refusing to participate, whereas they were never allowed to opt out of the boys' choice of activities (Gibbons & Humbert, 2008), demonstrating a differential in each gender's control or power over the class.

With respect to an increased focus on the body, PE is certainly the school subject most susceptible to this problem, as the body is the centre of the activity. Specific PE uniforms, frequently the source of complaints from students (Flintoff & Scraton, 2001; Gibbons & Humbert, 2008), may also result in increased focus on girls' bodies, as they may reveal more than the standard school uniform and highlight differences between students' bodies more starkly. In PE classes which do meet these criteria, girls could therefore be expected to experience the negative consequences outlined by Moffitt and Szymanski (2011): increased objectifying thoughts within that

environment, increased body image concerns, and reduced engagement and enjoyment of PE.

From objectification theory, there is a potential process through which some girls may come to experience the PE environment as objectifying: to the extent that girls perceive their class as heightening focus on their bodies, and as affording boys greater power, it is likely that they will experience greater self-objectification within it. These findings can be integrated with those of work using self-determination theory, by conceptualising regulations as one potential mechanism through which objectifying class environments influence girls' participation in PE. Previous research integrating sociocultural perspectives on women's body image and self-determination theory has suggested that women who have more strongly internalised cultural pressures regarding their body and appearance, such as the thin-ideal, experience less self-determination when engaging in body-related behaviours, such as eating regulation or exercise (Pelletier & Dion, 2007). It could therefore be anticipated that an objectifying PE environment will result in girls becoming more controlled in their regulation. However, no previous work has investigated the potential for self-objectifying experiences in PE classes, or how these experiences may be associated with girls' autonomous motivation within them, and thus with their engagement and enjoyment.

The Present Study

The present work sought to investigate the dual processes of regulation of activity and self-objectification in PE, and how these may link girls' perceptions of the PE environment to their body image and engagement in, and enjoyment of, PE. A quantitative measure for assessing two elements of Moffitt and Szymanski's (2011) objectifying environments, power imbalance and focus on the body, was developed, by considering perceptions of gender bias in teachers' behaviour and frequency of body-

focused comments from other students. These elements of the environment were contrasted with positive factors raised as important in the previous literature on girls' engagement in PE: skill learning opportunities and activities which girls would participate in later in life (Felton et al., 2005).

It was predicted that the girl-friendly PE factors of skill learning and lifetime activities would be associated with greater PE engagement and enjoyment, via increases in self-determined (identified and intrinsic) regulation. In contrast, objectifying environment factors of gender bias and body commentary were predicted to be associated negatively with body image, and with PE engagement and enjoyment, via self-objectifying thoughts. Finally it was predicted that self-objectifying thoughts would be associated with PE engagement via higher levels of controlled (external and introjected) and lower levels of intrinsic regulation.

5.3. Method

Participants

Four schools were involved in the research project (see Table 1 for school characteristics and samples). Three schools provided girls from school years 8 and 9 (ages 12-14; $n = 274$, $n = 62$, and $n = 209$), whereas the fourth provided only girls from year 8 (ages 12-13; $n = 146$). The total sample therefore included 691 girls, with 428 students in year 8 and 264 students in year 9. The majority of students took part only in single sex PE lessons (514 students, 74%); students at School 1 took part only in single sex PE lessons in the year groups participating in the research and two of the other schools had students in single sex groups with the exception of one group in each year (Schools 3 and 4). In the remaining school (School 2), students took part in mixed PE lessons once a week and single sex sessions once a week.

Table 1. School Characteristics and Sample Sizes.

	Age range	Student numbers	Specialism	Percentage children receiving free school meals	Ofsted Rating*	Students participating in the research (*n*)		
						Year 8	Year 9	Total
School 1	11-16	1640	Sports	10.3	2 (2013)	137	137	274
School 2	11-16	560	Arts	8.4	1 (2011)	37	25	62
School 3	11-16	1170	Technology	23.0	3 (2013)	108	101	209
School 4	12-16	1440	Business & Enterprise	9.9	2 (2010)	146	0	146

Notes. * Overall effectiveness ratings from Ofsted: 1 – Outstanding, 2 - Good, 3 – Requires Improvement (Satisfactory prior to 2012), 4 – Inadequate. Date of most recent report given in brackets.

Procedure

Physical education departments were approached regarding involvement in the research. At interested schools, the head teacher's consent was obtained in order to conduct the research. Parents were informed via letters sent home a minimum of a week in advance of the research, and had the opportunity to withdraw their children from participating, and to request more information on the study from the research team. Children were given their own information sheet to explain the research to them at the testing sessions. The researchers also went through this information verbally with the students, emphasising that they did not have to take part in the research if they did not want to, that they could skip any question they wished in the questionnaire pack, and that they could stop working on the pack at any time. In three of the schools, students completed the questionnaires during class time (either physical education or personal and social education) supervised by the research team and their teachers. In the

remaining school, participants completed the questionnaires at home and returned them

to the school within one week. The sessions in schools lasted approximately 45 minutes,

with the questionnaire taking approximately 30 minutes in total to complete. The ethics

committee of the University approved all consent procedures, materials and debriefing

procedures, and the research conformed to APA and BPS ethical standards.

Measures

The full set of items contained within the student questionnaire can be found in

Appendix E.[19] Table 2 provides means and standard deviations for each variable of

interest, by school and year.

PE Engagement and Enjoyment. Ten items were generated to assess PE

engagement and enjoyment, drawing upon previous work in the area (e.g., Mouratidis et

al., 2011). These differentiated between PE engagement, characterised by taking part

and not engaging in avoidant behaviours (e.g., excuses, skipping school), and PE

enjoyment, characterised by interest and enjoyment of PE classes. Students responded

to these on a four-point likert scale (*not at all true for me* to *very true for me*). In an

exploratory factor analysis using direct oblimin rotation, five items loaded onto the

enjoyment factor, and five onto the engagement factor, with all factor loadings

above .40 and no cross-loadings above .40 in the pattern matrix. One item ("I

sometimes skip school to avoid PE") was removed due to its low mean and standard

deviation, indicating that very few students engaged in, or were willing to admit to, this

behaviour ($M = 1.07$, $SD = 0.35$). These two subscales demonstrated good reliability

(engagement $\alpha = .81$; enjoyment $\alpha = .92$) and were positively correlated ($r = .62$, p

$< .001$).

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[19] In addition to the measures reported below, the questionnaire included two additional measures relating to self-objectification (adapted Self-Objectification Questionnaire, Noll & Fredrickson, 1998) and to physical activity outside of school (adapted Leisure Time Exercise Questionnaire, Godin & Shephard, 1985). Due to issues with comprehension by students with these specific scales, these measures are not included in the analyses presented below.

Table 2. Descriptive statistics for key variables, by school and year.

	School 1		School 2		School 3		School 4	
	Year 8	Year 9	Year 8	Year 9	Year 8	Year 9	Year 8	Year 9
Body commentary	1.94 (0.75)	2.11 (0.83)	1.69 (0.52)	2.23 (0.62)	1.99 (0.88)	2.25 (0.88)	2.17 (0.83)	n/a
Gender bias	1.92 (1.01)	1.63 (0.61)	1.59 (0.70)	2.11 (0.80)	1.95 (1.03)	1.98 (0.97)	1.79 (0.85)	n/a
Skill learning opportunities	3.18 (0.80)	3.40 (0.67)	3.61 (0.85)	2.90 (0.94)	2.80 (0.91)	2.67 (0.88)	3.39 (0.80)	n/a
Lifetime activities	2.78 (0.91)	3.03 (0.98)	3.42 (0.96)	2.72 (0.85)	2.39 (1.07)	1.92 (0.97)	2.76 (1.02)	n/a
Self-objectifying thoughts	2.59 (1.00)	3.17 (1.13)	2.52 (1.05)	3.13 (1.08)	3.19 (1.20)	3.22 (1.08)	3.10 (1.09)	n/a
External regulation	2.17 (0.79)	1.96 (0.79)	2.37 (0.74)	2.05 (0.87)	2.18 (0.85)	2.36 (0.70)	2.19 (0.85)	n/a
Introjected regulation	1.85 (0.68)	1.88 (0.78)	2.43 (0.72)	2.08 (0.72)	1.70 (0.64)	1.65 (0.69)	2.05 (0.69)	n/a
Identified regulation	2.89 (0.77)	3.00 (0.77)	3.43 (0.51)	2.91 (0.88)	2.47 (0.93)	2.13 (0.97)	3.02 (0.87)	n/a
Intrinsic regulation	3.00 (0.86)	3.08 (0.80)	3.35 (0.78)	2.92 (0.99)	2.36 (1.00)	2.05 (0.96)	3.00 (1.00)	n/a
Positive body image	2.32 (0.69)	1.98 (0.72)	2.25 (0.95)	2.04 (0.75)	1.89 (0.74)	1.97 (0.80)	2.08 (0.76)	n/a
Negative body image	2.21 (0.77)	2.47 (0.87)	2.31 (0.84)	2.48 (0.94)	2.61 (0.92)	2.61 (0.86)	2.47 (0.82)	n/a
PE engagement	3.61 (0.48)	3.63 (0.48)	3.75 (0.34)	3.64 (0.45)	3.26 (0.67)	2.99 (0.68)	3.57 (0.57)	n/a
PE enjoyment	2.89 (0.79)	2.82 (0.79)	3.11 (0.71)	2.76 (0.93)	2.35 (0.86)	2.11 (0.87)	2.95 (0.90)	n/a
Participation in extra-curricular sport/exercise	74.8%	66.7%	64.9%	72.0%	47.2%	45.5%	54.1%	n/a
Average number of sessions per week	3.87 (2.84)	3.56 (2.39)	2.65 (2.00)	3.57 (4.38)	3.15 (2.30)	4.21 (5.03)	3.84 (3.35)	n/a
Average desire to join club	2.26 (0.84)	2.38 (0.94)	2.67 (0.98)	2.14 (0.38)	2.24 (1.01)	2.00 (1.05)	2.63 (1.00)	n/a

Regulation of behaviour in PE. Behavioural regulation in PE class was assessed using items from the Perceived Locus of Causality scale (PLOC, Goudas, Biddle, & Fox, 1994), supplemented by additional items from the academic form of the Self-Regulation Questionnaire (SRQ-A, Ryan & Connell, 1989), adapted to physical education. Students completed 16 items, 4 for each of external, introjected, identified and intrinsic regulation, responding to the stem of "I take part in PE…" on a four-point likert scale (*not at all true for me* to *very true for me*). Example items are "so that the teacher won't yell at me" (external), "because I would feel bad about myself if I didn't" (introjected), "because I want to improve my abilities in PE" (identified), and "because PE is fun" (intrinsic). All four scales demonstrated good reliability (αs = .79, .74, .91 and .96 respectively).

Experiences and events in PE. From the qualitative literature on girls' engagement in, and enjoyment of, PE (e.g., Felton et al., 2005; Yungblut et al., 2012), and from the characteristics of an objectifying environment outlined by Moffitt and Szymanski (2011), 17 questions were generated to assess several key concepts identified across the literature: from objectification theory, gender power imbalance in PE classes (in the form of teacher gender bias), and body focusing events in PE classes (in the form of body commentary from other students); from the qualitative literature on engagement, lifelong activity in PE class, and skill learning in PE class. The scale focused on the gender bias and body commentary elements of objectifying environments as these had the strongest evidence and influence in the PE domain; these issues appeared most frequently in the qualitative research, and are viewed by participants as having a strong influence on their enjoyment of PE. Table 3 includes all items, loadings and reliabilities for the PE environment items. Exploratory factor analysis revealed these two objectifying environment factors, as predicted, and a joint

lifelong activity and skill learning factor.[20] However, given the potential for skill learning and lifetime activities to have different impacts on the outcome variables, these factors were assessed separately in the analyses. The two objectifying environment factors (gender bias and body commentary) had good reliability (αs > .70). The two items relating to lifelong activity in PE were strongly correlated ($r = .72$, $p < .001$); the two skills learning items were significantly correlated, but more weakly ($r = .24$, $p < .001$). Example items are "the girls make comments about how each other look in PE class" (body commentary), "the teacher treats the boys better than the girls" (gender bias), "we get a lot of time to learn new skills in class (skill learning opportunities), and "we do activities in PE that I will keep doing after I finish secondary school" (lifetime activities). Participants responded to these on a five-point likert scale (*never happens* to *always happens*).

Involvement in organised extra-curricular sport and exercise. Students reported whether they participated in extra-curricular sport or exercise clubs outside of PE. Students who did participate in clubs reported what types of activity they took part in and how many sessions they attended a week. Students who did not currently participate in extra-curricular activity were asked to rate on a four-point likert scale how much they would like to join such a club (*would not like to join at all* to *would like to join very much*).

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[20] Factor analysis also revealed a further factor, which was labelled 'teacher strictness', as it included issues relating to policing of PE kit rules, criticism in front of the rest of the class, and the use of individual demonstrations. This teacher strictness factor had poor reliability ($\alpha = .56$), and, given that it was not the theoretical focus of the paper, was therefore not included in further analyses.

Table 3. Factor loadings and reliabilities of the PE environment items.

Items	1.	2.	3.	4.
1. Body commentary $\alpha = .74$				
The boys make comments about the girls' bodies in PE class	**.72**			
The girls make comments about the boys' bodies in PE class	**.72**			
The girls make comments about how each other look in PE class	**.62**			
The boys make comments about how each other look in PE class	**.49**			
2. Gender bias $\alpha = .74$				
The teacher spends more time with the boys than with the girls		**.66**		
The teacher treats the boys better than the girls	.41	**.64**		.55
The boys get away with messing around in PE	.48	**.50**		
3. Skill learning/ lifetime activities $\alpha = .74$				
We get a lot of time to learn new skills in class			**.55**	
We spend a lot of time learning how to play sports before we do them in class			**.93**	
We do activities in PE that I will keep doing after I finish secondary school			**.42**	
We do activities in PE that I will probably participate in for the rest of my life			**.79**	
4. Teacher Strictness $\alpha = .56$				
The teacher makes comments on how students look				**.48**
The teacher makes us do individual demonstrations				**.46**
The teacher points out what we're doing wrong in front of the whole class				**.66**

Notes. Direct oblimin rotation, loadings from the exploratory factor analysis structure matrix. All loadings above .40 shown. Numbers in bold represent loading for the subscale the item is included in for further analysis.

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Self-objectifying thoughts during PE. Self-objectifying thoughts in PE were assessed using an adapted thought checklist from Wolfe (1998). This measure originally assessed self-objectifying thoughts in a sample of exercising young adult women; it was adapted to the age group of the study and to the PE context by altering several of the filler items, and adapting some of the body objectifying thoughts to make them more appropriate to a younger age group than the original college student sample of Wolfe (1998). Example items assessing self-objectifying thoughts in PE include "In PE class, I think about how my body looks" and "In PE class, I think about what other people think of my body". Participants responded to each statement on a five-point likert scale (*never think about this* to *always think about this*). Exploratory factor analysis of the full set of items (fillers and self-objectifying) indicated a factor comprised of the self-objectifying thoughts and one filler item, which focused on the discomfort of exercise. However, this item's loading was considerably lower than all other items (.49 vs. all others above .70), and was thus removed from the scale. The final items assessing self-objectifying thoughts had excellent reliability ($\alpha = .94$).

Body Esteem. Two factors of the Body Esteem scale (Mendelson, White, & Mendelson, 1996) were used to measure participants' body esteem: the appearance and weight subscales. Participants responded on a four-point likert scale (*not at all true for me* to *very true for me*). However, exploratory factor analysis revealed that the items loaded onto two subtly different factors, which were termed positive and negative body image (example positive item: "I'm pretty happy about the way I look"; example negative item: "The way I look upsets me"). The scales correlated significantly and negatively with one another ($r = -.64$, $p < .001$) and demonstrated good reliability (positive body image: $\alpha = .91$; negative body image: $\alpha = .86$).

5.4. Results

Overview of analysis

Initially, a series of ANOVAs was employed test the extent of differences between schools and the two year groups (year 8 and year 9), and to assess whether trends previously found in adolescent girls relating to declines in engagement and enjoyment were also present in the sample. A theoretically derived path model in MPlus 6 (Muthén & Muthén, 2011) was used to test the proposed relationships between the variables. In this model, features of the PE environment were modelled to predict experiences of regulation and self-objectification within it. These experiences were then modelled to predict the outcomes of positive and negative body image, PE engagement and PE enjoyment. By considering the indirect effects of the PE environment factors on engagement, enjoyment and body image, it was possible to consider the extent to which motivation and self-objectification in PE mediate these associations.

Year group and school differences

A series of ANOVAs were run on each of the PE and body image variables with school and year group as the between-subjects factors. Appendix F provides full details of all differences by school and year, but key results are presented below. There were significant school and year differences across the variables, in patterns consistent with the predictions about the relationships between these variables and with the existing literature. Across the PE variables, there was a general trend of decreasing enjoyment, engagement, identified regulation and intrinsic regulation with age: year 9 students scored lower on these variables than the students in year 8 (all ps < .05). Students in year 9 also perceived fewer skill learning opportunities, fewer lifetime activities, and more body commentary from students in PE classes. Students in year 9 had worse body image and higher levels of self-objectifying thoughts in PE (all ps < .05).

There were also differences between schools, again following the patterns expected among variables. School 3 was significantly lower than the other schools in engagement and enjoyment in PE, as well as in perceptions of skill learning opportunities and lifetime activities in PE, and introjected, identified and intrinsic forms of regulation; in contrast, students at this school had the highest levels of external regulation (all ps < .05). School 1 contradicted the overall trend of declining engagement and motivation in PE: students in year 9 did not have significantly lower levels of engagement, or identified and intrinsic regulation, than students in year 8 at this school (significant school x year interaction effects, ps < .05). Year 9 students at this school also had *higher* perceptions of skill learning opportunities and lifetime activities in PE, than those in year 8, contrasting the downward trend in the full sample.

Relationships between PE environment, experiences in PE and outcomes

To test the proposed relationships between these variables, a path analysis was conducted, with each construct represented by its scale mean. Descriptive statistics and zero order correlations for all variables can be found in Table 4. Whether students participated in extra-curricular sports and the number of sessions they participated in were included as covariates, due to previous research associating extra-curricular physical activity with both PE motivation and body image. Due to the differences between School 3 and the other three schools, outlined above, school was also included as a covariate, using dummy coding with School 3 as the reference category.

The four PE environment factors (gender bias, body commentary, skill learning opportunities, lifetime activities) were modelled as independent variables and correlated with one another and with the covariates. The PE environment factors then predicted all four regulations (external, introjected, identified, intrinsic), and self-objectifying thoughts in PE. Self-objectifying thoughts in PE predicted all four regulations, and both

self-objectifying thoughts and the regulations predicted the four outcome variables (positive and negative body image, PE engagement, PE enjoyment). The error terms of the four outcome variables were correlated with one another, as were those of the regulations.

This initial model fitted the data well ($\chi^2 = 49.90$, $df = 18$, $p < .001$; CFI = .99; RMSEA = .05; SRMR = .01). However, the modification index for the direct path from lifetime activities to PE enjoyment was particularly high (> 25), and thus this path was added to the model. The addition of this path significantly improved the model fit ($\Delta\chi^2 = 26.26$, $\Delta df = 1$, $p < .001$). Given the complexity of the initial model, it was deemed appropriate to improve its parsimony by removing non-significant paths from the model (any $p > .10$). Twenty paths were thus removed from the model, resulting in the model displayed in Figure 1. The removal of these paths did not significantly worsen model fit and the final model had excellent fit indices ($\chi^2 = 39.40$, $df = 37$, $p = .36$; CFI = 1.00; RMSEA = .01; SRMR = .02).

Among the PE environment factors, gender bias was positively associated with body commentary ($\beta = .40$), and negatively associated with skill learning ($\beta = -.18$) and lifetime activities ($\beta = -.18$). Body commentary was also negatively associated with skill learning ($\beta = -.11$) and lifetime activities ($\beta = -.09$). Skill learning and lifetime activities were positively associated ($\beta = .53$). Among the outcome variables, positive body image was negatively correlated with negative body image ($\beta = -.49$) and positively correlated with PE engagement ($\beta = .10$). Negative body image was negatively associated with PE engagement ($\beta = -.21$). PE engagement and enjoyment were positively associated ($\beta = .17$).

Table 4. Zero-order correlation matrix and descriptive statistics for variables in the path analyses.

	Mean (SD)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Body commentary	2.07 (0.82)	-														
2. Gender bias	1.84 (0.89)	.40*	-													
3. Skill learning	3.15 (0.87)	-.11*	-.18*	-												
4. Lifetime activities	2.67 (1.05)	-.09*	-.18*	.53*	-											
5. SO thoughts in PE	3.02 (1.12)	.49*	.27*	-.10*	-.14*	-										
6. External regulation	2.17 (0.81)	.10*	.11*	-.15*	-.21*	.18*	-									
7. Introjected regulation	1.88 (0.72)	.11*	-.00	.18*	.20*	.19*	.30*	-								
8. Identified regulation	2.79 (0.91)	-.09*	-.20*	.43*	.64*	-.15*	-.23*	.42*	-							
9. Intrinsic regulation	2.79 (1.00)	-.03	-.15*	.44*	.62*	-.18*	-.30*	.25*	.80*	-						
10. BE – positive	2.07 (0.76)	-.20*	-.18*	.16*	.22*	-.49*	-.13*	-.00	.22*	.28*	-					
11. BE – negative	2.45 (0.86)	.34*	.20*	-.16*	-.16*	.65*	.13*	.14*	-.13*	-.17*	-.64*	-				
12. PE engagement	3.47 (0.60)	-.15*	-.22*	.38*	.38*	-.27*	-.23*	.18*	.60*	.63*	.31*	-.32*	-			
13. PE enjoyment	2.70 (0.89)	-.03	-.13*	.40*	.40*	-.16*	-.28*	.25*	.75*	.87*	.25*	-.14*	.62*	-		
14. School Year	8.38 (0.49)	.09*	-.03	-.07	-.07	.12*	-.05	-.08*	-.12*	-.10*	-.09*	.07	-.11*	-.14*	-	
15. Extracurricular sport	0.61 (0.49)	.05	-.04	.17*	.29*	-.06	-.18*	.02	.25*	.32*	.15*	-.16*	.24*	.32*	-.00	-
16. Weekly sports sessions	2.22 (3.04)	.10*	.08	.05	.15*	.02	-.12*	-.02	.14*	.21*	.06	-.03	.07	.24*	.01	.59*

Notes. * *p* < .05. Maximum n = 691, some *n*s smaller due to missing data.

Given the hypotheses of the present research relate to the pathways through which environmental factors in PE influence body image, and PE engagement and enjoyment, each environmental factor, and its indirect effects on the outcomes of interest, is examined in turn. Body commentary was positively associated with self-objectifying thoughts, as per the predictions of work on objectifying environments. Self-objectifying thoughts were directly and positively associated with negative body image, and negatively associated with PE engagement and positive body image. Due to their negative association with intrinsic regulation, self-objectifying thoughts were also indirectly associated with positive body image, PE engagement and PE enjoyment. Body commentary was thus indirectly associated with negative body image, positive body image and PE engagement via self-objectifying thoughts. In the case of negative body image this was a simple indirect effect, via only self-objectifying thoughts ($\beta = .29$, $se = .03$, $p < .001$). For both positive body image and PE engagement, this pathway was the largest element of the indirect effect ($\beta = -.20$, $se = .02$, $p < .001$, and $\beta = -.06$, $se = .01$, $p < .001$, respectively). However there was also a small additional pathway, via self-objectifying thoughts and then via intrinsic regulation to each of these outcomes ($\beta = -.01$, $se = .002$, $p = .006$, and $\beta = -.01$, $se = .004$, $p = .003$, respectively). Body commentary was not indirectly associated with enjoyment of PE ($p = .22$).

Gender bias, contrary to predictions, was only marginally associated with self-objectifying thoughts in PE ($\beta = .07$, $se = .04$, $p = .07$). However, gender bias was directly associated with identified regulation, and thus indirectly with PE engagement and enjoyment ($\beta = -.03$, $se = .01$, $p = .006$ and $\beta = -.01$, $se = .004$, $p = .01$, respectively). It is worth noting that these indirect effects are particularly small, and their significance may be more of a function of the large sample size than of their importance in these processes.

Skill learning opportunities were associated with higher levels of introjected, identified, and intrinsic regulation. This environmental factor was therefore positively indirectly associated with PE engagement ($\beta = .06$, $se = .02$, $p = .001$) and PE enjoyment $\beta = .09$, $se = .03$, $p = .001$), via identified and intrinsic regulations. It is worth noting that intrinsic regulation appears to account for the bulk of these indirect associations, particularly with enjoyment, where the majority of the association is due to intrinsic regulation, rather than identified regulation ($\beta = .08$ vs. $\beta = .01$). Skill learning opportunities were also indirectly associated with positive body image, via intrinsic regulation ($\beta = .02$, $se = .01$, $p < .01$). The skill learning factor had no association with negative body image.

Lifetime activities were positively associated with introjected, identified, and intrinsic regulation. The lifetime activities factor therefore shares similar indirect pathways to the outcome variables as the skill learning factor, being indirectly associated with engagement ($\beta = .29$, $se = .02$, $p < .001$) and enjoyment ($\beta = .38$, $se = .03$, $p < .001$) via both identified and intrinsic regulation, indirectly associated with positive body image via intrinsic regulation ($\beta = .08$, $se = .02$, $p < .001$), and not associated with negative body image. In the case of PE engagement, the indirect pathway seems to be relatively evenly divided between identified and intrinsic regulation ($\beta = .16$ for intrinsic, vs. .13 for identified); for PE enjoyment, the majority of this indirect association is via intrinsic regulation, rather than identified ($\beta = .33$ for intrinsic, vs. .05 for identified).

After accounting for the relationships in the model, there were no effects of school on the body image outcomes or on PE enjoyment. There remained a significant difference between School 3 and the other schools, however, on PE engagement. There were no significant effects of school year as a covariate on any of the outcome variables.

Excluding the effects of covariates, the model explained 26% of the variation in positive body image, 42.3% of the variation in negative body image, 42.9% of the variation in PE engagement, and 77.6% of the variation in PE enjoyment.

5.6. Discussion

In a large sample of British adolescent girls engaging in compulsory PE lessons, this study finds support for a model based on self-determination theory and objectification theory in predicting body image and PE engagement and enjoyment. Previous research has identified 'girl-friendly' factors in physical education, such as skill learning opportunities and lifetime activities (e.g., Felton et al., 2005). However, the current findings demonstrate that these positive links with girls' engagement in PE are due to their association with girls' feelings of being motivated by the value and benefits of PE, and by the enjoyment they get from it (identified and intrinsic regulation). This provides further support for self-determination theory in the PE context, and builds on research which highlights the importance of autonomous motivation in PE for engagement, enjoyment, and well-being (e.g., Mouratidis et al., 2011; Vlachopoulos, 2012).

In this unique consideration of potentially objectifying factors in PE, there is support for the processes of an objectifying environment outlined by Moffitt and Szymanski (2011): that specific elements of an environment will promote self-objectification and that this will result in disengagement from activities within that environment and in worse body image. First, self-objectifying thoughts in PE were associated with lower levels of engagement in, and enjoyment of, the subject, as well as with more negative body image outcomes. Furthermore, students who perceived a greater level of body-related commentary in their class from other students experienced significantly more objectifying thoughts, and these thought were responsible for a

Figure 1. Regulations mediate the association between self-objectifying thoughts and PE engagement and enjoyment.
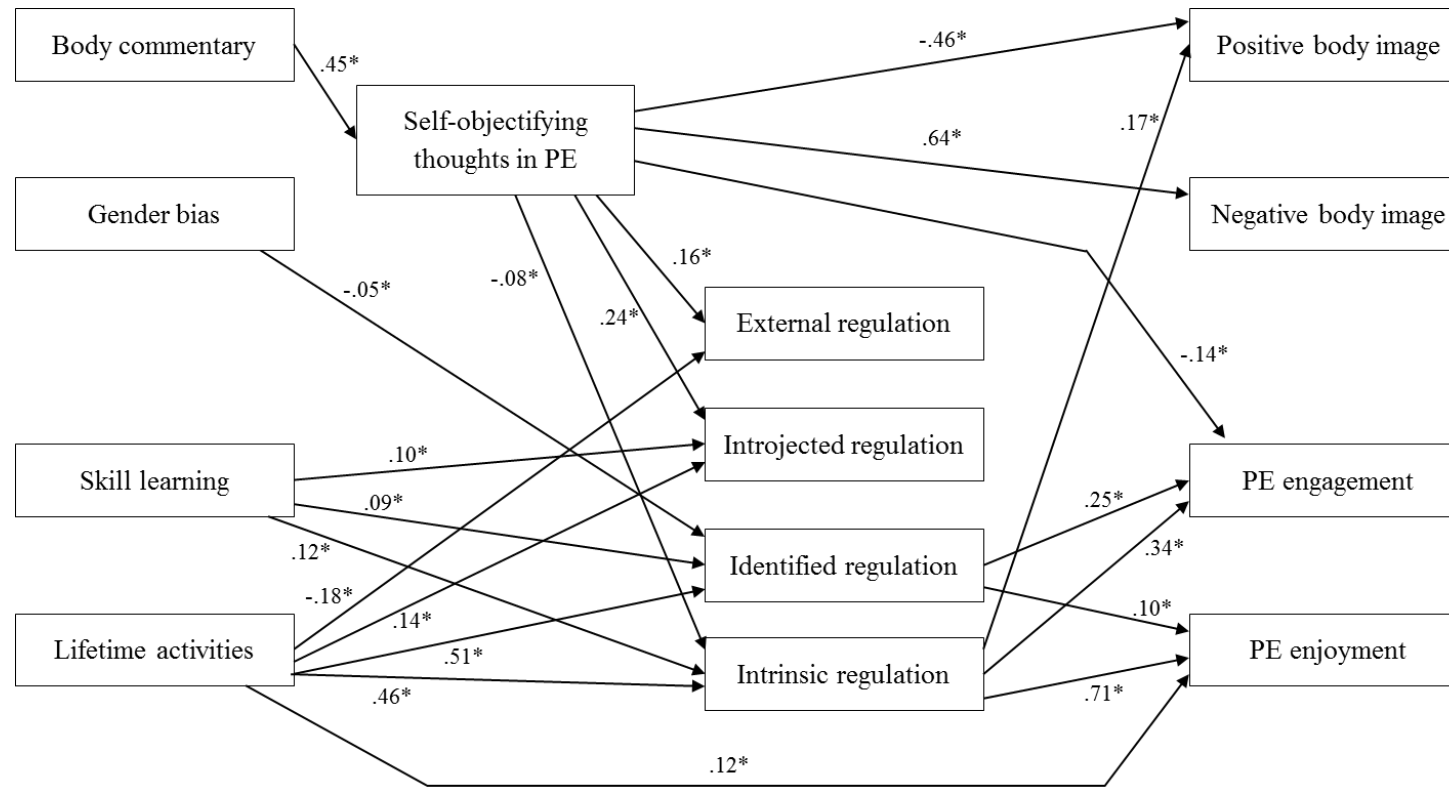
Notes. Standardised estimates shown. * *p* < .05. Correlations between error terms of regulations included in the analysis, but not shown.

Covariates included but not shown in the model: participation in an extra-curricular club for sport/exercise, number of extra-curricular sport or exercise sessions per week, school (dummy coded to three variables), school year. Participation in extra-curricular sport associated with positive body image (β = .09), negative body image (β = -.14), PE engagement (β = .10), intrinsic regulation (β = .11), skill learning (β = .17), and lifetime activities (β = .30). Number of extra-curricular sport sessions associated with PE engagement (β = -.10), PE enjoyment (β = .06), lifetime activities (β = .15), and body commentary (β = .09). School year associated with external regulation (β = -.09), self-objectifying thoughts (β = .10), and body commentary (β = .09).

significant indirect association between body-related commentary and disengagement and a lack of enjoyment in PE. Although the associations between self-objectifying thoughts and PE engagement were mainly direct, there was also support for the proposal that part of their association with PE engagement and enjoyment occurs through regulations, specifically via lower intrinsic regulation.

These findings provide novel insight into how objectifying environments and thoughts may influence girls' and women's motivation and body image. Increased external focus on the body in a particular environment, measured by student perceptions of body commentary within lessons, was associated with greater self-objectification by girls, in the form of checking their appearance, comparing themselves with others, and thinking about their appearance. These self-objectifying thoughts were, in turn, associated with worse body image and lower levels of engagement in, and enjoyment of, PE. Within this context, these findings provide support for the claim that women's and girls' perceptions of the environment may increase self-objectification, rather than self-objectification being responsible for environment selection. An adult woman engaging in physical activity has the ability to choose her exercise environment; thus, findings which link self-objectification to exercising in particular environments, such as fitness centres or cardio-classes, cannot tell us whether these classes result in self-objectification or if women high in self-objectification are likely to select them (e.g., Prichard & Tiggemann, 2005, 2008). Physical education for the students in this sample is a compulsory activity: girls have no choice over their environment, and have little influence over factors such as body commentary from other students, or gender bias from teachers. As such, it is possible to have more confidence in interpreting these results as indicating an influence of the environment on self-objectification within it, rather than the selection effect of high self-objectification on environment.

The findings regarding the relative strength of body commentary and teacher gender bias as elements of the objectifying environment also provide important theoretical insight. Gender bias was not associated with objectifying thoughts; instead this environmental factor was associated with girls' identified regulation, and through this their enjoyment and engagement in PE. In contrast, body commentary from other students functioned as predicted by research on objectifying environments (Moffitt & Szymanski, 2011): body commentary from other students was associated with more self-objectifying thoughts, which, in turn, were associated with body image and with engagement. This suggests that of these two elements of the objectifying environment, outlined by Moffitt and Szymanski (2011), an increased focus on the body is the more important in girls' and women's experiences of an objectifying environment, rather than any gender-based power imbalance.

These findings also have implications for the integration of sociocultural theories, such as objectification theory, and self-determination theory. Experiencing self-objectifying thoughts was associated with fewer experiences of being motivated to engage in PE due to the inherent enjoyment of PE activities (intrinsic regulation), and with more experiences of being motivated to engage in PE because girls felt they had to (external regulation), or they would feel bad if they did not (introjected regulation). However, self-objectifying thoughts' indirect associations with PE engagement, enjoyment and positive body image were due to their negative association with intrinsic regulation, and not their links with the two controlled forms of regulation. This finding contradicts previous self-determination theory work considering the internalisation of sociocultural pressure, which has conceptualised this as a coercive influence, whose primary effect on regulation is to increase controlled regulation, rather than reduce intrinsic motivation (e.g., Pelletier & Dion, 2007). However, this finding fits with

Fredrickson and Roberts' (1997) proposition that self-objectification prevents women from achieving peak motivational states, known as 'flow'. The enjoyment inherent in intrinsic regulation is discussed by Vansteenkiste, Niemiec, and Soenens (2010) as stemming from immersion in the activity, and given self-objectification's proposed disruption of immersion, it therefore seems logical that the experiences of self-objectification would reduce experiences of intrinsic regulation. However, self-objectifying thoughts also directly predicted engagement in PE, over and above their association with intrinsic regulation, and the indirect effects of self-objectification via intrinsic regulation were very small (βs between .01 and .05), suggesting that this path is only a small element of their negative association with engagement, enjoyment and body image.

Considering the school and year effects in the data, and what influences remain after accounting for these relationships raises an important practical implication: when girls' perceptions of the PE environment, their regulation of behaviour, and self-objectifying thoughts within it were accounted for, school year became non-significant as a predictor of PE engagement and enjoyment, and school differences remained only on PE engagement. This implies that the well-documented declines in girls' PE engagement and enjoyment as they progress through adolescence (e.g., Cairney et al., 2012) are not inevitable, but instead appear to be the result of girls' changing feelings towards, and focus on, their bodies, and their changing experiences of the PE environment. School 1 in this project is an excellent example of the positive possibilities raised by this work: girls at this school *increased* in their perceptions of lifetime activities and skill learning opportunities from year 8 to year 9 and, possibly as a result, engagement and enjoyment in this school did not decline as in other schools in the sample.

These findings are therefore particularly important for PE teachers seeking to increase participation among girls in their classes. First, they provide two examples of positive environmental factors that teachers can aim to increase in their classes to improve enjoyment and engagement: skill learning opportunities and lifetime activities. Second, and perhaps most importantly, they provide explanations of the *processes* by which these environmental factors may influence girls' engagement and enjoyment: by increasing identified and intrinsic regulation. By understanding the processes behind positive PE environments, it is possible to conceive new and different alterations to the PE environment, and how these may influence girls' engagement. Explicitly focusing on everyone participating and enjoying PE lessons is one potential example, as this could plausibly encourage girls to feel they were participating for enjoyment, rather than because they had to. Equally, understanding self-objectifying thoughts as the key negative process behind body commentary from other students enables teachers to avoid classroom practices which may focus attention on girls' bodies but also to promote healthier focuses in their classes. The findings on the importance of self-objectifying thoughts suggest that teachers could use techniques from yoga and mindfulness to focus students on their bodies' function and feelings during PE classes, rather than its appearance, with potentially positive outcomes on engagement and enjoyment.

In spite of their contributions, these findings are limited in the conclusions they allow us to draw regarding causality. As with any cross-sectional research which discusses potential predictors and outcomes, many of the relationships within the path model could be logically modelled in the opposite direction from how they have been specified: engaging more actively in PE lessons may, in fact, give girls less opportunity to think objectifying thoughts. The direction of relationships between objectifying thoughts, body image, and experiences of body commentary from other students is

particularly difficult to specify: it is entirely plausible that girls with more negative body image might, as a result, engage in more body-checking behaviours and objectifying thoughts, and may also be particularly conscious of other students' comments about their or others' appearance. Future research could take a longitudinal approach, considering variations within and between students over time, in order to determine temporal antecedence. Moreover, a further fruitful approach to confirm causal direction would be to actively manipulate these elements of the PE environment: Mouratidis et al. (2011) manipulated autonomy and relatedness support across 4 sessions of PE, by altering teaching style to be more need-supportive in two of the sessions. By using multi-level modelling, the researchers were able to consider whether changes between lessons in students' enjoyment of PE were due to their manipulation of the PE environment, or due to random variation between students. Using a similar methodology, it would be possible to begin to consider causal directions among the variables of this research.

A key issue in considering the PE environment is the relationship between students' individual experiences and the environment or climate of the class as a whole. The measure of body commentary used in this research could represent the extent to which students hear other members of their class commenting on anyone's body, as would be necessary to consider it an environmental or climate factor. However, it is entirely possible that students respond to this item from a personal perspective: a child who is victimised in PE class regarding their appearance is potentially far more likely to report that others in their class make comments about appearance. This measure, in the analysis employed in this study, can therefore not differentiate between individual and climate effects of the PE class. A solution to this could be the use of multi-level

modelling, working from the structure of students nested within classes[21] and including a separate measure assessing individual victimisation. This would allow a comparison of the effect of the class average of perceived body commentary and the individual victimisation any particular child is experiencing.

A final issue relates to the items regarding the PE environment. This measure included two potential factors from the conceptualisation of the objectifying environment (gender bias and body commentary; Moffitt & Szymanski, 2011) and two factors from descriptions of girl-friendly PE (lifetime activities and skill learning; Felton et al., 2005; Gibbons & Humbert, 2008). As such, this environmental measure could not capture the full range of elements of an objectifying environment or of girl-friendly PE. Self-determination theory suggests an additional means of considering the PE environment that may be beneficial in future research, with basic psychological needs theory (Deci & Vansteenkiste, 2004) highlighting the importance of the satisfaction of students' basic psychological needs for autonomy, competence, and relatedness in the class, that is, whether the environment is need-supportive (Niemiec & Ryan, 2009). This work primarily examined the interface between self-objectifying thoughts and regulation of behaviour, the extent to which students felt autonomous in their actions in the PE environment; however, it may be that objectifying thoughts affect engagement and enjoyment via their influence on students' experiences of need satisfaction or thwarting, with objectifying thoughts having potential to disrupt feelings of competence and relatedness particularly. Future work should therefore seek to expand upon the elements of the PE environment considered, to further objectifying elements of the environment and to the assessment of need support in the PE environment as a mechanism through which self-objectifying thoughts might operate.

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[21] Although the students in this sample were, of course, nested within PE classes, students recorded only their form class, and not their specific PE class, thus preventing the analysis of the data in a meaningfully clustered manner.

Notwithstanding the necessarily limited selection of PE environment factors, the findings relating to them provide support for the proposal that PE may be experienced as an objectifying environment by some girls, and that this contributes to disengagement and a lack of enjoyment. Furthermore, this research identifies *how* objectifying environments and thoughts may exert an influence on disengagement, by reducing girls' experiences of being motivated by enjoyment. This work provides insights for physical education professionals, not only suggesting potential improvements to the PE environment, but also examining the mechanisms underlying their influence. In addition, it provides initial evidence for the benefits of integrating objectification theory and self-determination theory. This integration provides a useful step in understanding girls' and women's motivation for physical activity, in particular how this relates to their consideration of their bodies. Such understanding may pave the way for interventions that will result in more women being physically active and healthy, and experiencing the potential body image benefits of exercise.

Chapter 6:

Conclusions

6. Conclusions

This final chapter will draw together the findings of the empirical programme as a whole. It will highlight the consistent support for exercise regulations, and the specific importance of introjected and intrinsic regulation, as key processes through which appearance goals for exercise are associated with women's body image, alongside a discussion of the limitations of the empirical evidence provided for these relationships. In addition, it will discuss the initial support the research programme provides for the integration of motivational processes from self-determination theory into objectification theory, and highlight the limitations of the programme's treatment of self-objectification as a variable in achieving this integration. It includes a discussion of the theoretical implications of these findings, considering their importance for self-determination theory and objectification theory individually, as well as the implications of the integration of these two theories. In addition, practical implications and applications of these findings are considered, addressing issues relating to the healthy promotion of exercise, body image and exercise interventions, and the importance of physical education for girls' body image and future physical activity participation. Finally, future areas of research development are considered, in relation to broader aspects of social and developmental psychology.

6.1. Integrative summary: Findings and limitations

The findings of the research programme can be outlined in relation to the initial research questions regarding the role of regulation of exercise behaviour as a process through which appearance goals for exercise influence women's body image, and whether self-determination theory has the potential to provide a motivational account of self-objectification. It is also possible to consider the findings in relation to their success in supporting the theoretical model outlined in the introductory chapter (Figure 1).
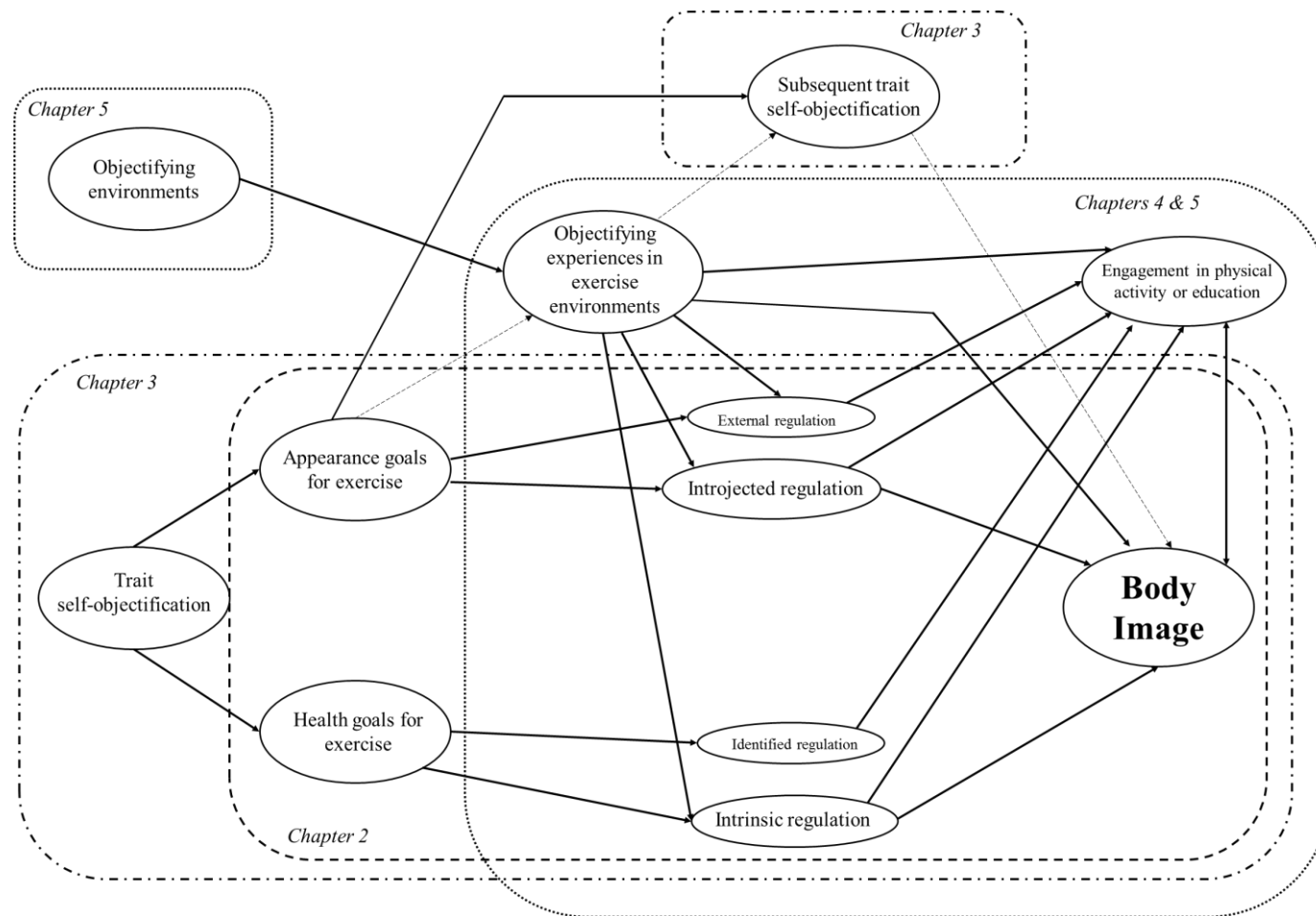
Figure 1. Visual summary of relationships supported by the empirical programme. *Notes to Figure 1.* Rounded rectangles represent the empirical chapters which provide support for each element of the model (the different line patterns are intended to aid the viewer in distinguishing between these chapters). Dashed arrows represent initial theoretical pathways not tested in the empirical programme; solid arrows represent the relationships for which support was found in the empirical programme.

Addressing the first of these research questions, the research programme provides support for the regulation of exercise behaviour as a process through which goals for exercise affect women's body image. Across the analyses of Chapters 2 and 3, there are significant indirect associations, via regulations, of both intrinsic and extrinsic goals for exercise. Supporting the proposals of self-determination theory, the extrinsic goal of appearance and weight loss was consistently associated with controlled forms of regulation, with women who endorsed these goals more strongly feeling more that they exercised due to pressure from others (external regulation) and from the desire to avoid feelings of guilt and shame (introjected regulation). In contrast, stronger endorsement of the intrinsic goal of health was consistently associated with more autonomous regulation of exercise behaviour, with women feeling that they exercised because of the personal value they placed on it (identified regulation), and because of the inherent enjoyment they found in the activity (intrinsic regulation). These findings are consistent with the theoretical proposals and existing empirical support for self-determination theory (Ryan & Deci, 2006).

From Chapter 3, there is evidence for the temporal sequence of association, from goals for exercise, to regulations for exercise, and then to body image, as proposed in the introductory overview and depicted in Figure 1: women's appearance goals in the initial questionnaire predicted their regulations over the next 10 weeks, and thus their body image over this period of time. The causality of these pathways, from goals, to regulations, to body image is further supported by the programme's six month consideration of women's goals, regulations of exercise behaviour and body image in Chapter 3. This analysis clearly demonstrates the long-term effect of introjected regulation of exercise behaviour on body image, rather than vice versa. Previous work has conceptualised body image concerns as a factor which results in women

experiencing their exercise as less self-determined (Brunet & Sabiston, 2009; Brunet, Sabiston, Castonguay, Ferguson, & Bessette, 2012). However, the analysis clearly demonstrates that relative declines in women's body image were predicted by initial introjected regulation, and that initial negative body image did not result in increasingly controlled regulation.

Furthermore, the empirical programme identifies two particularly important types of regulation: introjected regulation and intrinsic regulation. Among the samples of young adult and community women, introjected regulation was primarily responsible for the indirect associations between appearance goals for exercise and women's body image, in both the cross-sectional and the longitudinal analyses. Although appearance goals for exercise consistently predicted external regulation as well, it is their link with introjected regulation that carries this indirect influence from appearance goals to body image: in Chapter 2, external regulation was associated with body image, but appearance goals did not indirectly influence body image via this pathway; in Chapter 3, external regulation was associated with body image only at the weekly level, and not at the cross-sectional level, or over six months. In contrast, introjected regulation was associated with body image at every level in these two studies, except for week-to-week variation.

There is further support for the causal importance of introjected regulation from the experimental study in Chapter 2, where women's guilt relating to exercise (guilt vs. no guilt) was manipulated alongside the appearance framing of exercise advice (appearance vs. health). In this study, women who experienced more guilt immediately after reading the article had more negative body image when the article had focused on guilt relating to exercise. By manipulating guilt in this way, the study demonstrates the negative, causal influence that guilt relating to not exercising, the core component of

introjected regulation measures in the exercise domain (e.g., Markland & Tobin, 2004), can have on women's body image. In all of the adult samples, introjected regulation of exercise behaviour was associated with negative body image. These findings echo the consistent support for the association between introjected regulation and body image throughout the literature (e.g., Brunet et al., 2012; Brunet & Sabiston, 2009; Thøgersen-Ntoumani & Ntoumanis, 2007) and provide support for introjected regulation as a key mediator of the relationship between appearance goals for exercise and women's body image, as it is positioned in Figure 1.

Intrinsic regulation repeatedly emerged as a second important regulation in predicting women's body image. In Chapter 2's cross-sectional analysis, and in Chapter 3's consideration of women's regulations over 10 weeks, there is support for the importance of this form of regulation, which seems to be particularly linked to positive body image. In Chapter 3's 10-week analysis, for any given week, women's intrinsic regulation for exercise was associated with more happiness with their bodies. Further supporting this link between positive elements of body image and intrinsic regulation, Chapter 5 found that girls' intrinsic regulation in physical education class was associated with higher levels of positive body image. Although intrinsic regulation emerges as an important predictor of positive body image in these circumstances, the six-month analysis employed in Chapter 3 did not find any links between intrinsic regulation and women's body image over this period. This finding may suggest that intrinsic regulation functions in a more immediate manner than introjected regulation, with its importance seen within single sessions or weeks of exercise, as in Chapter 3, or in particular physical activity context, as in Chapter 5. These findings support the existing literature which highlights the importance of intrinsic regulation for body image; in contrast, these findings provide only weak evidence for the importance of

identified regulation (cross-sectionally, in Chapter 3), which has previously been associated with body image (e.g., Markland, 2009).

These findings regarding the associations between goals, regulations and body image should be considered with two main caveats, the first relating to methodological issues around causality and the specific importance of introjected and intrinsic regulation, and the second relating to the potential confounding variable of goal achievement. The uncertainty regarding causal direction in the results of the empirical programme stems from issues with both the experimental and the correlational work. First, the experimental manipulation in Chapter 2 influenced regulation of exercise behaviour not directly, but instead via post-test guilt. Although this then had an effect on post-test body anxiety and thus supports the importance of guilt as an emotional response, it does not statistically confirm introjected regulation as a mediator of the relationship between appearance goals for exercise and body image (Bullock, Green, & Ha, 2010). Second, in the longitudinal analyses in Chapter 3, high rates of attrition meant that the sample was not a sufficient size to consider the four regulations, and their effects over time, in a single cross-lagged model. Although initial introjected regulation emerged as a substantial predictor of later body image, it may be that this association is due to, or influenced by, other variables not included in the model. The four forms of regulation are highly correlated, and it is entirely possible that, by not including all four in a single model predicting body image, the results a) overstate the importance of introjected regulation, and b) understate the influence of other regulations due to their shared associations, or due to suppression effects.

In light of these difficulties, future research should seek to confirm the causal importance of introjected regulation, and regulation in general, by recruiting substantial longitudinal samples with lower attrition rates, and by developing robust manipulations

for individual regulations. Specifically, it may be possible, and easiest, to utilise instructor manipulations in exercise classes, similar to those used in research into physical education (e.g., Gillison et al., 2013). The majority of these manipulations tend to seek to improve autonomy in general, or support the satisfaction of basic psychological needs, rather than focusing on individual regulation manipulation. Careful manipulation of activity leader scripts could be utilised to adjust the focus of the session more precisely between the four forms of regulation considered within this research programme. For example, providing a rationale for activities seems clearly associated with identified regulation, whereas promoting enjoyment and fun would most likely more strongly promote intrinsic regulation. Due to the closely related nature of regulations, it is most probably not possible to solely manipulate one regulation, while keeping all others at identical levels; the two manipulations suggested above are likely to both increase identified and intrinsic regulation. However, the first may increase identified regulation more than intrinsic, whereas the opposite effect may occur in the second, meaning it is possible to compare the effects of these two autonomy-promoting manipulations, which focus on different regulations. From the empirical programme's findings, a more beneficial effect might be predicted from the second manipulation, promoting intrinsic regulation rather than identified regulation, on women's body image.

In addition to these issues, conclusions around the importance of regulations in the link between appearance goals for exercise and body image are somewhat constrained by the exclusion from the analyses of one potential confounding variable, goal achievement. Research suggests that appearance goals for exercise are unrealistic and particularly difficult to achieve (Greenleaf, McGreer, & Parham, 2006) and research grounded in self-determination theory suggests that this is due to the constantly increasing standards for these goals (as outlined by extrinsically motivated exercisers in

Sebire, Standage, Vansteenkiste, & Gillison, 2013) and the external evaluation of these goals' success (Kasser & Ryan, 1996). Thus, it may be easier to achieve goals that are more intrinsic, such as health and fitness goals, than to achieve appearance and weight loss goals. As such, without controlling for women's achievement of their goals, it is not possible to conclude that the negative associations of appearance goals with body image are due to their joint links with regulations, as opposed to the difficulty in goal attainment that women experience pursuing them. Perhaps if women succeeded in achieving appearance goals, these goals might not be so negatively associated with body image.

Women's body mass index is controlled for in Chapter 2, but it is not assessed throughout the empirical programme; although it would have been ideal to include a measure of body mass index in the study in schools (Chapter 5), this was not possible due to ethical issues regarding the weighing and measuring of children. Thus, the empirical programme overall is missing a measure of women's and girls' achievement of the extrinsic goals of appearance and weight. However, even controlling for women's body mass index may not be sufficient to remove the effects of goal achievement from the models: body mass index is very much a crude approximation of the achievement of the goal of appearance, providing information only on body weight, which research has confirmed as only one small element of the body perfect ideal (Bell, 2012).

However, even if it was possible to accurately measure women's *actual* appearance goal achievement, women pursuing these goals may also be less likely to *perceive* changes in their bodies as a result of exercise. Research into the process of exercise goal pursuit suggests that intrinsically-oriented exercisers focus on internal markers of progress, such as feelings of fitness or health, whereas extrinsically-oriented exercisers tend to focus on external markers, such as observations in mirrors and

comments from others (Sebire et al., 2013). It may therefore be easier for intrinsically-oriented exercisers to notice the gains they are making, or they may perceive these as bigger gains; this is important for the consideration of body image as an outcome due to previous work suggesting that women's perceived body changes from exercise are more important than the actual changes in women's bodies when predicting their body image improvement (Ginis & Bassett, 2011).

In spite of highlighting this variable's omission as a limitation, there is considerable existing evidence that the effects of goal pursuit or endorsement persist after controlling for attainment, and that extrinsic goal attainment is not associated with positive outcomes. There is little to no work that considers goal achievement among exercisers and its associations with well-being outcomes; however, considerable research exists from self-determination theory work relating to life goal attainment and well-being. Repeatedly, this work finds that achieving intrinsic goals is beneficial for well-being, and that the attainment of extrinsic goals either has zero or even negative effects on individuals' well-being (Kasser & Ryan, 2001; Niemiec, Ryan, & Deci, 2009; Ryan et al., 1999; Sheldon & Kasser, 1998). Crucially, this work has found that the importance individuals attach to extrinsic goals longitudinally influences their well-being, even after controlling for goal attainment (Niemiec et al., 2009). Thus, the omission of goal attainment measures may not critically weaken the empirical programme. However, given this gap in the exercise literature, with no studies considering the concurrent effects of goal pursuit and attainment on body image, future work should seek to include measures of intrinsic and extrinsic goal attainment and to consider the relationships between goal pursuit, attainment, and body image over time. Such work could also differentiate between the quantity of goal pursuit behaviour

(levels of physical activity) and the content of these goals (intrinsic vs. extrinsic goals, autonomous vs. controlled regulation).

In addition to these findings regarding the relationships goals, regulations and body image (these caveats notwithstanding), the inclusion of both of adult women and adolescent girls within the empirical programme enables a consideration of the differences between the importance of specific regulations for these groups. In adult women, the association of introjected regulation with body image is clear, with intrinsic regulation also associated at the cross-sectional and weekly level, but not over longer time frames (Chapters 2 and 3). However, in the sample of adolescent girls (Chapter 5), intrinsic regulation was the only regulation associated with body image, and was the regulation most strongly associated with girls' engagement in, and enjoyment of, PE. These contrasting results suggest that the influence of guilt as a detrimental form of motivation for women's body image may not emerge until young adulthood. This may be due to the identity and value changes which occur in adolescence (Kroger, Martinussen, & Marcia, 2010); in contrast, adult women are likely to have more stable identities and greater internalisation of cultural values relating to appearance, and thus may be more influenced by the resulting guilt-based motivation. This developmental shift, from the positive effects of intrinsic regulation to the negative effects of introjected regulation, would be a fascinating avenue for future research.

It is again advisable to interpret these findings with caution, however, due to several other differences between the studies and measures. First, for the adult women, regulation of *exercise behaviour* was assessed, which for them is a voluntary behaviour; among the adolescent girls, regulation of *taking part in PE activities* was assessed, a compulsory activity for all of the girls. Differences between these groups could, in fact, be due to the difference in choice about engaging in the behaviour to start with;

intervention studies in PE appear to support the importance of autonomous regulation in a compulsory environment, with generally more consistent effects of need satisfaction and support on autonomous regulation than on controlled regulation (Ntoumanis & Standage, 2009). Second, the introjected regulation subscales differed between these two samples: the measure employed in the adult studies (BREQ-2, Markland & Tobin, 2004) focuses on motivation based on the avoidance of negative emotion (e.g., guilt, shame), whereas the measure completed by the adolescent girls included such items but also included items related to social recognition (SRQ-A, Ryan & Connell, 1989; PLOC, Goudas, Biddle & Fox, 1994). If the guilt-based element of introjected regulation is the critical component in its link with body image, it would follow that this association would be weakened when introjected regulation is assessed with a measure that does not focus entirely on this element (as was the case with the introjected regulation measure in Chapter 5).

Beyond considering these motivational sequences proposed by self-determination theory, the thesis also provides evidence for the role they may play in linking self-objectification to women's body image, providing a motivational account of self-objectification in an exercise context. Chapter 3 provides support for trait self-objectification predicting women's appearance goals for exercise, as well as its association with the endorsement of health goals for exercise at the cross-sectional level, suggesting that it may function in a way similar to higher order values (Vallerand, 1997). Self-objectification thus appears to be linked to body image in part due to its negative motivational associations, leading to greater endorsement of appearance goals in specific domains (in this case exercise), which, in turn, predict more experiences of guilt-based motivation, and thus more negative body image (as seen in Figure 1).

In addition to this negative chain of motivation, the thesis supports the proposal that there are reciprocal relationships between appearance goals for exercise and trait self-objectification proposed in the introductory overview: women's initial appearance goals for exercise predict increases in self-objectification over 3 and 6 months, and initial self-objectification predicts increases in women's endorsement of appearance goals for exercise over 6 months. Given trait self-objectification's negative association with body image in the broader literature (e.g., Breines, Crocker, & Garcia, 2008; Moradi, 2010; Slater & Tiggemann, 2002; Tiggemann & Slater, 2001), this could be the beginning of a downward spiral, where women's appearance-focused exercise damages their body image but also reinforces cultural ideals. Increases in these ideals may then further damage their body image, and increase their endorsement of appearance goals for exercise.

The thesis also provides support for a motivational account of self-objectification in the specific context of physical education. In Chapter 5, there is evidence that objectifying thoughts predicted regulation of activity in PE, reducing girls' intrinsic regulation for PE and increasing their external and introjected regulation; teachers' reports of negative motivational consequences stemming from self-objectification and appearance concerns in Chapter 4 further support this suggestion. State experiences of self-objectification therefore appear to be experienced by girls as autonomy-frustrating factors, extending work on trait levels of sociocultural internalisation by Pelletier and Dion (2007) to the state level. Interestingly, self-objectifying thoughts' principal indirect associations with both PE engagement and positive body image were via their negative links with intrinsic regulation, rather than through their positive association with controlled regulations. Objectification, and self-objectification, is thus not merely a form of control, which society exerts on women

(Fredrickson & Roberts, 1997); it is experienced by women as a dampening influence on their enjoyment of activities. However, this indirect pathway only partially mediated these relationships; with the exception of PE enjoyment, girls' self-objectifying thoughts within PE still demonstrated a direct association with body image and PE outcomes, suggesting that regulation and self-determination are not the sole reasons behind these links.

Once more, these conclusions regarding the integration of self-determination theory and objectification theory should be tempered by the limitations of the research programme. The primary limitation with regards to this research question is the programme's relatively narrow consideration of self-objectification, which focuses predominantly on the trait level in the studies with adult samples. The research provides insights into the links between appearance goals for exercise and trait self-objectification, but what the research does not fully consider is the process by which this is proposed to occur: the micro-mediational process of state self-objectification within the exercise environment, an important pathway within Figure 1. One potential reason for appearance goals to result in both more negative body image and increases in trait self-objectification is that women exercising while endorsing these goals experience more state self-objectification (Wolfe, 1998). Karazsia, Van Dulmen, Wong, and Crowther (2013) describe how these processes may function over time in their review of literature on internalisation of the thin ideal: to borrow from their conceptual model, appearance goals for exercise may result in a greater level of state internalisation, in this case, state self-objectification. These state experiences of self-objectification result in both state body dissatisfaction, and, over time, changes in trait self-objectification. Both state body image dissatisfaction and trait self-objectification then influence trait body dissatisfaction.

Thus, the evidence from Chapter 3 that appearance goals for exercise influence trait self-objectification over a time span of 3 to 6 months fits well within the theoretical model of Figure 1, with the initial influence (appearance goals) predicting later trait internalisation of sociocultural pressure (self-objectification at 3 and 6 months). However, as none of the research with adult exercisers includes a *state* measure of self-objectification, this research programme could not fully examine the intervening processes of state self-objectification and its role in influencing state body image and changes in trait self-objectification among adult women. Additionally, by not including state self-objectification in the research with adult exercisers, it was also not possible to examine the suggestion that state self-objectification may influence women's regulation of exercise behaviour, limiting, to an extent, the quality of integration that can be achieved between these two theories.

A key extension to work integrating these two theories would be to include more contextual measures of self-objectification in cross-sectional work, such as the extent to which women report consistently experiencing self-objectifying thoughts during exercise (McKinley & Hyde, 1996; Wolfe, 1998). In addition, the weekly data collection of Chapter 3 could be adapted to include an assessment of women's self-objectification each week, or be focused down to the level of the single exercise session, over a shorter period of time, as in the 10-day diary study by Le Page and Crowther (2010) examining the influence of individual exercise sessions on body image. By including measures of self-objectification across a range of timeframes and contexts, from the single exercise session, to the exercise context in general, to trait levels, it would be possible to provide a fuller account of women's objectifying experiences during exercise than is available from this empirical programme.

6.2. Theoretical implications

Notwithstanding the limitations of the research programme, in particular the modest strength of evidence for causality and the specific importance of individual regulations, the thesis has theoretical implications for self-determination theory and for objectification theory, as well as the integration of these areas of work. Overall, the findings support the proposals of the mini-theories within self-determination theory of goal content theory and organismic integration theory (Vansteenkiste, Niemiec, & Soenens, 2010): intrinsic and extrinsic goals are associated with autonomous and controlled regulation, respectively, which have differential associations with body image. In addition to their indirect associations with body image via regulations, goals for exercise also appear to have a strong direct association; this suggests that other processes proposed by goal content theory may play a role in linking extrinsic goals to negative body image, such as their association with lower satisfaction, and greater frustration, of basic psychological needs (Vansteenkiste et al., 2010; Vansteenkiste, Soenens, & Duriez, 2008).

The specific importance of introjected regulation, however, poses something of a challenge for self-determination theory's current conceptualisations. Intrinsic regulation, as the most autonomous form of motivation, should theoretically be most strongly associated with positive outcomes; thus, it is relatively unproblematic for self-determination theory that the thesis finds more consistent associations between this form of regulation and body image than between identified regulation and body image. However, introjected regulation is more autonomous than external regulation, but appears to have a substantially more negative effect on body image. In Chapter 2, external regulation was associated with body image, but to a lesser extent than introjected regulation; in Chapter 3, external regulation was associated with body image

only at the weekly level, whereas introjected regulation was consistently associated with body image, cross-sectionally and over time. These relationships with body image do not follow the pattern that would be predicted if the key element of regulations was their relative autonomy; therefore, it appears that regulations may be differentiated by more than their levels of autonomy, and that these other differences are the driving influence of their association with body image.

Vansteenkiste et al. (2010) suggest that the experiential and emotional content of regulations mean that they are more likely to be associated with well-being than are goals, which are more cognitively focused. In an extension of this concept, it may be that introjected and intrinsic regulation are more strongly predictive of body image, as a well-being outcome, due to their emotional basis. Introjected regulation of exercise behaviour is typically measured using items referring to guilt or shame, and intrinsic regulation items focus on fun and pleasure (Markland & Tobin, 2004). This is in contrast to the more cognitive framing of identified regulation in particular, which focuses on whether participants engage in activity because they 'value the benefits of exercise'. Emotion is strongly linked to motivation: Bradley (2000) highlights the fact that both terms stem from the same Latin verb, *movere*, meaning 'to move', and research consistently links the two of these constructs. Anticipating the emotions that would be associated with success or failure in pursuing dieting and exercise goals prompted participants to strive harder towards these goals (Bagozzi, Baumgartner, & Pieters, 1998), and review work highlights the importance of *anticipated*, rather than immediate, emotion in predicting motivation and behaviour (Baumeister, Vohs, De Wall, & Zhang, 2007). Given this research linking emotion and motivation, and the potentially emotional nature of body image, these emotion-based regulations may be

more strongly predictive than cognitively framed regulations, such as identified regulation.

However, considering work from beyond self-determination theory, body image may be predicted by introjected and intrinsic regulation due to the *specific* emotional content of these regulations: guilt and enjoyment. In the experimental study in Chapter 2, negative emotions other than guilt resulting from the manipulation were controlled for. Of the negative emotions measured, none had as substantial an association with post-test body image as did guilt, suggesting this may be a particularly relevant emotion for body image and body modification behaviours, such as exercise or dieting. This proposal is supported by the growing body of work in the body image literature that focuses on body-focused emotions, and specifically on guilt relating to the body (e.g., Brunet & Sabiston, 2009; Calogero & Pina, 2011; Crocker et al., 2014).

A further possibility relates to the specific content of items measuring external and introjected regulation, and to what extent they represent approach or avoidance tendencies. When considering the contingent self-esteem element of introjected regulation, individuals may participate in exercise because they will feel pride as a result (approach), or in order to avoid feeling bad about themselves (avoidance). Assor, Vansteenkiste, and Kaplan (2009) raise the possibility that introjected regulation should be further divided into approach and avoidance subtypes, and support this with their finding that avoidance-based introjected regulation is more negative in its correlates than approach-based introjected regulation. In the exercise context, introjected regulation is frequently measured as the avoidance of guilt and shame. In contrast, external regulation does not clearly specify approach or avoidance: exercising 'because important others think you should' (the standard phrasing of external regulation items in the exercise domain; Markland & Tobin, 2004) could be due to either the rewards or the

punishment you expect from them. In the only study of the thesis where the measure of introjected regulation included both approach and avoidance items (Chapter 5; from the Self-Regulation Questionnaire and the Perceived Locus of Causality scale; Goudas, Biddle, & Fox, 1994; Ryan & Connell, 1989), there was no association between introjected regulation and body image outcomes.

In addition, it may be that internally controlled motivation (introjected regulation) is worse for well-being outcomes than externally controlled motivation (external regulation), contrasting with the suggestion of organismic integration theory, that more internalised regulation of behaviour should have more positive consequences (Deci & Ryan, 1985). Control from the self, in the form of guilt-based motivation, may be experienced as more controlling, or pressuring, than control from others, in the form of external regulation; the experience of pressure from friends or family, if not internalised, may be easier to brush off, and avoid negative implications from, than the inescapable experience of pressure from the self.

Self-determination theory therefore has a challenge before it, in explaining the different experiences associated with different forms of controlled regulation, and their links with body image. These theoretical challenges have an important methodological implication for future self-determination theory research: if a given regulation's relative autonomy does not explain their relationship with body image, then using combined measures of relative autonomy, such as the relative autonomy index (e.g., Markland & Ingledew, 2007) is insufficient to fully examine these relationships. Future work should focus on measuring the individual regulations and their affective correlates, in order to be able to tease apart their complex relationships with body image.

In addition to highlighting the importance of regulations, the thesis also expands objectification theory by considering the motivational framework underlying it. This has

benefits for conceptual understanding of how self-objectification functions, at both state and trait levels. For example, by considering the motivational impact of objectifying experiences in the PE environment, researchers can begin to understand the processes through which these thoughts and feelings influence women's body image and motivation. The negative links between self-objectifying thoughts in a particular environment (in this case, physical education classes) and intrinsic regulation for activities within that environment suggest that self-objectification may not simply act as a controlling, cultural pressure, as previous work integrating sociocultural pressures into self-determination theory suggests (e.g., Kopp & Zimmer-Gembeck, 2011; Pelletier & Dion, 2007). Instead, objectifying thoughts seem to inhibit optimal motivational experiences of intrinsic regulation. This process is echoed for trait self-objectification in its zero-order correlations with regulation of exercise behaviour in Chapter 3: although it has strong positive associations with external and introjected regulation, it also has a significant negative association with intrinsic regulation. This provides further conceptual support for the proposal of Fredrickson and Roberts (1997) that self-objectification can function by disrupting motivational states, such as flow. This represents an important advance as the majority of previous work on the effects of self-objectification has focused on cognitive outcomes (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Gay & Castano, 2010; Roberts & Gettman, 2004), with relatively little examining its influence on motivation. Self-objectification's motivational influences may be as important in explaining women's struggle to achieve parity in traditionally male domains, such as mathematics and science, as Fredrickson et al. (1998) propose its cognitive impacts are.

At the trait level, placing self-objectification within a motivational framework allows us to consider it in these terms, reframing it as a higher order value of

appearance over health and functionality, which then steers women towards domain-specific goals of appearance, such as in exercise or the regulation of eating behaviour. The cross-sectional analysis of Chapter 3 supports the positioning of self-objectification as a higher order value of appearance: it is strongly predictive of domain-specific goals for appearance in the exercise domain, and negatively predicts health goals. Reconceptualising trait self-objectification in terms of its links with extrinsic life and domain specific goals (such as appearance, rather than health) can aid researchers in explaining and examining its effects. Body modification processes, such as dieting, exercising for weight loss, and cosmetic surgery, could be reframed under this conceptualisation as goal pursuit behaviours, further elaborating the processes for their negative effects, and for the seemingly low success rates of these behaviours in improving women's body image; appearance-motivated body modification processes should therefore have negative outcomes as a result of the higher numbers of social comparisons individuals engaged in them make, their association with greater need frustration, and their negative associations with autonomous regulation (Ingledew & Markland, 2008; Sebire, Standage, Gillison, & Vansteenkiste, 2013; Verstuyf, Vansteenkiste, & Soenens, 2012).

Considering self-objectification as a higher order value may also help us to understand some of its negative associations beyond body image. Previous research into the structure of goal and value content suggests that some goals are psychologically more similar, and others more distant, than others: Grouzet et al. (2005) find evidence that extrinsic goals, such as financial success, image, and fame are in direct opposition to goals such as affiliation, self-acceptance, and community. These extrinsic goals map closely onto Schwartz's values of achievement and power (Schwartz, 1992). Conceptualising trait self-objectification as located on the extrinsic side of the

circumplex suggests it is in direct opposition to values such as benevolence, or affiliation. This location of self-objectification could explain negative associations between self-objectification and relationship satisfaction (Downs, James, & Cowan, 2006). This would also suggest that self-objectification would inhibit goals of social justice and universalism, located adjacent to benevolence on the circumplex, and to promote endorsement of existing social hierarchies. Calogero (2013) provides preliminary support for this proposition, with work demonstrating both greater support for the existing unequal gender status quo and lower levels of gendered activism among women with high levels of self-objectification in the United States. This conceptualisation of self-objectification as a higher order value allows future research to tap into the existing literature on values (e.g., Grouzet et al., 2005; Schwartz, 1992), both to explain existing findings and to drive forward new areas of research. One such area could be the prevention of self-objectification: rather than seeking to alter environments to reduce self-objectification, the value circumplex approach suggests that actively priming a contradictory value or goal could inhibit self-objectification (Maio, Pakizeh, Cheung, & Rees, 2009), and restrict the negative motivational consequences that stem from it. Thus, this re-conceptualisation opens up new avenues of research and predictions for self-objectification research.

Finally, this conceptualisation of trait self-objectification as a higher order value may pave the way for methodological innovation in the field. The present, dominant measure (Self-Objectification Questionnaire, SOQ, Noll & Fredrickson, 1998) assesses the importance women place on their body's appearance versus its health and function, by asking women to rank a set of observable and non-observable attributes of their bodies. There are several problematic elements of this scale, however, which future scale development could correct by implementing scale work from self-determination

theory, specifically the Aspirations Index (Kasser & Ryan, 1996). A key issue with the SOQ is that its ranking nature prohibits standard estimates of internal consistency: due to its nature as a single score, computed from ranks, evaluations of reliability (Cronbach's α) cannot be calculated. Hill and Fisher (2008) recommend considering the correlation between the appearance-related sum of rankings and the health- and function-related sum of rankings, in order to confirm that these clusters of items correlate negatively and strongly, as a means of checking the measure's consistency within a single study.

However, although this provides a figure to compare between studies, it does not enable researchers to confirm the value and consistency of individual items within the scale, or provide easily identifiable steps to take if this correlation is not sufficiently large or negative. Using a method more similar to the Aspiration Index would enable researchers to have considerably more faith in the individual items and their overall reliability. By asking individuals to rate the importance of individual items (rather than rank them), researchers would be able to examine the internal consistency of the appearance and non-appearance items in each sample and to identify problematic items. Furthermore, by computing separate subscales, and making them relative using algebraic combinations (in the AI, typically extrinsic minus intrinsic), researchers could consider the importance of relative *and* absolute value placed on appearance, allowing research to provide support for a key proposal of objectification theory regarding the centrality of appearance, in that it is prioritised over and above other characteristics and values (Fredrickson & Roberts, 1997).

In addition to its implications for objectification theory, regarding the importance of motivation, this work also has implications for the conceptual framework behind objectifying environments. Szymanski, Moffitt, and Carr (2011) highlight a

series of criteria for identifying a sexually objectifying environment for women, including the high probability of male contact, gender power imbalances and a focus on the sexual and/or physical characteristics of women's bodies. Many of these criteria focus on gender relations and on the importance of women's objectification by men. However, this research suggests that a heightened focus on the body, even without power imbalance or objectification specifically by men, can increase self-objectification within an environment; girls in both mixed and single sex PE classes experienced more self-objectifying thoughts if there was more body-related commentary in their classes. Our findings suggest that environments can be experienced as objectifying without a male presence, contrary to the arguments of Szymanski et al. (2011), and that a key criterion for provoking self-objectification appears to be an increased focus on girls' or women's bodies, in this case via appearance-related commentary.

Interestingly, from this gendered perspective on objectification, which predominantly discusses women's objectification by men, girls reported more body commentary from one another than from boys (or than was targeted at boys), in both the mixed and single sex classes. Although gaze, and not appearance-related comments, is hypothesised as the primary socialising experience through which objectification is internalised by women (Fredrickson & Roberts, 1997), an increasing body of work has examined the effects of appearance-related comments (complimentary and critical) on women's self-objectification and body image. Appearance-related comments, whether positive or negative, increase women's body dissatisfaction, their body surveillance, and their self-objectification (e.g., Calogero, Herbozo, & Thompson, 2009; Tiggemann & Boundy, 2008). Furthermore, the potential role of women's objectification by other women is highlighted by work which suggests that women objectify women as much as they objectify men (but less than men do), and that women's objectification of other

women may be an important element in the replication and perpetuation of sexualising cultural pressures on women (Levy, 2006; Strelan & Hargreaves, 2005). The findings in this study of physical education environments suggest the importance of further considering women's role in objectifying environments, and in culture more generally.

6.3. Practical implications

In addition to conceptual and methodological contributions to self-determination and objectification theories, the findings of the thesis also have practical implications, provided the causal relationships they are consistent with hold true. First, these findings suggest that exercise promotion, within the Western context of an on-going 'obesity epidemic', should avoid moral imperatives and the temptation to leverage guilt as a form of motivation. Second, the findings provide an understanding of mechanisms which can be used to make body image interventions as effective as possible for their participants. Third, the findings highlight the importance of the exercise environment, and suggest alterations that both schools and fitness centres could implement in order to promote engagement, enjoyment, and positive body image.

In the UK, there has been a considerable amount of focus in the media on 'the obesity epidemic' in the last 15 years (Hilton, Patterson, & Teyhan, 2012). Within conversations regarding body modification practices associated with addressing obesity, such as dieting and exercising for weight loss, there is a significant cultural discourse relating to morality, and motivation (Gard & Wright, 2005); guilt is positioned as an important motivator for encouraging overweight individuals to exercise, and "fat shaming", the process of purposefully making people feel guilty and ashamed in order to motivate them to lose weight, is evident in both mainstream media and discussions on social media. This research is the latest in a long line of self-determination theory publications questioning the value of guilt, with previous work suggesting that guilt is

an ineffective motivator of long-term exercise engagement (e.g., Pelletier, Vallerand, Fortier, & Briere, 2001; Teixeira et al., 2010). The thesis' consideration of goals for exercise and their links to regulations and body image lends further support to this argument via two findings: first, it finds that exercising for the reasons of appearance and weight loss is negatively associated with autonomous regulation, particularly intrinsic regulation, whereas exercising for health is associated positively with these forms; second, it finds that guilt-based regulation of exercise behaviour has a consistent negative association with women's body image, suggesting that promoting exercise via guilt may not solve the obesity epidemic, but instead could contribute to a simultaneous epidemic of eating disorders.

The focus of the research programme on the *processes* underlying appearance goals' negative association with body image is crucial for practical implications, as it may allow practitioners to reduce their negative outcomes without removing women's autonomy by criticising their personally held goals. According to discussions of socialisation, both from self-determination theory (Vansteenkiste et al., 2010) and from sociocultural theories (Costanzo, 1992; Fredrickson & Roberts, 1997), successful socialisation relies on members of the culture internalising the rationale for culturally approved behaviours, by experiencing these as motivated by personal choice and values. Thus, although evidence repeatedly demonstrates that appearance goals have significant negative associations, direct attempts to reduce endorsement of these goals (for the good of participants' well-being and body image) may be met with resistance, or experienced as controlling, by individuals who have fully internalised these goals as part of the socialisation process. For example, in an exercise intervention study, physical education students perceived an extrinsic, controlling climate manipulation as most valuable of the four classes they experienced in a 2 x 2 repeated measures classroom manipulation

(extrinsic vs. intrinsic; autonomy-supportive vs. controlling); unfortunately, this class had the most negative influences on their effort and enjoyment (Gillison, Standage, & Skevington, 2013). The present research offers a solution to this problem, by highlighting negative processes which can be disrupted: diffusing the negative associations between regulation and self-objectification and appearance goals could substantially reduce their potential damage to body image. For example, the active promotion of 'no guilt' in the experimental manipulation in Chapter 2 resulted in the appearance framing condition, vs. the health framing condition, having no effect on women's body image.

Previous research has suggested the exercise class as an excellent venue for interventions, due to the activity leader's control over the environment (e.g., Gillison et al., 2013; Mouratidis, Vansteenkiste, Sideridis, & Lens, 2011). To improve women's body image outcomes, the findings of the thesis appear to suggest three potential strategies for these exercise leaders. First, rather than reinforcing self-objectification by encouraging participants to check or think about their appearance during the class, exercise leaders could reiterate the importance of listening to one's body and emphasise the importance of body awareness. Such practices are common within yoga classes, and are potentially one reason why these classes are associated with lower levels of self-objectification (Impett, Daubenmier, & Hirschman, 2006); introducing these principles of bodily awareness to classes which many women attend for appearance reasons (e.g., aerobics, cardio classes, 'bums, tums, and thighs') could help to neutralise the negative process of self-objectification associated with these goals. Second, exercise leaders could focus on enjoyment of the activity as motivation during the session and as a reason to return for the next class, potentially boosting intrinsic regulation among participants. Third, exercise leaders could actively promote self-compassion regarding

exercise behaviour, in a manner similar to the 'no guilt' manipulation in Chapter 2; by explicitly encouraging participants not to feel guilty, and to reduce contingent self-esteem based on exercising, exercise leaders can potentially reduce introjected regulation for their participants, and thus disrupt the negative associations between appearance reasons for exercise and body image, and promote positive exercise outcomes.

Beyond the work of individual exercise leaders, the thesis also has implications for gyms and fitness centres. With more advanced attendance monitoring systems, many gyms now send reminder emails to participants who have not attended recently; these messages, if not carefully worded, may have the inadvertent effect of encouraging women to exercise because they feel guilty. Gyms should therefore focus on positive advertising and messaging to members, promoting self-compassion and more autonomous regulation of exercise explicitly in these messages, in order to avoid adverse effects for their members. A further finding with implications for gyms is that some girls experienced PE as an objectifying environment, even in single sex groups (Chapter 5). This suggests that women-only gyms may not be immune to the objectifying influences outlined by Prichard and Tiggemann (2005), such as mirrors, ideal body imagery, or appearance-related comments (even if positive). Many of these gyms (e.g., Curves, Gymophobics) are founded on the principle of giving women a safe environment to work out in and to improve their fitness and health, but the empirical findings suggest that they may still need to exert extra effort to ensure that women do not experience the physical activity environment as objectifying due to the focus it places on their bodies.

Finally, given the findings of Chapter 2 are based on an experimental manipulation of a magazine article text, media companies which truly care about

'women's health and fitness' should consider the underlying guilt messages contained within their headlines and features: Townsend and Stock (2012) highlight the guilt-based messaging within health and fitness magazines and the compensatory nature of exercise behaviour promoted in regular features such as 'you ate it, negate it' (which encourages women to consider the calorific content of food in relation to the amount of exercise needed to burn it off). Reducing the guilt-inducing elements of such media could enable them to cater to the desires of their target audience, in the form of appearance-focused exercise advice, while neutralising some of the processes which result in these materials making women feel worse about their bodies. The experimental study demonstrates that it is possible to give women advice on weight loss and appearance-based exercise without activating these guilt-related issues.

The consideration of the psychological processes underlying environmental elements of physical education classes provides a similar, process-based focus for improving PE for girls. Given the findings on the negative association of self-objectifying thoughts in PE, promoting a focus on how the body feels, compared to how it looks, in physical education classes could have positive effects for girls' body image and their participation levels. This could be done subtly, by the explanation of tasks in terms of how girls should feel as they perform a movement or stretch, or more explicitly by introducing a short mindfulness 'body scan' exercise at the beginning of sessions, which focuses participants' attention on the sensations of their bodies (e.g., Albertson, Neff, & Dill-Shackleford, 2014). Additionally, given the association of intrinsic regulation in PE with both body image and PE engagement and enjoyment, teachers may benefit from encouraging a fun-based approach to physical education, focusing on participation and enjoyment. Finally, given the positive association of skill learning opportunities with PE engagement and enjoyment in Chapter 5, teachers may find it

beneficial to focus on a mastery approach to learning in physical education, rather than performance. Mastery-focused climates within PE use the self as a reference point: success is evaluated by personal improvement (Goudas & Biddle, 1994). In contrast, performance-focused climates evaluate success relative to others, or external reference points of achievement. Fostering a climate focused on task mastery may reduce social comparisons and concerns relating to others (Ames & Archer, 1988), thus reducing girls' self-objectification in class, by increasing their focus on their own abilities and their bodies' performance.

6.4. Areas of future research development

In addition to the recommendations made throughout this chapter regarding extensions of this specific research programme, it is important to consider this work within the broader realms of social and developmental psychology. Future areas of interest discussed below include positive motivational influences on body image, the inclusion of men within this theoretical framework, the consideration of broader societal ideals and values, and a developmental perspective on motivation and objectification.

The empirical programme focused primarily on appearance goals for exercise, self-objectification, and their negative associations with women's body image. Although significant evidence is provided in the introductory chapter that appearance goals for exercise are culturally pervasive, with their wide promotion in the media and high levels of endorsement among women, the focus on appearance goals in particular runs counter to the recommendations of positive psychology. Positive psychology highlights the importance of considering positive influences on well-being, rather than simply the negative, particularly with regards to intervention settings (e.g., Seligman & Csikzentmihalyi, 2000). It is however worth noting that the empirical programme did include positive elements of motivation and of the environment in each of the studies:

Chapters 2 and 3 include a measure of health goals for exercise in addition to appearance goals, and Chapter 5 includes positive elements of the environment, such as skill learning opportunities, in addition to proposed objectifying factors.

Although the inclusion of health goals for exercise in Chapters 2 and 3 was grounded in the conceptualisation of self-objectification (which positions health and function in opposition to appearance of the body), and gives insight into potential positive motivational processes, the goal of health may, in fact, be the least intrinsic of the intrinsic goals for exercise currently identified. Although health goals for exercise are negatively associated with trait self-objectification (Chapter 3, $r = -.22$), considerable research suggests that Western culture consistently conflates health and fitness with a low body weight and with attractiveness. Discourses of 'health' and 'healthy lifestyles' are central to discussions of the moral imperative to exercise to avoid being fat (Gard & Wright, 2005), and this can be seen in the only partially internalised health and fitness rationale that adolescent girls discuss in qualitative work on health goals for exercise (Gillison, Osborn, Standage, & Skevington, 2009). These girls discussed exercise as something they felt they 'should' do, or 'ought' to do, indicating feelings of control, rather than ownership, relating to health goals. This is supported by the positive association found between health goals and introjected regulation in Chapter 2, and in both Chapter 2 and Chapter 3, health goals were associated positively with appearance and weight loss goals (Chapter 2: $r = .25$; Chapter 3: $r = .16$).

Health and fitness have become part of Western body ideals, as Tiggemann (2011) notes in her discussion of the rise of the athletic ideal. Tatangelo and Ricciardelli (2013) provide evidence that this conflation of appearance with health and fitness, particularly for girls, creeps ever younger: both boys and girls, aged between 8 and 10

years, emphasised the importance of a 'fit' body in discussing ideals, but boys highlighted the functional importance of fitness and idolised sportsmen, while girls focused their attention on actresses and singers and on fit as the opposite of fat. This evidence suggests the importance of considering alternative intrinsic goals and their associations with women's body image, as it may be that goals without these problematic associations with cultural ideals have a more substantial positive influence on women's body image.

The Goal Content for Exercise Questionnaire (GCEQ, Sebire, Standage, & Vansteenkiste, 2008) identifies two intrinsic goals in addition to health: affiliation and development. Affiliation as a goal may be beneficial to women's body image and well-being, due to its correspondence with the basic psychological need of relatedness; the pursuit of this goal may entail activities which satisfy this need more effectively than the goal of health. Indeed, women who more strongly endorsed affiliation goals for exercise experienced greater improvements in their body image in an exercise intervention (Williams & Cash, 2001), suggesting this goal increases positive links between exercise and body image. However, social motivations for exercise may not be purely intrinsic: exercise motivated by a desire for social recognition (an extrinsic goal measured by the GCEQ) is likely to have negative consequences for women's body image and well-being, due to increasing levels of social comparison associated with this goal (Sebire et al., 2013). Future research into this area should therefore be careful to differentiate between exercise motivated by a desire for genuine interaction and relatedness to others and exercise motivated by more negative social goals, such as proving one's worth, social status and self-enhancing social comparisons.

The goal of development may also be a positive one, with its focus on skill learning, mastery, and the process of personal improvement, rather than a focus on an

end-point of weight loss or attractiveness. This mastery-orientation may be especially

beneficial for the basic psychological need of competence, due to its association with

improved learning and persistence (e.g., Ames, 1995). However, the pursuit of

development and mastery in a physical activity context may have particular benefits for

women's relationship with their bodies, by focusing them on what their body can *do*, in

contrast to pervasive cultural pressures encouraging them to focus on how their body

looks. This focus on functionality is a critical element of positive body image and a key

process outlined in Menzel and Levine's discussion of the embodying potential of

exercise (2011). Future research should therefore focus on these intrinsic goals for

exercise, which may more successfully promote the positive and embodying

experiences discussed by Menzel and Levine (2011), rather than the negative,

objectifying experiences examined within this research programme. These

considerations may be particularly important with younger populations: autonomous

physical activity with a focus on intrinsic goals could be a critical form of primary

prevention for girls, promoting positive views of, and relationships with, their bodies

and increasing engagement in physical activity for the rest of their lives.

A second area of development from this research would be the expansion of the

theoretical framework to include men and boys. Although there were substantial reasons

to consider only women and girls in this research programme, it would be interesting to

consider the extent to which these processes also apply to men and boys, and their

motivations for exercise. Work with adolescent boys suggests that exercise and physical

activity may be a crucial predictor and element of male body image: sport allows men

and boys to discuss issues of body image, and the areas of boys' bodies that they like

most are associated with sporting prowess (Ricciardelli, McCabe, & Ridge, 2006). The

processes of objectification theory, as a theory developed regarding the experiences of

women and girls, may not apply as much to men and boys, but self-determination theory, as a universal theory of motivation, would suggest that men should experience similar effects to women of extrinsic goals for exercise, and introjected regulation. However, adolescent boys and girls appear to experience introjected regulation differently, with boys focused on the 'approach' elements, such as increased self-esteem and social status, and girls on the 'avoidance' elements, such as guilt-avoidance and what they ought to do (Gillison et al., 2009). Therefore, an exploration of these processes among men and boys may also be beneficial for developing a better understanding of introjected regulation, and the influence of motivation for exercise on body image more generally.

A third area of future development for work in this area may be to link this work regarding appearance goals for exercise to broader work on extrinsic goals or values, and the culture in which these develop. Although the thesis' exploration of culture focuses on sexualised images of women and their influence on the importance of appearance, these images are almost universally associated with the consumption of material goods: beautiful women appear in advertisements not just for beauty products, but for watches, coffee, and even toilet paper. Body perfect ideals and the materialistic notion of the good life are highlighted by Dittmar (2008) as two prominent advertising ideals, and recent experimental work suggests that exposure to the pairing of these ideals results in greater body dissatisfaction among women than exposure to either ideal in isolation (Ashikali & Dittmar, 2012). Future research could therefore consider how exercise may function as a status symbol within this cultural environment, not only associated with achieving the perfect body, but also with the 'right' gym subscription or workout clothes.

Fourth, future research could consider developmental issues relating to exercise, body image, and self-objectification more thoroughly. Research has shown that self-objectification and body image issues occur among children as early as the age of 5 years (Dittmar, Halliwell, & Ive, 2006; Tiggemann & Slater, 2014). However, objectification theory and self-determination theory have yet to be extended to cover the developmental span of childhood: most studies focus on testing the models developed on adults on younger populations (e.g., Slater & Tiggemann, 2002; Thøgersen-Ntoumani, Ntoumanis, & Nikitaras, 2010), and focus on adolescence or later. Future work should seek to consider the developmental changes that children and adolescents go through, such as identity development, changes in cognition, and changes in the importance of peer relations, and integrate these into theories of motivation and body image. Although some work on objectification focuses on the increasing sexual maturity of girls' bodies, and how this influences girls' experiences of objectification (e.g., Lindberg, Grabe, & Hyde, 2007; Slater & Tiggemann, 2012), physical maturation is but one developmental process, and exploring the psychological developments that girls and boys experience may further strengthen psychological understanding of the genesis of self-objectification and negative motivational sequences among women.

6.5. Concluding remarks

In spite of its limitations, this thesis extends psychological understanding of appearance goals for exercise and their influence on women's body image. Through a variety of methods, the thesis demonstrates the importance of guilt-based, introjected regulations in the negative association between women's appearance goals for exercise and their body image, and highlights the long-term links between these goals and women' s trait self-objectification. The thesis provides further integration of objectification theory and self-determination theory by considering the objectifying

potential of the physical education class for girls, demonstrating important motivational links between a body–focused environment and girls' enjoyment of and engagement in activities within that environment, as well as their feelings about their bodies overall. The importance in these findings of introjected regulation for women's body image, over external regulation in particular, poses a challenge for self-determination theory's continuum of controlled to autonomous regulation, but also highlights new avenues of research, such as the concepts of approach-avoidance and their relevance in regulation, and the emotional importance of guilt in relation to body image.

The processes through which appearance goals for exercise are associated with women's body image are important in understanding the different outcomes of exercise for women, and understanding these will enable health and fitness professionals and active women and girls to ensure that their exercise experiences fulfil their positive potential for body image. Although this research outlines primarily negative associations, with cultural pressure leading women to endorse appearance goals for exercise, and this being associated with worse body image, it also paves the way for an understanding of how exercise might have a more positive influence, challenging cultural ideals of beauty and of hegemonic femininity, and empowering women and girls to fully realise the embodying potential of exercise.

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Appendices

Appendix A

Chapter 2: Study 1

Cross-sectional Questionnaire Measures

A.1. Self-Discrepancy Index (SDI, Halliwell & Dittmar, 2006)

Your Personal Ideals

Like most people, you probably like some things about yourself, but would like to change others. In this section of the questionnaire, we would like to ask you about the personal ideals that you hold for yourself. Please complete the sentences in the grid below.

In the first column, after "I...", write any word or set of words to describe something about yourself that you would like to change. In the second column, below "but I would like ...", please write how you would - ideally - like to be instead. Then, please indicate for each sentence

- *how different* you are from your ideal (ie. how big the gap is)
- *how concerned* you are about this difference (ie. how important it is to you, how much you worry about it)

A rating of '1' suggests that you are **not at all** concerned or different from your ideal, whereas a rating of '6' would indicate that you are **extremely** concerned or different.

	But I would like…	How different?	How important?
I… _____	_____	1 2 3 4 5 6	1 2 3 4 5 6
I… _____	_____	1 2 3 4 5 6	1 2 3 4 5 6
I… _____	_____	1 2 3 4 5 6	1 2 3 4 5 6
I… _____	_____	1 2 3 4 5 6	1 2 3 4 5 6

Scoring for the SDI.

Each discrepancy is coded as:
Weight, shape or tone (WST) discrepancy
General appearance (GA) discrepancy
Neither

For each discrepancy: difference score x importance score
Then sum the discrepancy scores for each category (WST & GA).

A.2. Physical Appearance State Trait Anxiety Scale (PASTAS, Reed et al, 1991)

Your Current Feelings

We are also interested in how you feel about various areas of your life in general.

In general, how **anxious** do you feel about the following areas of your life?

Likert anchors, 5 points: not at all, slightly, moderately, quite a lot, extremely so.

1. My family relationships
2. My financial debt
3. My buttocks
4. My academic performance
5. My intelligence
6. My belongings
7. My stomach (abdomen)
8. My financial position
9. My legs
10. The extent to which I look overweight
11. My friendships
12. My hips
13. My body odour
14. My social relationships
15. My size
16. My muscle tone
17. My love life
18. My clothes
19. My waist
20. My home

Scoring for the PASTAS

Body anxiety: 3, 7, 9, 10, 12, 15, 16, 19.

A.3. Body Appreciation Scale (BAS, Avalos et al, 2005)

You and Your Body

We are now interested in what you think about your body. Please answer the questions as truthfully as possible.

Likert anchors, 5 points: not at all true for me, a little true for me, somewhat true for me, quite true for me, very true for me.

1. I respect my body
2. I feel good about my body
3. On the whole, I am satisfied with my body
4. Despite its flaws, I accept my body for what it is
5. I feel that my body has at least some good qualities
6. I take a positive attitude towards my body
7. I am attentive to my body's needs
8. My self-worth is independent of my body weight or shape
9. I do not focus a lot of energy being concerned with my body weight or shape
10. My feelings towards my body are positive, for the most part
11. I engage in healthy behaviours to take care of my body
12. Despite its imperfections, I still like my body

Scoring for the BAS

All items included in scale mean calculation.

A.4. Leisure Time Exercise Questionnaire (LTEQ, Godin & Shephard, 1985)

Your Exercise Regime

During a **typical 7-day period** (a week), how many times **on average** do you do the following kinds of exercise for **more than 15 minutes** during your free time?

Note: The activities listed under particular levels are guidelines for how strenuous activities may be. Please use the description in parentheses eg. (heart beats rapidly) to determine where your particular level of activity fits in.

Mild exercise (minimal effort).
Eg. yoga, archery, fishing from riverbank, bowling, golf, easy walking

Number of times: _____

Moderate exercise (not exhausting).
Eg. fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing

Number of times: _____

Strenuous exercise (heart beats rapidly).
Eg. running, jogging, hockey, football, basketball, cross country skiing, roller skating, vigorous swimming, vigorous long distance bicycling

Number of times: _____

During a typical 7-day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?

3 points: never or rarely, sometimes, often

Scoring for the LTEQ
Moderate-strenuous METs calculated from 5 x moderate plus 8 x strenuous.

A.5. Behavioral Regulation of Exercise Questionnaire 2 (BREQ-2, Markland & Tobin, 2004)

Why do you exercise?

The following questions are interested in your reasons and your thoughts about why you engage in exercise.

<u>Influences on exercise behaviour</u>

We are interested in the influences underlying people's decisions to engage, or not engage, in physical exercise. *Whether you currently exercise regularly or not*, please read each statement carefully and indicate whether or not each statement is true for you personally.

Likert anchors, 5 points: not at all true for me, a little true for me, somewhat true for me, quite true for me, very true for me.

1. I exercise because other people say I should
2. I feel guilty when I don't exercise
3. I value the benefits of exercise
4. I exercise because it's fun
5. I don't see why I should have to exercise
6. I take part in exercise because my friends/family/partner say I should
7. I feel ashamed when I miss an exercise session
8. It's important to me to exercise regularly
9. I can't see why I should bother exercising
10. I enjoy my exercise sessions
11. I exercise because others will not be pleased with me if I don't
12. I don't see the point in exercising
13. I feel like a failure when I haven't exercised in a while
14. I think it is important to make the effort to exercise regularly
15. I find exercise a pleasurable activity
16. I feel under pressure from my friends/family to exercise
17. I get restless if I don't exercise regularly
18. I get pleasure and satisfaction from participating in exercise
19. I think exercise is a waste of time

Scoring for the BREQ-2.

Amotivation: 5, 9, 12, 19

External: 1, 6, 11, 16

Introjected: 2, 7, 13

Identified: 3, 8, 14, 17

Intrinsic: 4, 10, 15, 18

A.6. Exercise Motivations Inventory 2 (EMI-2, Markland & Ingledew, 1997)

<u>Reasons for exercise</u>

We are also interested in the reasons why people exercise and the benefits they gain from it.

Below are a number of statements concerning the reasons people often give when asked why they exercise. *Whether you currently exercise regularly or not*, please read each statement carefully and indicate whether or not each statement *is true* for you personally, or *would be true* for you personally if you did exercise.

Remember, we want to know why *you personally* choose to exercise or might choose to exercise, not whether you think the statements are good reasons for *anybody* to exercise.

Likert anchors, 5 points: not at all true for me, a little true for me, somewhat true for me, quite true for me, very true for me.

Personally, I exercise (or might exercise)...

1. To stay slim
2. To avoid ill-health
3. Because it makes me feel good
4. To help me look better
5. To show my worth to others
6. To give me space to think
7. To have a healthy body
8. To build up my strength
9. Because I enjoy the feeling of exerting myself
10. To spend time with friends
11. Because I like trying to win in physical activities
12. To stay/become more agile
13. To give me goals to work towards
14. To lose weight
15. To prevent health problems
16. Because I find exercise invigorating
17. To have a good body
18. To compare my abilities with other peoples'
19. Because it helps to reduce tension

20. Because I want to maintain good health
21. To increase my endurance
22. Because I find exercising satisfying in and of itself
23. To enjoy the social aspects of exercising
24. Because I enjoy competing
25. To maintain flexibility
26. To give me personal challenges to face
27. To help control my weight
28. To avoid heart disease
29. To recharge my batteries
30. To improve my appearance
31. To gain recognition for my accomplishments
32. To help manage stress
33. To feel more healthy
34. To get stronger
35. For enjoyment of the experience of exercising
36. To have fun being active with other people
37. Because I enjoy physical competition
38. To stay/become flexible
39. To develop personal skills
40. Because exercise helps me to burn calories
41. To look more attractive
42. To accomplish things that others are incapable of
43. To release tension
44. To develop my muscles
45. Because I feel at my best when exercising
46. To make new friends
47. Because I find physical activities fun, especially when competition is involved
48. To measure myself against personal standards

Scoring for the EMI-2

Appearance subscale: 4, 17, 30, 41

Weight management subscale: 1, 14, 27, 40

Positive health subscale: 7, 20, 33

Ill-health avoidance subscale: 2, 15, 28

A.7. Combination of Body Perfect Internalisation Scale (BPIS, Bell, 2012) & Consumer Culture Internalisation Scale (CCIS, Easterbrook, Wright, Dittmar & Banerjee, 2014)

Personal Beliefs and Values

We are interested in finding out about things which are important to you. Below are some possible way people might think about the things they want and how they look. Please select the response that accurately represents how true each statement is for you personally.

5 points - not at all true for me, a little true for me, somewhat true for me, quite true for me, very true for me.

1. I wish I was rich like the celebrities on TV
2. What I look like is an important part of who I am
3. I would love to have things that cost lots of money
4. I aspire to look like the actors or actresses in films and TV
5. I always do whatever I can to look my best
6. I wish I looked like the models who advertise underwear
7. I think it's a waste of time to make a big effort to get more money and expensive things
8. I wish my body was like those shown in music videos
9. Having cool possessions, like the latest gadgets and fashionable clothes, is important to me
10. I would like my body to look like the bodies in magazines
11. I would like to have the expensive possessions that people in films and TV have
12. Having the perfect body is important to me
13. I would like to put a lot of effort into making my body look good
14. I'm not interested in the money or possessions that famous people have
15. It bothers me a lot that I don't have the perfect body
16. When I see advertisements for clothes, I wish I looked like the models
17. When I graduate, I want a job where I earn lots of money
18. I would like to spend a lot of time buying new things
19. I wish I looked like a film star
20. My life would be better if I had the perfect body
21. When I see people advertise cool things, I wish I could have those things myself
22. I would like to spend a lot of time making myself look good
23. I believe that people with perfect bodies have it all
24. I don't care much about money and possessions
25. Having the perfect body would be one of the greatest achievements in my life

26. I would be happier if I had more money to buy things for myself

27. Having great looks would mean a lot to me

28. I would put a lot of effort into getting money and cool things

29. I would be more popular if my body was more perfect

30. I believe the thinner you are, the better you look

31. When I think about my favourite celebrity, I want to look as good as they do

32. I would like to spend a lot of money on making my body look good

33. Having the perfect body is essential to my popularity

34. I'm not interested in the way that famous people look

35. I believe that the more toned you are as a woman, or the more muscular you are as a man, the better you look

36. I would be more successful in life if I had a perfect body

37. The more money I have, the happier I will be

38. I'd be happier if my body was more perfect

Scoring for the BPIS/CCIS.

Not included in thesis.

A.8. Demographic and Exercise Details

About You

Thank you for participating in this research. To help with our analysis of the results, please complete the following demographic details.

Gender   male/female.

Age

Please select the option which best indicates your ethnic group or background. White/ Asian/ Black, Caribbean or African/ Mixed or multiple ethnic groups/ Other/ Decline to answer.

Occupation   undergraduate student/postgraduate student/other
If student,   Do you study psychology?   yes/no

Height in centimetres
More info box available: 1 inch = 2.54 cm, 1 foot = 12 inches

Weight in kilograms
More info box available: 1 pound = .45kg, 1 stone = 14 pounds

Do you have a gym membership?   yes/no

Are you a member of a sports team or club?   yes/no
If yes, what sport do you play on this team?
If yes, is this a university sports team?   yes/no

What would you say is your main type of exercise?
Individual gym workouts/ Group exercise classes at gym or sports centre/ Individual exercise outside of the gym/ Group exercise outside of the gym/ Other.

Appendix B

Chapter 2: Study 2

Study Materials: Manipulations, Post-test Measures, Follow Up Measures

B.1 Article Text for Manipulations

B.1.1. Appearance, No Guilt manipulation

Your magazine article is from a Health & Fitness magazine, aimed at female students such as yourself. Please take several minutes to properly and carefully read through the article. We'll then ask you to answer some questions about it afterwards.

[page break]

Every second counts! Make the most of time you never realised you had!

Are you someone who struggles to find time to tone up and burn off those excess calories? Fear not! You're not alone, and we have three top tips from Helen, a student at the University of Sussex, to help you make the most of your time – and find some you didn't even know you had!

Helen says…

As students, we work hard for our courses and that means we don't always have lots of time to spare. But I think it is important to exercise regularly, and to take care of how we look. Here are my top tips for fitting in exercise around a full study timetable.

1. Work Out… At Work

Most days, I lose a lot of time to work, whether it's working in the lab or spending time sat at a desk in the library. But you'd be amazed at the butt-busting, toning exercises you can do even during these times! Taking the stairs, instead of the lift, can help you burn more calories and tone up your legs and bum. If you take the stairs every day, you'll see improvements in your general tone, and you certainly won't be worrying about whether you're allowed dessert!

I also sneak in some toning at my desk – with bum clenches! Squeeze your muscles in your bottom together as hard as you can for 5 seconds and then release, and repeat this ten times. Maybe it feels a bit silly, but I've definitely had a better-looking bottom since starting to do this!

2. Make Room for Slippage

It's important to exercise regularly to maintain the weight loss and toning gains we get from being active, but sometimes, things pop up and get in the way of our plans. To make sure we still exercise even if we lose some time unexpectedly, it's best if we plan our exercise sensibly – and that's easier than you think!

Planning to go to the gym after my 4pm seminar gives me one opportunity to work out and burn up some calories, and if I miss that 'time slot', I probably won't find the energy to go after I've got home and had dinner. So, instead of planning for the latest

time that I'll make, I plan for the earliest, so that if something comes up, I have other chances to make it up in that day. By planning to exercise earlier in the day, like before uni or in my lunch break, I give myself more chances to actually manage to go, and to tone myself up into that perfect sleek physique. It takes a bit of effort to change how you plan things, but believe me, it's well worth the effort.

3. The 15 Minute Work Out

Sometimes, I really don't feel like I have time to exercise – maybe I've only got a spare 30 minutes, and that needs to include my shower afterwards too! Research has shown that even just 15 minutes of the right kind of activity can increase your metabolism and help you burn more calories – so you'll never have to feel too short of time to exercise again! I've uploaded some of the best rapid routines I've found to the magazine website, and with these quick hits of exercise, you'll be burning even more calories and shaping up quicker than ever – even with only a small window of time.

Helen's Final Thoughts

Even with these tricks, I sometimes find I don't do as much exercise as I would like. But I know it's hard to fit exercise into a busy schedule and so mostly I'm happy with the amount I do. Exercise *can* be done in short bursts and still be effective, but I don't need to beat myself up about missing the odd session.

Next week on Your Top Tips: Amy shares her amazing calorie skimming tricks for food.

B.1.2. Appearance, Guilt manipulation

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Planning to go to the gym after my 4pm seminar gives me one opportunity to work out and burn up some calories, and if I miss that 'time slot', I probably won't find the energy to go after I've got home and had dinner. So, instead of planning for the latest time that I'll make, I plan for the earliest, so that if something comes up, I have other chances to make it up in that day. By planning to exercise earlier in the day, like before

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Helen's Final Thoughts

Even with these tricks, I sometimes find I don't do as much exercise as I should. I know it's hard to fit exercise into a busy schedule, but sometimes I just feel so guilty about the amount I do. Exercise *can* be done in short bursts and still be effective, so I know that I really don't have a great excuse when I miss opportunities to work out.

Next week on Your Top Tips: Amy shares her amazing calorie skimming tricks for food.

B.1.3. Health, No Guilt manipulation

Your magazine article is from a Health & Fitness magazine, aimed at female students such as yourself. Please take several minutes to properly and carefully read through the article. We'll then ask you to answer some questions about it afterwards.

[page break]

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Are you someone who struggles to find time to get fit and healthy? Fear not! You're not alone, and we have three top tips from Helen, a student at the University of Sussex, to help you make the most of your time – and find some you didn't even know you had!

Helen says…

As students, we work hard for our courses and that means we don't always have lots of time to spare. But I think it is important to exercise regularly, and to take care of our health and our bodies. Here are my top tips for fitting in exercise around a full study timetable.

1. Work Out… At Work

Most days, I lose a lot of time to work, whether it's working in the lab or spending time sat at a desk in the library. But you'd be amazed at the how much health-boosting activity you can do even during these times! Taking the stairs instead of the lift is a great way to add some cardiovascular exercise into your day and help your heart stay healthy. If you take the stairs every day, you'll see improvements in your general fitness, and you certainly won't be out of breath at the top after a while!

I also sneak in some exercise at my desk – with bum clenches! Squeeze your muscles in your bottom together as hard as you can for 5 seconds and then release, and repeat this ten times. Maybe it feels a bit silly, but I've definitely had less ankle and knee pain since starting to do this!

2. Make Room For Slippage

It's important to exercise regularly to maintain the health benefits we get from being active, but sometimes, things pop up and get in the way of our plans. To make sure we still exercise even if we lose some time unexpectedly, it's best if we plan our exercise sensibly – and that's easier than you think!

Planning to go to the gym after my 4pm seminar gives me one opportunity to be active and healthy, and if I miss that 'time slot', I probably won't find the energy to go after I've got home and had dinner. So, instead of planning for the latest time that I'll make, I plan for the earliest, so that if something comes up, I have other chances to make it up in that day. By planning to exercise earlier in the day, like before uni or in my lunch

break, I give myself more chances to actually manage to go, and to get active and healthy. It takes a bit of effort to change how you plan things, but believe me, it's well worth the effort.

3. The 15 Minute Work Out

Sometimes, I really don't feel like I have time to exercise – maybe I've only got a spare 30 minutes, and that needs to include my shower too! Research has shown that even just 15 minutes of the right kind of activity can increase your heart rate and improve your general fitness over time – so you'll never have to feel too short of time to exercise again!

I've uploaded some of the best rapid fitness routines I've found to the magazine website, and with these quick hits of exercise, you'll be able to fit in even more fitness and get healthier than ever, even when you don't have much time.

Helen's Final Thoughts

Even with these tricks, I sometimes find I don't do as much exercise as I would like. But I know it's hard to fit exercise into a busy schedule and so mostly I'm happy with the amount I do. Exercise *can* be done in short bursts and still be effective, but I don't need to beat myself up about missing the odd session.

Next week on Your Top Tips: Amy shares her amazing healthy eating tricks.

B.1.4. Health, Guilt manipulation

Your magazine article is from a Health & Fitness magazine, aimed at female students such as yourself. Please take several minutes to properly and carefully read through the article. We'll then ask you to answer some questions about it afterwards.

[page break]

Every second counts! Make the most of time you never realised you had!

Are you someone who struggles to find time to get fit and healthy? Fear not! You're not alone, and we have three top tips from Helen, a student at the University of Sussex, to help you make the most of your time – and find some you didn't even know you had!

Helen says…

As students, we work hard for our courses and that means we don't always have lots of time to spare. But I think it is important to exercise regularly, and to take care of our health and our bodies. Here are my top tips for fitting in exercise around a full study timetable.

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Planning to go to the gym after my 4pm seminar gives me one opportunity to be active and healthy, and if I miss that 'time slot', I probably won't find the energy to go after I've got home and had dinner. So, instead of planning for the latest time that I'll make, I plan for the earliest, so that if something comes up, I have other chances to make it up in that day. By planning to exercise earlier in the day, like before uni or in my lunch

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I've uploaded some of the best rapid fitness routines I've found to the magazine website, and with these quick hits of exercise, you'll be able to fit in even more fitness and get healthier than ever, even when you don't have much time.

Helen's Final Thoughts

Even with these tricks, I sometimes find I don't do as much exercise as I should. I know it's hard to fit exercise into a busy schedule, but sometimes I just feel so guilty about the amount I do. Exercise *can* be done in short bursts and still be effective, so I know that I really don't have a great excuse when I miss opportunities to work out.

Next week on Your Top Tips: Amy shares her amazing healthy eating tricks.

B.2. Post-test Measures

B.2.1. Article and author questions

Very briefly, what was the article about?

Key element of the guilt/no guilt manipulation:

Now we'd like you to re-read the last paragraph, titled *Helen's Final Thoughts.* Take your time, and really think about what she writes.

Now imagine you are Helen. Write down 5 reasons why you might feel how she describes in this paragraph. Go into as much detail as possible.

We'd now like you to answer some questions about the article. For each question, there will be a scale ranging from one extreme to the other, such as 'not at all useful' to 'very useful' – please select the number on the scale which best represents your feelings or thoughts. Remember, there are no right answers – we are simply interested in how you feel or think.

How useful did you find the tips in the article?

Likert anchors, 5 points: Not at all useful - Very useful

How easy do you think it would be to integrate these suggestions into your life?

Likert anchors, 5 points: Not at all easy - Very easy

How likely would you be to buy a magazine which featured similar articles?

Likert anchors, 5 points: Not at all likely - Very likely

How likeable did you find Helen?

Likert anchors, 5 points: Not at all likeable - Very likeable

How focused on her health do you think she is?

Likert anchors, 5 points: Not at all focused on her health - Very focused on her health

How focused on her appearance do you think she is?

Likert anchors, 5 points: Not at all focused on her appearance - Very focused on her appearance

How similar do you think Helen is to you?

Likert anchors, 5 points: Not at all similar - Very similar

B.2.2. Positive and Negative Affect Scale – Short Form (PANAS-SF, Thompson, 2007)

All About You

We're also interested in how you're feeling right now. We're going to ask you a little about what you're feeling and thinking about at the moment.

We're interested in knowing how you feel, right now. Please mark the number (where 1 represents 'not at all' and 7 'very much') which best represents the extent to which you feel each of the feelings described below.

Likert anchors (7 points) – not at all, very much.

1. Upset
2. Hostile
3. Alert
4. Ashamed
5. Inspired
6. Nervous
7. Determined
8. Guilty
9. Attentive
10. Afraid
11. Active

Scoring for PANAS-SF.

Guilty used as single item (8).

Negative emotions composite: 1, 2, 6, 10

B.2.3. Physical Appearance State Trait Anxiety Scale (PASTAS, Reed et al., 1991) – State

We'd also like to know what you're worrying about right now, or what you might feel anxious about. We've listed some different areas of your life and yourself that you might be anxious about right now, and we'd like you to tell us about how anxious you are about this.

Right now, how anxious are you about the following?

Likert anchors, 5 points: Not at all anxious, Very anxious.

1. My family relationships
2. My financial debt
3. My academic performance
4. My well-being
5. How prone I am to illnesses
6. My stomach (abdomen)
7. My financial situation
8. My legs
9. The extent to which I look overweight
10. My friendships
11. My hips
12. My strength
13. My exercise skills
14. My size
15. My muscle tone
16. My general health
17. My physical abilities
18. My waist
19. My energy levels
20. My ability to exercise

Scoring for PASTAS.

Appearance anxiety: 6, 8, 9, 11, 14, 15, 18.

B.2.4. Objectified Body Consciousness Scale (OBCS, McKinley & Hyde, 1996)

We'd now like to ask you some questions about yourself, in order to better understand why different women like different kinds of magazines and articles. There are no right or wrong answers to these questions – we're really interested in what **you** think or feel.

Likert anchors, 5 points: Not at all true for me, Very true for me.

1. I rarely think about how I look
2. When I can't control my weight, I feel like something must be wrong with me
3. I think a person is pretty much stuck with the looks they're born with
4. I feel ashamed of myself when I haven't made the effort to look my best
5. I think it is more important that my clothes are comfortable than whether they look good on me
6. When I'm not the size I think I should be, I feel ashamed
7. It is a joy to care for and look after my body
8. The shape you are in depends mostly on your genes
9. I think more about how my body feels than how it looks
10. I think a person's weight is mostly determined by the genes they're born with
11. I never worry that something is wrong with me when I am not exercising as much as I should
12. It is possible to look however you want to if you try hard enough
13. I rarely compare how I look with how other people look
14. Even when I can't control my weight, I think I'm an ok person
15. During the day, I think about how I look many times
16. I think I have a lot of control over how my body looks
17. I can weigh what I'm supposed to when I try hard enough
18. I often worry about whether the clothes I am wearing make me look good
19. I am more concerned with what my body can do than how it looks
20. I feel like I must be a bad person when I don't look as good as I could
21. I rarely worry about how I look to other people
22. I am aware of how my body and body parts feel
23. I think a person can look pretty much how they want to if they are willing to work at it
24. I would be ashamed for people to know what I really weigh
25. A large part of being in shape is having that kind of body in the first place
26. I feel like I know what is going on with my body most of the time
27. When I'm not exercising enough, I question whether I am a good enough person

Scoring for the OBCS.
Not included in thesis.

B.2.5. Behavioral Regulation of Exercise Questionnaire 2 (BREQ-2, Markland & Tobin, 2004) – Shortened, State

Now we'd like you to think about exercising today. It doesn't matter if you were planning to or not, we're just interested, hypothetically. If you were going to exercise today, why would you be exercising?

Likert anchors, 5 points: Not at all true for me, Very true for me.

I would be exercising today…

1. Because I value the benefits of exercise
2. Because I would feel guilty if I didn't
3. Because my friends, family or partner say I should
4. Because I find exercise a pleasurable activity
5. Because I would feel like a failure if I didn't
6. Because it's important to me to exercise regularly
7. Because I feel under pressure from my friends or family to exercise
8. Because I would feel ashamed if I didn't
9. Because I get pleasure and satisfaction from participating in exercise
10. Because I think it's important to make the effort to exercise regularly
11. Because other people say I should
12. Because I enjoy exercising

Scoring for the Shortened BREQ-2.

External: 3, 7, 11

Introjected: 2, 5, 8

Identified: 2, 6, 10

Intrinsic: 4, 9, 12

B.2.6. Goal Content for Exercise Questionnaire (GCEQ, Sebire et al., 2008) – Shortened, State

We're also interested in what people think the 'point' of exercise is for them personally. Again, there are no right or wrong answers, and we are simply interested in what you think the benefits of exercise are for you personally.

Likert anchors, 5 points: Not at all true for me, Very true for me.

The point of exercise for me is…
1. To increase my resistance to illness and disease
2. To gain social recognition from others
3. To improve the look of my overall body shape
4. To increase my energy levels
5. To acquire new exercise skills
6. To form close bonds with others
7. To improve my appearance
8. To improve my overall health
9. To be well thought of by others
10. To develop my exercise skills
11. To change my appearance by altering a specific part of my body
12. To develop close friendships
13. To learn and exercise new techniques
14. To gain favourable approval from others
15. To connect with others in a meaningful manner

Scoring for the GCEQ – Shortened.

Appearance: 3, 7, 11

Social recognition: 2, 9, 14

Health: 1, 4, 8

Development: 5, 10, 13

Affiliation: 6, 12, 15

B.2.7. Demographic Details.

How old are you?

Please circle the ethnicity you feel best describes you.

White/ Asian/ Black, Caribbean or African/ Decline to answer/ Mixed or multiple ethnic groups/ Other

If you're willing to tell us, we'd also like you to tell us your height and weight.

Height: [feet and inches or cm]

Weight: [stone and pounds or pounds or kg]

If you had to guess, what do you think the study was about? When did you 'guess' that this was what the study was about?

B.3. Follow Up Online Questionnaire

B.3.1. Physical Appearance State Trait Anxiety Scale (PASTAS, Reed et al., 1991) – Trait

Your Feelings

At different times in our lives, we worry or are anxious about different things. On the scales below, we'd like you to indicate **how anxious you generally are** about each of the aspects of your life or your self below.

Likert anchors, 5 points: Not at all, Slightly, Moderately, Quite a lot, Extremely so

In general, how **anxious** do you feel about the following areas of your life?

1. My family relationships
2. My financial debt
3. My academic performance
4. My well-being
5. How prone I am to illnesses
6. My stomach (abdomen)
7. My financial situation
8. My legs
9. The extent to which I look overweight
10. My friendships
11. My hips
12. My strength
13. My exercise skills
14. My size
15. My muscle tone
16. My general health
17. My physical abilities
18. My waist
19. My energy levels
20. My ability to exercise

Scoring for PASTAS.

Appearance anxiety: 6, 8, 9, 11, 14, 15, 18.

B.3.2. Self-objectification Questionnaire (SOQ, Noll & Fredrickson, 1998)

How you think about your body

We are now interested in the different ways that you think about your body. Remember, there are no right or wrong answers - we are interested in your personal responses.

Different things are important to different people when they think about their bodies.

Please take a moment to look at the different body traits listed below.

Now we'd like you to rank the traits **in order of how important they are to you** when you think about **your own body**, with **1** indicating the **most important** to you, and **12** indicating the **least important**.

You don't have to select from the boxes in the order they appear - you may in fact find it is easier to go through from what you consider most important to what you consider least important.

Remember to rank all of the traits, and to make sure there are no duplicate numbers when you rank them.

1. Physical attractiveness
2. Muscular strength
3. Skin tone
4. Physical condition
5. Weight
6. Physical energy level
7. Sex appeal
8. Stamina
9. Measurements (hips, waist, bust, etc.)
10. Health
11. Muscle tone
12. Physical fitness

Scoring for SOQ.

Appearance traits: 1, 3, 5, 7, 9, 11

Non-appearance traits: 2, 4, 6, 8, 10, 12

Highest ranked trait given 11 points, through to lowest ranked trait given 0 points.

Sum appearance points, sum health points. Subtract health from appearance for overall self-objectification score.

B.3.3. Objectified Body Consciousness Scale (OBCS, McKinley & Hyde, 1996).

How you think about bodies in general

We would now like you to ask some questions about how you think about bodies in general.

Likert anchors, 5 points: Not at all true for me, A little true for me, Sometimes true for me, Quite true for me, Very true for me.

1. I rarely think about how I look
2. When I can't control my weight, I feel like something must be wrong with me
3. I think a person is pretty much stuck with the looks they're born with
4. I feel ashamed of myself when I haven't made the effort to look my best
5. I think it is more important that my clothes are comfortable than whether they look good on me
6. When I'm not the size I think I should be, I feel ashamed
7. It is a joy to care for and look after my body
8. The shape you are in depends mostly on your genes
9. I think more about how my body feels than how it looks
10. I think a person's weight is mostly determined by the genes they're born with
11. I never worry that something is wrong with me when I am not exercising as much as I should
12. It is possible to look however you want to if you try hard enough
13. I rarely compare how I look with how other people look
14. Even when I can't control my weight, I think I'm an ok person
15. During the day, I think about how I look many times
16. I think I have a lot of control over how my body looks
17. I can weigh what I'm supposed to when I try hard enough
18. I often worry about whether the clothes I am wearing make me look good
19. I am more concerned with what my body can do than how it looks
20. I feel like I must be a bad person when I don't look as good as I could
21. I rarely worry about how I look to other people
22. I am aware of how my body and body parts feel
23. I think a person can look pretty much how they want to if they are willing to work at it
24. I would be ashamed for people to know what I really weigh
25. A large part of being in shape is having that kind of body in the first place
26. I feel like I know what is going on with my body most of the time
27. When I'm not exercising enough, I question whether I am a good enough person

Scoring for the OBCS.
Not included in thesis.

B.3.4. Leisure Time Exercise Questionnaire (LTEQ, Godin & Shephard, 1985)

Your Recent Exercise

In the past 3 months, during a **typical 7-day period** (a week), **how many times** on average do you do the following kinds of exercise for more than 15 minutes during your free time?

Note: The activities listed under particular levels are guidelines for how strenuous activities may be. Please use the description in parentheses eg. (heart beats rapidly) to determine where your particular level of activity fits in.

Mild exercise (minimal effort).
Eg. yoga, archery, fishing from riverbank, bowling, golf, easy walking

Number of times in a typical week: _____

Moderate exercise (not exhausting).
Eg. fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing

Number of times in a typical week: _____

Strenuous exercise (heart beats rapidly).
Eg. running, jogging, hockey, football, basketball, cross country skiing, roller skating, vigorous swimming, vigorous long distance bicycling

Number of times in a typical week: _____

Scoring for the LTEQ

Moderate-strenuous METs calculated from 5 x moderate plus 8 x strenuous.

B.3.5. Behavioral Regulation of Exercise Questionnaire 2 (BREQ-2, Markland & Tobin, 2004) – Shortened, Trait

Why do you exercise?

We are interested in the influences underlying people's decisions to engage, or not engage, in physical exercise in general. *Whether you currently exercise regularly or not*, please read each statement carefully and indicate whether or not each statement is true for you personally.

Likert anchors, 5 points: Not at all true for me, A little true for me, Somewhat true for me, Quite true for me, Very true for me.

I exercise…

1. Because I value the benefits of exercise
2. Because I would feel guilty if I didn't
3. Because my friends, family or partner say I should
4. Because I find exercise a pleasurable activity
5. Because I would feel like a failure if I didn't
6. Because it's important to me to exercise regularly
7. Because I feel under pressure from my friends or family to exercise
8. Because I would feel ashamed if I didn't
9. Because I get pleasure and satisfaction from participating in exercise
10. Because I think it's important to make the effort to exercise regularly
11. Because other people say I should
12. Because I enjoy exercising

Scoring for the Shortened BREQ-2.

External: 3, 7, 11

Introjected: 2, 5, 8

Identified: 2, 6, 10

Intrinsic: 4, 9, 12

B.3.6. Goal Content for Exercise Questionnaire (GCEQ, Sebire et al., 2008) –
Shortened, Trait

Goals for Exercise

We are now interested in your personal goals for exercise or sports participation, or
what you think the *point* of exercise is.

Likert anchors, 5 points: Not at all important, Slightly important, Somewhat important,
Quite important, Very important.

I exercise…

1. To increase my resistance to illness and disease
2. To gain social recognition from others
3. To improve the look of my overall body shape
4. To increase my energy levels
5. To acquire new exercise skills
6. To form close bonds with others
7. To improve my appearance
8. To improve my overall health
9. To be well thought of by others
10. To develop my exercise skills
11. To change my appearance by altering a specific part of my body
12. To develop close friendships
13. To learn and exercise new techniques
14. To gain favourable approval from others
15. To connect with others in a meaningful manner

Scoring for the GCEQ – Shortened.

Appearance: 3, 7, 11

Social recognition: 2, 9, 14

Health: 1, 4, 8

Development: 5, 10, 13

Affiliation: 6, 12, 15

B.3.7. Physical Activity Details

Thank you for participating in this research. To help with our analysis of the results, it would be very helpful if you could give us a little extra information about yourself.

Do you have a gym membership at the moment?   yes/no

What would you say is currently your main type of exercise?

Individual gym workouts/ Group exercise at a gym or sports centre/ Individual exercise outside of the gym/ Group exercise outside of the gym/ None/ Other

Appendix C

Chapter 3: Study 1

Initial Questionnaire Measures and Three and Six Month Follow-Up

C.1. Self-Discrepancy Index (SDI, Halliwell & Dittmar, 2006)

Your Personal Values

Like most people, you probably like some things about yourself, but would like to change others. In this section of the questionnaire, we would like to ask you about the personal ideals that you hold for yourself. Please complete the sentences in the grid below.

In the first column, after "I...", write any word or set of words to describe something about yourself that you would like to change. In the second column, below "but I would like ...", please write how you would - ideally - like to be instead. Then, please indicate for each sentence

- *how different* you are from your ideal (ie. how big the gap is)
- *how concerned* you are about this difference (ie. how important it is to you, how much you worry about it)

A rating of '1' suggests that you are **not at all** concerned or different from your ideal, whereas a rating of '6' would indicate that you are **extremely** concerned or different.

	But I would like…	How different?	How important?
I… _____	_____	1 2 3 4 5 6	1 2 3 4 5 6
I… _____	_____	1 2 3 4 5 6	1 2 3 4 5 6
I… _____	_____	1 2 3 4 5 6	1 2 3 4 5 6
I… _____	_____	1 2 3 4 5 6	1 2 3 4 5 6

Scoring for the SDI.

Each discrepancy is coded as:
Weight, shape or tone (WST) discrepancy
General appearance (GA) discrepancy
Neither

For each discrepancy: difference score x importance score
Then sum the discrepancy scores for each category (WST & GA).

C.2. Physical Appearance State Trait Anxiety Scale (PASTAS, Reed et al., 1991)

Your Current Feelings

We are also interested in how you feel about various areas of your life in general.

In general, how **anxious** do you feel about the following areas of your life?

Likert anchors, 5 points: not at all, slightly, moderately, quite a lot, extremely so.

1. My family relationships
2. My financial debt
3. My buttocks
4. My academic performance
5. My intelligence
6. My belongings
7. My stomach (abdomen)
8. My financial position
9. My legs
10. The extent to which I look overweight
11. My friendships
12. My hips
13. My body odour
14. My social relationships
15. My size
16. My muscle tone
17. My love life
18. My clothes
19. My waist
20. My home

Scoring for the PASTAS

Body anxiety: 3, 7, 9, 10, 12, 15, 16, 19.

C.3. Self-objectification Questionnaire (SOQ, Noll & Fredrickson, 1998)

You and Your Body - Thoughts

We are now interested in how you think about your body. Remember, there are no right or wrong answers - we are interested in your personal responses.

Different things are important to different people when they think about their bodies.

Please take a moment to look at the different body traits listed below.

Now we'd like you to rank the traits **in order of how important they are to you** when you think about **your own body**, with **1** indicating the **most important** to you, and **12** indicating the **least important**.

You don't have to select from the boxes in the order they appear - you may in fact find it is easier to go through from what you consider most important to what you consider least important.

Remember to rank all of the traits, and to make sure there are no duplicate numbers when you rank them.

1. Physical attractiveness
2. Muscular strength
3. Skin tone
4. Physical condition
5. Weight
6. Physical energy level
7. Sex appeal
8. Stamina
9. Measurements (hips, waist, bust, etc.)
10. Health
11. Muscle tone
12. Physical fitness

Scoring for SOQ.

Appearance traits: 1, 3, 5, 7, 9, 11
Non-appearance traits: 2, 4, 6, 8, 10, 12

Highest ranked trait given 11 points, through to lowest ranked trait given 0 points.
Sum appearance points, sum health points. Subtract health from appearance for overall self-objectification score.

C.4. Body Appreciation Scale (BAS, Avalos et al., 2005)

You and Your Body - Feelings

We are now interested in what you think about your body. Please answer the questions as truthfully as possible.

| 89771 | 106833386 | 89906 |

Likert anchors, 5 points: not at all true for me, a little true for me, somewhat true for me, quite true for me, very true for me.

1. I respect my body
2. I feel good about my body
3. On the whole, I am satisfied with my body
4. Despite its flaws, I accept my body for what it is
5. I feel that my body has at least some good qualities
6. I take a positive attitude towards my body
7. I am attentive to my body's needs
8. My self-worth is independent of my body weight or shape
9. I do not focus a lot of energy being concerned with my body weight or shape
10. My feelings towards my body are positive, for the most part
11. I engage in healthy behaviours to take care of my body
12. Despite its imperfections, I still like my body

Scoring for the BAS

All items included in scale mean calculation.

C.5. Leisure Time Exercise Questionnaire (LTEQ, Godin & Shephard, 1985)

Your Exercise Regime

In the past three months, during a **typical 7-day period** (a week), **how many times** on average do you do the following kinds of exercise **for more than 15 minutes during** your free time?

Note: The activities listed under particular levels are guidelines for how strenuous activities may be. Please use the description in parentheses eg. (heart beats rapidly) to determine where your particular level of activity fits in.

Mild exercise (minimal effort).

Eg. yoga, archery, fishing from riverbank, bowling, golf, easy walking

Number of times: ＿＿＿

Moderate exercise (not exhausting).

Eg. fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing

Number of times: ＿＿＿

Strenuous exercise (heart beats rapidly).

Eg. running, jogging, hockey, football, basketball, cross country skiing, roller skating, vigorous swimming, vigorous long distance bicycling

Number of times: ＿＿＿

Scoring for the LTEQ
Moderate-strenuous METs calculated from 5 x moderate plus 8 x strenuous.

C.6. Behavioral Regulation of Exercise Questionnaire 2 (BREQ-2, Markland & Tobin, 2004)

Why do you exercise?

Now we'd like you to take a moment to think about **why** you feel you have engaged in exercise over the past three months. Remember, we are interested in *your* thoughts and feelings: there are no right or wrong answers.

Influences on exercise behaviour

We are interested in the influences underlying people's decisions to engage, or not engage, in physical exercise. *Whether you currently exercise regularly or not*, please read each statement carefully and indicate whether or not each statement is true for you personally.

Likert anchors, 5 points: not at all true for me, a little true for me, somewhat true for me, quite true for me, very true for me.

1. I exercise because other people say I should
2. I feel guilty when I don't exercise
3. I value the benefits of exercise
4. I exercise because it's fun
5. I don't see why I should have to exercise
6. I take part in exercise because my friends/family/partner say I should
7. I feel ashamed when I miss an exercise session
8. It's important to me to exercise regularly
9. I can't see why I should bother exercising
10. I enjoy my exercise sessions
11. I exercise because others will not be pleased with me if I don't
12. I don't see the point in exercising
13. I feel like a failure when I haven't exercised in a while
14. I think it is important to make the effort to exercise regularly
15. I find exercise a pleasurable activity
16. I feel under pressure from my friends/family to exercise
17. I get restless if I don't exercise regularly
18. I get pleasure and satisfaction from participating in exercise
19. I think exercise is a waste of time

Scoring for the BREQ-2.

Amotivation: 5, 9, 12, 19

External: 1, 6, 11, 16

Introjected: 2, 7, 13

Identified: 3, 8, 14, 17

Intrinsic: 4, 10, 15, 18

C.7. Goal Content for Exercise Questionnaire (GCEQ, Sebire et al., 2008)

<u>Goals for Exercise</u>

We are now interested in your personal goals for exercise or sports participation. Please indicate to what extent these goals are important to you while exercising.

Likert anchors, 5 points: Not at all important, Slightly important, Somewhat important, Quite important, Very important.

I exercise…

1. To form close bonds with others
2. To improve the look of my overall body shape
3. To increase my resistance to illness and disease
4. To be well thought of by others
5. To acquire new exercise skills
6. To improve my appearance
7. To increase my energy level
8. To gain favourable approval from others
9. To develop close friendships
10. To be slim so to look attractive to others
11. To connect with others in a meaningful manner
12. To improve my overall health
13. To develop my exercise skills
14. To be socially respected by others
15. To share my spare time with a partner and/or friend
16. To change my appearance by altering a specific area of my body
17. To improve my endurance and stamina
18. To impress others
19. To become skilled at a certain exercise or activity
20. To share my exercise experiences with people that care for me
21. To gain social recognition from others
22. To learn and exercise new techniques
23. To meet others who share my exercise interests
24. So that others recognise me as an exerciser

Scoring for the GCEQ.

Appearance: 2, 6, 10, 16

Social Recognition: 4, 8, 14, 18, 21, 24

Health: 3, 7, 12, 17

Affiliation: 1, 9, 11, 15, 20, 23

Development: 5, 13, 19, 22

C.8. Need Satisfaction and Frustration in Exercise Environment (Adapted from Bartolomew et al., 2009, & Wilson et al., 2006)

Your Feelings About Exercise

Likert anchors, 5 points: Not at all true for me, A little true for me, Somewhat true for me, Quite true for me, Very true for me.

During my exercise time over the past three months…

1. I felt good about my ability to exercise
2. I felt capable of doing challenging exercises
3. I felt like I will achieve the exercise goals I set myself
4. I felt free to exercise in my own way
5. I felt free to choose the exercises I participated in
6. I felt like I was in charge of the exercise decisions I made
7. I got along with the people I interacted with
8. I felt close to my exercise companions
9. I felt a sense of camaraderie with those around me
10. I felt under pressure to follow a particular training plan
11. I felt like I had to exercise a certain amount or in a certain way
12. I felt like I had no choice in what I was doing
13. I felt like I was inadequate
14. I felt like I was incompetent at exercising
15. I felt like I will never achieve my exercise goals
16. I felt distant from those around me
17. I felt dismissed or looked down on by those around me
18. I felt alone when I exercised, even if other people were around

Scoring for Need Satisfaction and Frustration in Exercise.

Not included in Thesis.

C.9. Intentions to Exercise – Next Three Months (adapted from Li et al, 2011)

The Next Three Months

We're now interested in your plans about exercise for the next three months.

Likert anchors, 5 points: Not at all true, A little true, Somewhat true, Quite true, Very true.

I will try to engage in mild exercise regularly over the next three months.

I will try to engage in moderate exercise regularly over the next three months.

I will try to engage in strenuous exercise regularly over the next three months.

Scoring for Intentions for Exercise.

Not included in Thesis.

C.10. Demographics

About You

Thank you for participating in this research. To help with our analysis of the results, please complete the following demographic details.

Gender   male/female.

Age

Please select the option which best indicates your ethnic group or background.
White/ Asian/ Black, Caribbean or African/ Mixed or multiple ethnic groups/ Other/ Decline to answer.

What is your occupation?

What is your approximate personal yearly income before tax?
9 options, from 'Less than £10,000', to 'More than £80,000', in increments of £10,000

Do you have a gym membership?   yes/no

Are you a member of a sports team or club?   yes/no
If yes, what sport do you play on this team?
If yes, is this a university sports team?   yes/no

What would you say is your main type of exercise?
Individual gym workouts/ Group exercise classes at gym or sports centre/ Individual exercise outside of the gym/ Group exercise outside of the gym/ Other.

Appendix D

Chapter 3: Study 2

Weekly Scale Development and Measures

D.1. Weekly Measure Development

In developing the weekly measures, a sample was utilised from previous research conducted using the Behavioural Regulation of Exercise Questionnaire 2 (BREQ-2; Markland & Tobin, 2004) and the Physical Appearance State Trait Anxiety Scale (PASTAS; Reed et al., 1991). This sample was 215 female undergraduate students who participated in a 30 minute online questionnaire for course credit (17 – 30 years, mean age = 19.77; sd = 1.98).

D1.1. Regulation of exercise behaviour measures

For the weekly regulation of exercise behaviour measures, a single item from each of the four subscales of the Behavioural Regulation of Exercise Questionnaire 2 (BREQ-2; Markland & Tobin, 2004) was selected: external, introjected, identified and intrinsic regulation. In selecting items from the BREQ-2, the items with the fewest covariances or crossloadings suggested by modification indices and the highest factor loadings in the confirmatory factor analyses reported below were selected. This was done to ensure that items represented the form of regulation in question, without sharing variance with other regulations. All of the items selected had the highest factor loading for their individual subscale, and the least cross-loadings or covariances suggested by modification indices.

D.1.1.1. Factor loadings of selected regulation items.

Regulation	Item from BREQ-2 I exercise because…	Factor loading
External regulation	My friends, family or partner say I should	.83
Introjected regulation	I feel guilty when I don't exercise	.80
Identified regulation	I think it's important to make an effort to exercise regularly	.82
Intrinsic regulation	I find exercise a pleasurable activity	.96

D.1.1.2. Weekly regulation of exercise behaviour measures: Zero-order correlations

	External regulation	Introjected regulation	Identified regulation	Intrinsic regulation
External regulation	-			
Introjected regulation	.22***	-		
Identified regulation	-.01	.33***	-	
Intrinsic regulation	-.15*	.14*	.62***	-

*Note: Probability assessed from cluster-adjusted standard errors. * p < .05, ** p < .01, *** p < .001.*

D.1.1.3. Correlations between weekly regulation of exercise behaviour measures and
initial questionnaire

Weekly Regulation	*r* with full subscale
External regulation	.15+
Introjected regulation	.50***
Identified regulation	.48***
Intrinsic regulation	.73***

*Note: Probability assessed from cluster-adjusted standard errors. * p < .05, ** p < .01,
*** p < .001.*

D.1.2. Body image measures

To measure body image at the weekly level, 3 measures were generated: overall
anxiety, overall happiness, and anxiety over specific areas. To assess overall anxiety
regarding their body, a single item was used: "How anxious have you felt about your
body shape, weight or size this week?". To assess overall happiness regarding their
body, another single item was used: "How happy have you felt with your body this
week?".

To assess anxiety over specific areas of the body, the Physical Appearance State
Trait Anxiety Scale (PASTAS; Reed et al., 1991) was adapted to a briefer measure. This
was done by selecting four of the eight body anxiety items from the PASTAS. To give a
broader perspective on body anxiety, and because these concerns were already covered
in the single anxiety item, the 'overweight' and 'size' items from the original PASTAS

were not selected. From the remaining 6 items, 'buttocks' was ruled out for its low factor loading in the CFA of the student data (.57), and hips for its similarity to several of the other items (waist, stomach). Thus 'muscle tone', 'waist', 'legs' and 'stomach' were selected as the four items for the checklist measure.

D.1.2.2. Weekly body image measures: Zero-order correlations

	Anxiety	Happy	Checklist score
Anxiety	-		
Happy	-.63***	-	
Checklist score	.60***	-.53***	-

*Note: Probability assessed from cluster-adjusted standard errors. * p < .05, ** p < .01, *** p < .001.*

D.1.2.3. Correlations between weekly body image measures and initial questionnaire

Weekly body image measure	Initial questionnaire body image measures	
	Correlation with PASTAS	Correlation with BAS
Anxiety	.55***	-.39***
Happy	-.55***	.60***
Checklist score	.55***	-.42***

*Note: Probability assessed from cluster-adjusted standard errors. * p < .05, ** p < .01, *** p < .001.*

D.2. Weekly Measures

D.2.1. Leisure Time Exercise Questionnaire (LTEQ, Godin & Shephard, 1985) – adapted to weekly.

How much exercise have you done this week?

First of all, please think about how much exercise you have done this week.

Please state **how many times** during the week you have engaged in each type of exercise for 15 minutes or more.

The examples beneath each type are guides to help you, but if you feel a particular activity is more or less strenuous for you personally please feel free to rate it as such.

Mild exercise: _____

Minimal effort – eg. yoga, easy walking, fishing, golf.

Moderate exercise: _____

Not vigorous – eg. fast walking, easy cycling, easy swimming, energetic dancing, badminton.

Strenuous exercise: _____

Heart beats rapidly – eg. running, hockey, football, vigorous swimming or cycling.

Scoring for the Weekly LTEQ

Moderate-strenuous METs score is calculated from moderate x 5 + strenuous x 8.

D.2.2. Adapted Behavioural Regulation of Exercise Questionnaire 2 (Markland & Tobin, 2004)

Your Feelings About Exercise

The next few questions will ask you about why you feel you have exercised this week.

Remember, we are interested in your thoughts and feelings – there are no wrong answers.

Likert anchors, 5 points: Not at all true, A little true, Somewhat true, Quite true, Very true

[page break between each regulation]

1. This week, I exercise because my friends, family or parents say I should.

2. This week, I exercised because I feel guilty when I don't exercise.

3. This week, I exercised because I think it's important to make the effort to exercise regularly.

4. This week, I exercised because I find exercise a pleasurable activity.

Scoring for the Weekly BREQ-2

External: 1

Introjected: 2

Identified: 3

Intrinsic: 4

D.2.3. Weekly Body Image measures (adapted from PASTAS, Reed et al., 1991; BAS, Avalos et al., 2005)

Your Feelings

We'd now like to ask you a few questions about your feelings this week. Again, there are no right answers - we are interested in your personal responses.

How anxious have you felt about your body weight, shape or size this week?

Likert anchors, 5 points: Not at all anxious, A little anxious, Somewhat anxious, Quite anxious, Very anxious.

[page break]

We are interested in your feelings about a range of areas in your life and your body.

From the list below, please tick the box next to *any* area you have felt anxious or worried about this week.

1. Your friendships

2. Your muscle tone

3. Your financial situation

4. Your waist

5. Your health

6. Your career

7. Your legs

8. Your living situation

9. Your love life

10. Your stomach

[page break]

How happy have you felt with your body this week?

Likert anchors, 5 points: Not at all happy, A little happy, Somewhat happy, Quite happy, Very happy

Scoring for the Body Anxiety Checklist

Body anxiety items: 2, 4, 7, 10

One point scored for each body anxiety item checked.

Appendix E

Chapter 5

PE Student Questionnaire Measures

E.1. PE Engagement and Enjoyment Scale

Here are some statements that school pupils might make about Physical Education (PE) class.

For each one, we'd like you to let us know how you feel about PE, by circling the number which matches how true you think this statement is for you.

Likert anchors, 4 points: Not at all true for me, A little true for me, Quite true for me, Very true for me.

1. I always take part in PE
2. Even if I go to PE class, I won't put much effort in
3. I try to avoid taking part in PE
4. PE is one of my favourite subjects at school
5. Sometimes I'll make an excuse to avoid PE
6. I really enjoy PE
7. Sometimes I'll skip school to avoid PE
8. I find PE interesting
9. If PE was optional, I would still do it
10. I have fun in PE class

Scoring for PE engagement and enjoyment
Engagement: 1, 2*, 3*, 5*
Enjoyment: 4, 6, 8, 9, 10
* indicates reverse-scored item.

E.2. Self-objectification Questionnaire (Noll & Fredrickson, 1998) – Adapted to teenagers

We'd now like you to have a think about your body. Different parts of our bodies are important to different people, and make us think about ourselves in different ways.

We'd like you to look at the following list of different parts of your body, and have a think about which of these are <u>important to you about your body</u>.

When you're ready, put these different parts into order of how important you think they are to how you think about yourself, with 1 being the MOST IMPORTANT and 10 being the LEAST IMPORTANT.

Example. If Jack really cares about how strong he is but doesn't care about how much energy he has, he might put his '1' next to "How strong I am", and the 10 next to "How much energy I have".

1. How strong I am
2. How coordinated I am
3. How much I weigh
4. How much energy I have
5. What other people think of my body
6. How healthy I am
7. How attractive I am
8. My body shape and size
9. How my muscles look
10. How physically fit I am

Scoring for the SOQ-adapted
Not included in the thesis.

E.3. Adapted LTEQ (Godin & Shephard, 1985) and Extra-curricular sports participation items

We'd now like to ask you some questions about the kind of exercise you do outside of PE.

Have a think about what you've done over <u>the last three days</u>. Outside of PE, how many times have you done any of the types of activities below, and how long did you do them for?

Mild activity: *Things that don't take much effort, like easy walking, yoga or bowling.*

Moderate activity: *Things that take more effort, but aren't exhausting, like easy swimming, tennis or popular dancing.*

Strenuous activity: *Things where your heart beats quickly, like team sports, running or vigorous swimming.*

[For each: number of times, and total minutes]

Do you take part in any sports or fitness clubs outside of PE?   yes/no

If you answered YES, which clubs do you go to and how many times a week do you go to these clubs?

[space to indicate up to five clubs]

If you answered NO, and don't take part in any clubs outside of PE…

How much would you like to join a sports club outside of PE?

Likert anchors, 4 points: Wouldn't like to join at all, Would like to join a little bit, Would quite like to join, Would really like to join.

Scoring for LTEQ/Extra-curricular activity

LTEQ: *Not used in thesis. Excessive missing data.*

Extra-curricular sport: Number of clubs, number of sessions per week (total).

E.4. The Perceived Locus of Causality Scale (PLOC, Goudas et al., 1994) and the Self-Regulation Questionnaire Academic version (SRQ-A, Ryan & Connell, 1989)

We'd now like you to think about why you take part in PE activities, and why you might try to do your best in PE.

Likert anchors, 4 points: Not at all true for me, A little true for me, Quite true for me, Very true for me.

Why do you take part in the activities in PE class?

1. Because I'll get in trouble if I don't
2. Because it's important to me to take part in PE
3. Because I like PE
4. Because that's what I'm supposed to do
5. Because I want the other students to think I'm good at sports
6. Because I want to improve my abilities in PE
7. Because it's fun to take part in PE
8. So that the teacher won't yell at me
9. Because I will feel bad about myself if I don't
10. Because I enjoy taking part in PE
11. Because I want the teacher to think I'm a good student
12. Because I feel ashamed if I don't try
13. Because I want to get better at PE
14. Because it's the school rules that I have to
15. Because PE is fun
16. Because I want to learn new skills

Scoring for the PLOC/SRQ-A

External: 1, 4, 8, 14

Introjected: 5, 9, 11, 12

Identified: 2, 6, 13, 16

Intrinsic: 3, 7, 10, 15

E.5. PE Rules Questions

Here is a list of things which might happen in your PE classes. If the statement is true, circle 'true'. If it is false, circle 'false'.

[All true or false.]

We have to wear specific sports kit for PE class

We can wear whatever sports clothes we like in PE

We have time to shower after PE

We have time to change after PE

We have mixed gender PE groups (boys and girls)

We play mixed gender games when we do sports

E.6. Perceived PE Environment

Different things sometimes happen in PE classes. We're interested in what you think your PE class is like, so please be as honest as you can. There are no right or wrong answers. For each question, circle the number to show how often something happens in your classes.

Likert anchors, 5 points: Never happens, Rarely happens, Sometimes happens, Often happens, Always happens.

1. The teacher makes comments about how students look
2. The teacher makes us do individual demonstrations
3. The teacher points out what we're doing wrong in front of the whole class
4. The teacher stops the boys from making comments about how the girls look
5. The teacher spends more time with the boys than with the girls
6. The teacher treats the boys better than the girls
7. The teacher treats the girls better than the boys
8. The boys get away with messing around in PE
9. The girls get in trouble for not participating enough in PE
10. We get a lot of time to learn new skills in class
11. We do activities in PE that I will keep doing after I finish secondary school
12. We spend a lot of time learning how to play sports before we do them in class
13. The boys make comments about the girls' bodies in PE class
14. The boys are good at letting the girls take part in games
15. The girls make comments about the boys' bodies in PE class
16. The girls make comments about how each other look in PE class
17. The boys make comments about how each other look in PE class
18. We do activities in PE that I will probably participate in for the rest of my life

Scoring for PE environment measure

Body commentary: 13, 15, 16, 17

Gender bias: 5, 6, 8

Lifetime activities: 11, 18

Skill learning: 10, 12

Strict: 1, 2, 3

E.7. Self-objectifying thoughts in PE (adapted from Wolfe, 1998)

Now we're interested in some of the things you think about in PE class. Circle the number for each thought how often you have these kinds of thoughts in PE class. Remember, there are no wrong answers, and we won't be showing anybody else your answers.

Likert anchors, 5 points: Never think about this, Rarely think about this, Sometimes think about this, Often think about this, Always think about this.

In PE Class…

1. I think about how my body looks
2. I think about my schoolwork
3. I think about how my PE clothes look on me
4. I think about deadlines for homework
5. I think about how my skin and hair look
6. I think about any problems or hassles I have at the moment
7. I check how my PE clothes look on me
8. I think about the discomfort of exercising
9. I think about what other people think of my body
10. I think about my family
11. I compare my body shape to other students of the same gender
12. I check what my skin and hair look like
13. I have daydreams about the future
14. I think about other students looking at me

Scoring for Self-objectifying thoughts in PE

Self-objectifying thoughts items: 1, 3, 5, 7, 9, 11, 12, 14

E.8. Body Esteem (Mendelson, White, & Mendelson, 1996)

Some young people are happy with their weight and the way they look, but some young people are not happy with their weight and do not like the way they look. We've listed some possible ways young people think or feel about how they look and we'd like to know how true each of these things are for you.

Put a circle around the answer that shows how true each statement is for you.

Likert anchors, 4 points: Not at all true for me, A little true for me, Quite true for me, Very true for me.

1. I'm pretty happy about the way I look
2. My weight makes me happy
3. I like what I see when I look in the mirror
4. I wish I were thinner
5. There are lots of things I'd change about my looks if I could
6. I'm proud of my body
7. I really like what I weigh
8. I wish I looked better
9. I think I have a good body
10. The way I look upsets me
11. I worry about the way I look

Scoring for Body Esteem Scale

Positive body image: 1, 2, 3, 6, 7, 9

Negative body image: 4, 5, 8, 10, 11

E.9. Demographic Details and Open-ended Questions

Are you …   male/female ?

Are you …   year 8/year 9 ?

Now we're interested in what you've done this year in PE, and what your lessons are like.

What sports or activities have you done in PE this year? List as many as you can remember.

What is your favourite lesson that you've done in PE this year? Why did you like it?

If you could change one thing to make PE more enjoyable, what would you change?

Appendix F

Chapter 5

School and year differences: ANOVA summaries

F.1. Full ANOVA results for all psychological variables.

Variable	F-value			Error (df)
	School (df = 3)	Year (df = 1)	School x Year (df = 2)	
PE environment factors				
Body commentary	4.04**	12.41***	1.21	658
Gender bias	1.72	0.76	5.56**	611
Skill learning opportunities	21.19 ***	5.36*	8.56***	672
Lifetime activities	26.63***	8.24**	10.34***	669
Regulation of behaviour in PE				
External regulation	2.64*	1.88	4.24*	679
Introjected regulation	11.90***	2.64	1.69	678
Identified regulation	30.11***	7.85**	5.89**	678
Intrinsic regulation	37.46***	5.02*	3.70*	678
Self-objectifying thoughts in PE	6.24***	11.98**	4.15*	668
Outcome variables				
Positive body image	3.71*	3.84*	4.43*	664
Negative body image	4.22**	2.51	1.44	664
PE engagement	36.22***	4.16*	3.98*	685
PE enjoyment	26.95***	6.18*	1.11	685

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$.

F.2. Figures visualising school differences.

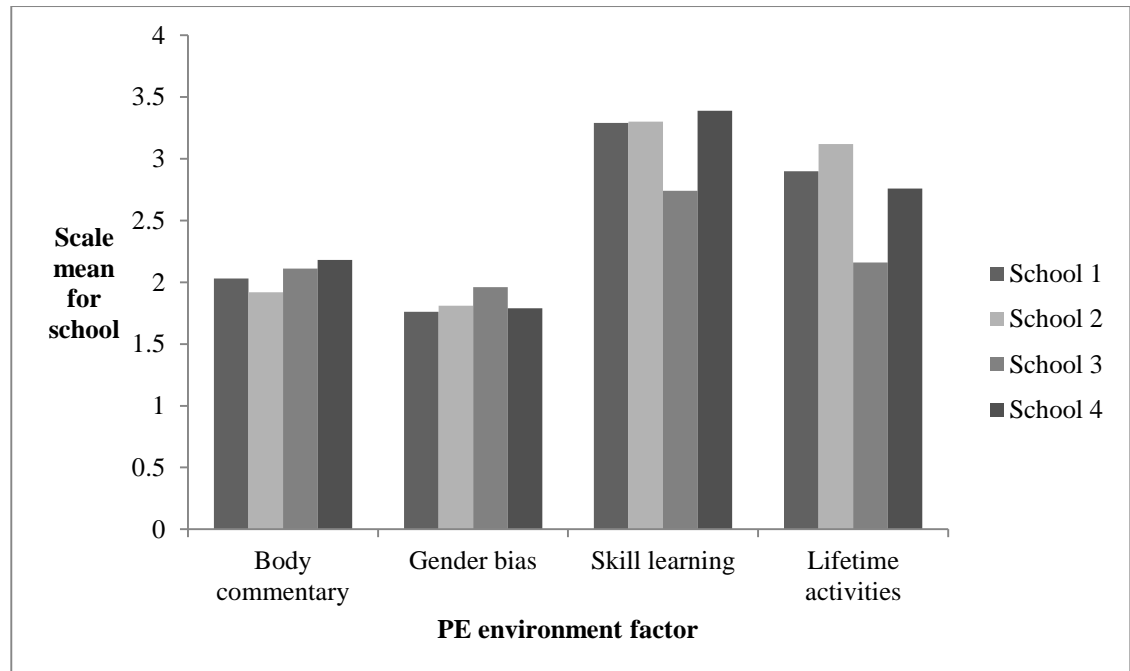Figure F.2.1. School differences in perceptions of PE environment

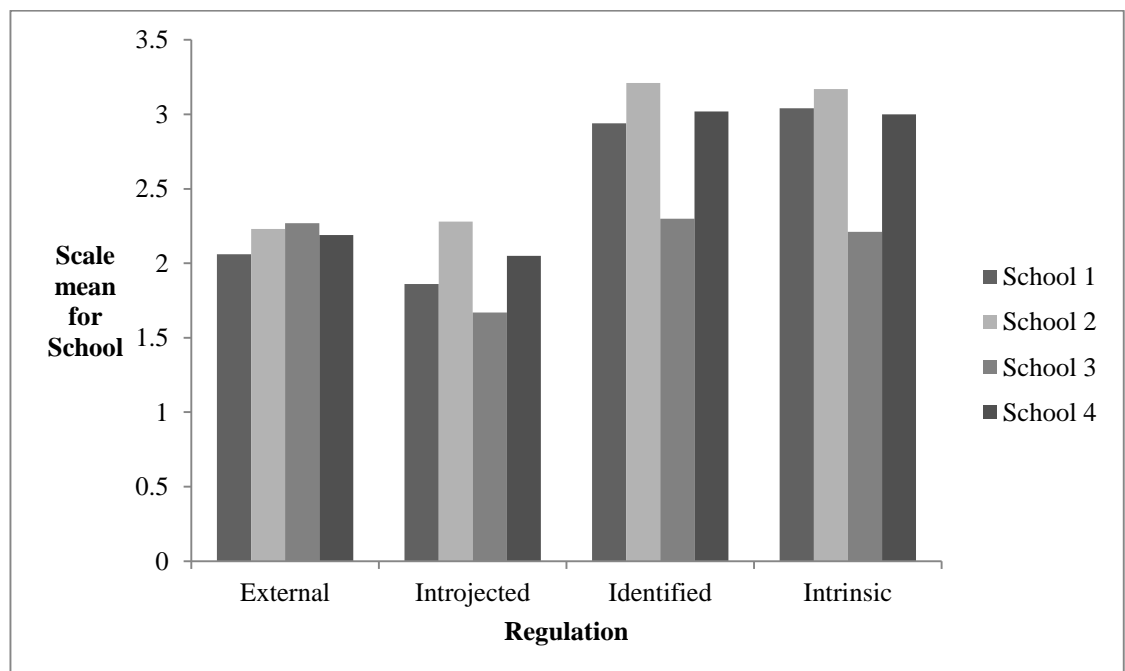Figure F.2.2. School differences in regulation in PE.
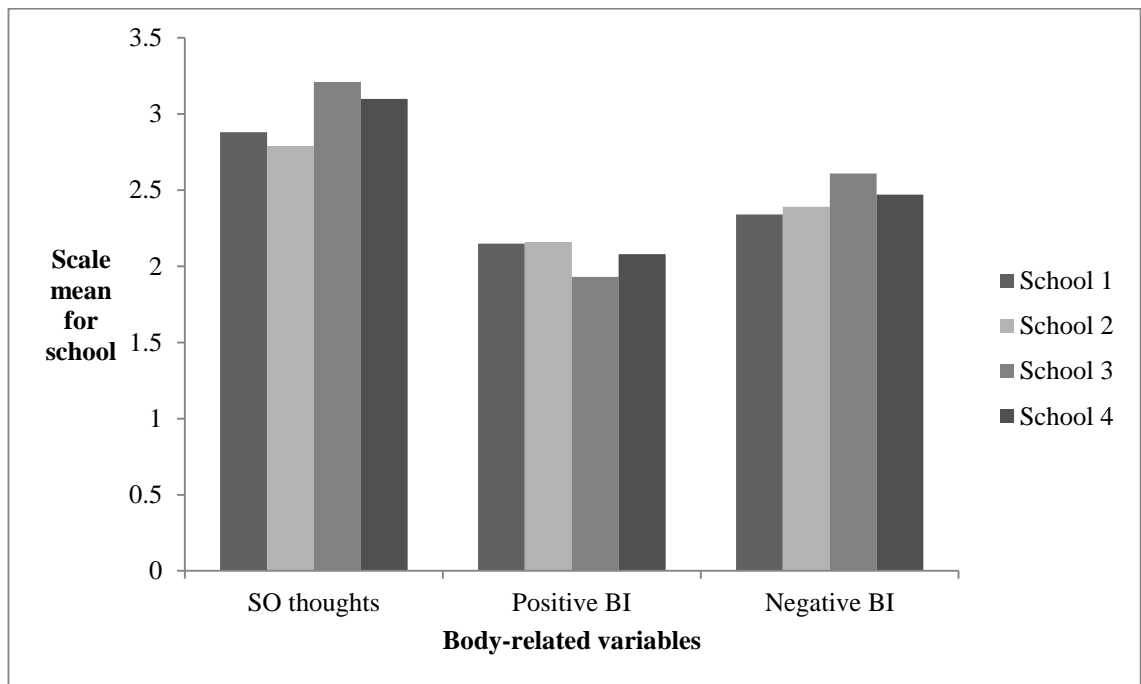
Figure F.2.3. School differences in body image variables.

Figure F.2.4. School differences in PE engagement and enjoyment.