

Digital Alteration Disclaimer Labels on Fashion Magazine Advertisements: Role of Social  
Appearance Comparison and Effect on Body Dissatisfaction

Belinda Bury

BA (Hons), Graduate Diploma in Psychology

School of Psychology

Faculty of Social and Behavioural Sciences

Flinders University

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## THESIS SUMMARY

Digital alteration is a practice now routinely used by the fashion, media and advertising industries to render already thin models even thinner and more attractive. One strategy that has been advocated by policy makers and governments in an attempt to reduce the known negative effects of exposure to thin idealised media imagery, such as in fashion magazines, is the use of disclaimers of digital alteration. More generally, the negative effects of thin ideal media exposure have been attributed to women comparing their appearance with the models and feeling worse when they do not measure up. The rationale behind the use of disclaimer labels is that they would highlight a model's appearance as unrealistic, and thereby reduce comparison on the basis of appearance and preserve body satisfaction.

As yet there is little evidence as to the effectiveness of disclaimers of digital alteration. Thus, the first major aim of the thesis was to determine whether there are certain conditions under which disclaimer labels appended to fashion magazine advertisements can be rendered effective. The second major aim was to investigate the role of social comparison as a potential mechanism underlying the effect (or lack of effect) of disclaimer labels. Finally, eye tracking technology was used to investigate the effect of the wording of disclaimer labels on women's visual attention to various areas of the advertisements, and the relationship of this visual attention to social comparison and body dissatisfaction.

Experiment 1 (Chapter 2) investigated the impact of experimental instructions on the effectiveness of disclaimer labels on fashion magazine advertisements. Disclaimer labels did not affect social comparison or body dissatisfaction, but social comparison instructions did. In addition, there was a three-way interaction between disclaimer labels, instructional set, and trait appearance comparison. For women in the distractor condition who saw disclaimers which specified the altered body areas, those high on trait appearance comparison

experienced increased body dissatisfaction, whereas those low on this trait experienced decreased body dissatisfaction.

Both Experiment 2 (Chapter 3) and Experiment 3 (Chapter 4) used eye tracking technology to verify that women do notice and attend to disclaimer labels. In Experiment 2, specifically worded disclaimer labels directed visual attention toward target body areas, with this effect stronger for women high on trait appearance comparison. In Experiment 3, this visual attention was associated with increased body dissatisfaction.

Finally, Experiment 4 (Chapter 5) investigated whether a brief digital alteration informational message presented before exposure to the advertisements would enhance the effectiveness of the disclaimer labels. This was not found to be the case. However, trait appearance comparison moderated the effect of the message on women's perceived realism of the models.

Together, the experiments confirmed that women did notice and attend to the disclaimer labels, but that the disclaimer labels had no overall benefit on either social appearance comparison or body dissatisfaction. In fact, specifically worded disclaimer labels led to *increased* body dissatisfaction for some women.

## DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed.....

Belinda Bury  
BA (Hons), Graduate Diploma in Psychology

Date.....

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## CHAPTER 1: GENERAL INTRODUCTION

### Chapter Overview

Although body image is a complex construct, most research and general interest has focussed on body dissatisfaction. Indeed, many women and girls in Western societies experience their bodies negatively and feel pressure to aspire to the societal ideal of beauty. Body dissatisfaction has a range of negative consequences, including disordered eating, and accordingly there is increasing societal concern about the prevalence of body dissatisfaction, as well as heightened importance in finding ways to prevent body dissatisfaction.

The thesis investigated one suggested body dissatisfaction prevention strategy, namely, the use of disclaimers of digital alteration applied to thin ideal media images. Conditions under which disclaimer labels may decrease short term or state body dissatisfaction were investigated within the framework of Social Comparison Theory. The present chapter seeks to provide a general introduction to the four experiments in the thesis, setting the context both theoretically and politically. It includes a description of body image and sociocultural effects, as well as a broad summary of the research evidence for negative body image effects from thin ideal media exposure, the role of social comparison, and prevention strategies in general. It then traces the history of the development of disclaimer labels indicating digital alteration, and concludes with the major aims and outline of the thesis.

### Body Image and Body Dissatisfaction

Body image is a multifaceted construct that broadly encompasses a person's experience of their body size and shape (Grogan, 2008; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Cash (2002) proposed that body image develops due to the interaction of a number of different influences, namely environment and cultural socialisation, interpersonal experiences, physical characteristics, as well as individual personality

differences. He also distinguishes between body image evaluation (satisfaction-dissatisfaction) and body image investment (the importance attached to the body for self-evaluation).

Body dissatisfaction is conceptualised as occurring on a continuum ranging from extreme satisfaction to extreme dissatisfaction with one's body. Body dissatisfaction occurs when a person experiences a discrepancy between their ideal and self-evaluated body and has negative thoughts and feelings as a consequence (Cash, 2011; Grogan, 2008). This can occur at a state level, with short term changes induced by experiences and environmental influences, but can also be conceptualised longer term as a stable individual trait (Cash, 2011; Grogan, 2008).

Of concern, body dissatisfaction has become increasingly widespread among women across Western societies (Paraskeva, Lewis-Smith, & Diedrichs, 2015; Wykes & Gunter, 2005), including Australia (Krawitz, 2014; Paxton & Hay, 2009; Tiggemann, 2011). Weight has been described as a case of "normative discontent" for women (Tiggemann, 2011, p. 12). Importantly, body dissatisfaction has been associated with greater depression and lowered self-esteem, as well as being identified as a major risk factor for eating disorders (Dittmar, 2009; Posavac, Posavac, & Weigel, 2001; Stice, 2002; Thompson et al., 1999). Thus, it has become increasingly important to identify interventions which help to reduce this concerning spread of body dissatisfaction (Posavac et al., 2001).

### **Sociocultural Effects on Body Dissatisfaction**

Body image has generally been conceptualised within a sociocultural framework. Broadly, such a framework proposes that there exist societal ideals of beauty which are disseminated through a variety of sociocultural means. Individuals then internalise those ideals and experience (dis)satisfaction according to the extent that they achieve those ideals or not (Tiggemann, 2011). The most widely supported specific sociocultural model used to

explain the current high levels of body dissatisfaction is the Tripartite Influence model (Thompson et al., 1999). According to the Tripartite Influence model, peers, family, and the media are the three main sociocultural influences on women's body image disturbance (Grogan, 2008; Thompson et al., 1999; van den Berg, Thompson, Obremski-Brandon, & Covert, 2002). There is a sizeable body of evidence linking each of these to body dissatisfaction (Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002; Jones, 2011; Tiggemann, 2011; Wertheim & Paxton, 2011).

Of these influences, the mass media have been identified as the most pervasive and influential transmitter of appearance ideals in Western societies (Thompson et al., 1999; Tiggemann, 2011). Content analyses have identified that the Western female beauty ideal has become increasingly thin over time, corresponding with widespread increases in body dissatisfaction (Tiggemann, 2011; Wykes & Gunter, 2005). Globally, increased access to Western mass media in non-Western societies has coincided with increased internalisation of the thin ideal (Chisuwa & O'Dea, 2010; Levine & Chapman, 2011; Tiggemann, 2011), and body dissatisfaction and eating disorders have been identified as more prevalent within sub-cultures of Western society where appearance is highly regarded (Tiggemann, 2011).

### **Effects of Thin Ideal Media Exposure**

The Tripartite Influence model identifies internalisation of the societal thin ideal, and more recently, comparison on the basis of appearance, as underlying mechanisms by which exposure to idealised media images leads to the development of body image disturbance (Thompson et al., 1999; Tiggemann, 2011; van den Berg et al., 2002). Of particular concern, contemporary media imagery does not at all represent the average woman, but rather consists of a plethora of naturally thin models made even thinner and more attractive by the common practice of digital alteration (Bennett, 2008; Grogan, 2008; Harper & Tiggemann, 2008; Paraskeva et al., 2015; Wykes & Gunter, 2005). Despite the resulting ideal being unrealistic

and impossible for the average woman to achieve, women still accept and internalise the thin ideal as a standard against which to compare their own appearance (Strahan, Wilson, Cressman, & Buote, 2006; Tiggemann, 2011).

In terms of research evidence for the role of thin ideal media in the development of body dissatisfaction, a large number of correlational studies have shown that naturally occurring media exposure is associated with body dissatisfaction, internalisation of the thin ideal, and disordered eating (for meta-analyses, see Grabe et al., 2008; Levine & Murnen, 2009). Importantly, experimental evidence has also demonstrated that acute exposure to thin idealised media images can lead to increased body dissatisfaction (for meta-analyses, see Grabe et al., 2008; Groesz et al., 2002; Want, 2009), although it has also been suggested that this may only occur for more vulnerable women (Hausenblas, Campbell, Menzel, Doughty, Levine, & Thompson, 2013). Indeed, women with pre-existing body dissatisfaction and those who have internalised the thin ideal to a greater extent have been shown to experience relatively worse body image following exposure to thin idealised images (Groesz et al., 2002; Richardson & Paxton, 2010; Thompson et al., 1999; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005).

### **The Role of Social Comparison**

Heightened body dissatisfaction following exposure to thin ideal media images has commonly been attributed to the process of social comparison on the basis of appearance (Bessenoff, 2006; Myers & Crowther, 2009; Want, 2009). According to the original postulation of Social Comparison Theory (Festinger, 1954), people desire to evaluate their abilities and opinions, and if no objective measure is available, will compare with others on the dimension of comparison. Since Festinger's original postulation of social comparison as an evaluative process, more recent proposals suggest that the motivation for comparison can also be self-improvement or self-enhancement (Halliwel & Dittmar, 2005; Wood, 1989). It

has been reasoned that women compare their appearance with that of the models in the media images (an upward comparison), and feel worse when they fail to measure up to the unrealistic beauty standard (Levine & Murnen, 2009; Myers & Crowther, 2009; Want, 2009; Wykes & Gunter, 2005). Supporting this, experimental studies have shown that social appearance comparison processing at least partially mediates the negative effect of thin ideal exposure on women's body image (Bessenoff, 2006; Tiggemann & McGill, 2004; Tiggemann & Polivy, 2010; Tiggemann, Polivy, & Hargreaves, 2009).

Further, the original theory postulated that people select comparison targets similar to themselves as the most relevant source of information. If this were indeed the case, women should *not* compare their appearance with that of idealised models in the media, as these are not at all similar to the average women (Grogan, 2008; Myers & Crowther, 2009). However, it has been shown that women do compare themselves to thin models in media images when evaluating their own appearance (Strahan et al., 2006). It has been suggested that women compare their appearance with that of these models (albeit unfavourably) because they consider the models relevant conveyors of the socio-cultural norms of beauty to which they aspire (Engeln-Maddox, 2005; Grogan, 2008; Myers & Crowther, 2009; Strahan et al., 2006). It has also been shown that, rather than only comparing with similar others such as peers, there are individual differences in the tendency to engage in upward comparisons with others who are superior on the dimension of comparison, or in downward comparisons with others who are worse off (Major, Testa, & Bylsma, 1991; Myers & Crowther, 2009; Wheeler & Miyake, 1992).

In addition, experimental studies have shown that the dimension on which comparisons are made and the underlying motivation for comparison can determine the outcome of thin ideal exposure. For instance, when women were specifically instructed to compare on the basis of appearance, they were more likely to be negatively affected by thin

ideal imagery (Cattarin, Thompson, Thomas, & Williams, 2000). However, when women compared themselves with thin ideal images of models on the dimension of intelligence rather than appearance, they were less likely to experience negative body image effects (Tiggemann & Polivy, 2010). Similarly, when the motivation was self-improvement rather than self-evaluation, women were less likely to be negatively affected by thin ideal imagery (Halliwell & Dittmar, 2005). Thus, the *type* of processing that women engage in appears to influence the outcome of thin ideal media exposure.

Social comparison can be conceptualised as both a state process in reaction to thin ideal exposure, as well as a trait individual difference variable. Indeed, trait appearance comparison has been found to moderate the negative effects of thin ideal media exposure on body image (Dittmar & Howard, 2004; Tiggemann, Slater, Bury, Hawkins, & Firth, 2013). The experiments in the thesis examined the role of both state and trait level social comparison.

### **Prevention**

Many groups internationally and in Australia are trying to develop strategies to reduce the prevalence of body dissatisfaction, as highlighted by the political advocacy efforts of groups such as the National Eating Disorder Association (NEDA) in the United States of America, Beating Eating Disorders (BEAT) in the United Kingdom, and the Butterfly Foundation in Australia (Paxton, 2015). In addition to the availability of interventions and treatments that are aimed at individuals who have developed body image or eating difficulties (Heinicke, Paxton, McLean, & Wertheim, 2007; Paxton & Hay, 2009), policy makers and governments have begun to consider a variety of social policies, with a view to preventing media-induced negative body image effects and eating disorders (Krawitz, 2014; Paraskeva et al., 2015).

Paxton (2011, 2015) identified three broad areas of social policy activism aimed at preventing the development of body image and eating difficulties. First, there are prevention strategies aimed at the whole population, which include social marketing advertising campaigns and internet prevention resources. Second, there are strategies aimed at changing the actions of the media, fashion, and advertising industries through the use of public policy, legislation and voluntary industry codes of conduct, which require, among other things, more realistic depictions of women's bodies and disclosure of digital alteration (Krawitz, 2014). Both of these types of primary prevention are termed *universal* in that they are directed at the whole population irrespective of individual risk factors (Neumark-Sztainer, Levine, Paxton, Smolak, Piran, & Wertheim, 2006). Finally, there are more targeted programs offered within educational settings which focus on media literacy and consumer activism, with the aim of inoculating (primarily) adolescent girls against internalisation of the thin ideal and resultant negative impacts on their body image. These programs have been termed *universal-selective* in that they are focussed on 'at risk' groups who do not yet exhibit signs of poor body image or disordered eating (Neumark-Sztainer et al., 2006).

In general, media literacy programs which encourage women and girls to be critical of messages presented to them by the media have shown promise in reducing body image disturbance from thin ideal exposure (Levine & Murnen, 2009; Ogden & Sherwood, 2008; Posavac et al., 2001; Richardson & Paxton, 2010; Want, 2009; Yamamiya et al., 2005). These programs (e.g., *Happy Being Me* and *Media Smart* in Australia) typically include multiple components, such as psycho-education about digital enhancement of media images (including examples of before and after images to show the extent of change), discourage appearance comparison, and encourage consumer activism with participants becoming actively involved in advocacy efforts (Ogden & Sherwood, 2008; Posavac et al., 2001; Richardson & Paxton, 2010; Want, 2009; Wilksch & Wade, 2009). Indeed, media literacy

training has been found to be more effective when presented interactively (rather than didactically) and when run over multiple sessions, enabling reinforcement of learning (Richardson & Paxton, 2010; Wilksch & Wade, 2009).

However, despite the reported effectiveness of media literacy programs, they are intensive and time consuming, requiring many resources such as instructors, meeting rooms, and learning tools, and so cannot realistically be offered society-wide. Thus, policy makers globally have begun to look for quicker and easier-to-implement *universal* interventions which will reach the broader population. One possibility would be to change the representation of women's bodies by the media, fashion, and advertising industries (Krawitz, 2014; Paxton, 2015). Indeed, there have been some developments in this direction, such as the introduction of a law in Israel banning the use of extremely thin models below a body mass index of 18.5, and international advocacy calling for these industries to use models of various sizes representing a healthy weight (Krawitz, 2014).

Nevertheless, due to the perception that thin and attractive models help to sell products, it is unlikely that advertisers, magazine editors, and the fashion industry will voluntarily stop using models whose appearance has been transformed by digital enhancement to render them near perfect. Another suggested strategy is the addition of a warning or disclaimer label on advertisements and other media images when the appearance of a model has been enhanced via digital alteration technology (Krawitz, 2014; Paraskeva et al., 2015). The rationale behind the use of a disclaimer label is that it would highlight a model's appearance as unrealistic, thereby reducing (upward) social comparison on the basis of appearance, and thus preserving body satisfaction (Tiggemann et al., 2013).

### **Development and Effectiveness of Disclaimer Labels**

One of the first proposals for the introduction of disclaimer labels was a 2010 bill introduced into the French National Assembly to make it illegal to print digitally retouched



images without a disclaimer (Boyer, 2010; Krawitz, 2014). Legislation requiring advertisements to carry disclaimers if images of models have been digitally altered has since been approved by the French lower house (April 2015), with this legislation currently awaiting approval by the upper house to become law (Charlton, 2015). Around the same time (2010), the Liberal Democrats party in England proposed that disclaimers be attached to any digitally altered advertisement (Krawitz, 2014), but this advocacy effort has not yet progressed to legislation. In 2012, Israel was the first country to actually pass a law, the ‘Photoshop Law’, requiring the advertising industry to disclose when images have been digitally enhanced to make the model thinner (Geuss, 2012; Krawitz, 2014).

Although no legislation has been introduced in Australia, early on, in 2009, the Australian National Advisory Group on Body Image introduced the Voluntary Code of Conduct which targeted the fashion, media and advertising industries (Krawitz, 2014). One recommendation under this code was that a disclaimer of digital alteration should be attached to any media image that had been digitally enhanced. Some popular Australian teen magazines have begun to experiment with the use of some form of disclaimer. In particular, *Girlfriend* has used a “self-respect reality check” label and *Dolly* has used labels that state that the image has not been digitally altered (Slater, Tiggemann, Firth, & Hawkins, 2012). As yet, however, these labels can only be applied to in-house images, not to advertisements or other material supplied by external sources that make up the bulk of the magazines (Slater et al., 2012).

Although there has been much enthusiasm for the introduction of digital alteration disclaimer labels, there has been little empirical research on their effectiveness at reducing the negative effects of thin ideal media exposure on women’s body image. When the experiments in the thesis commenced, there were only a handful of such studies in the published literature, and their findings were mixed. Only one study by Slater et al. (2012)

reported that disclaimer labels attached to fashion shoots led to reduced body dissatisfaction. However, two other studies which investigated the use of disclaimer labels on fashion magazine advertisements found no such benefit (Ata, Thompson, & Small, 2013; Tiggemann et al., 2013). Indeed, in one study, disclaimer labels which specified the body areas that had been digitally altered actually led to increased body dissatisfaction for women high on trait appearance comparison (Tiggemann et al., 2013).

### **Aims of the Thesis**

In view of the interest by policy makers and governments in introducing legislation or at least voluntary codes requiring the use of digital alteration disclaimer labels, and the lack of research evidence as to their effectiveness, the thesis broadly investigated the effectiveness of disclaimer labels and their underlying mechanisms. Four separate experiments were conducted with varying manipulations. In all experiments, young women were exposed to the same set of thin ideal fashion magazine advertisements, with the addition of disclaimer labels of various forms on the advertisements. The first major aim was to determine whether there are certain conditions under which disclaimer labels are more likely to be effective, that is, with certain experimental instructions (Experiment 1), or with a brief digital alteration informational message presented before exposure to the advertisements (Experiment 4). The second major aim was to investigate the role of social comparison as a potential mechanism underlying the effect (or lack of effect) of disclaimer labels. In Experiments 1, 3, and 4, this was investigated at both the state and trait level of social comparison. Finally, two studies incorporated eye tracking technology to investigate the impact of the wording of disclaimer labels on women's visual attention to various areas of the advertisements (Experiment 2), and the relationship of this visual attention to social comparison and body dissatisfaction (Experiment 3).

## Outline of the Thesis

Chapter 2 presents the results of Experiment 1, which was an investigation of the impact of experimental instructions on the effectiveness of digital alteration disclaimer labels of different forms (generic, specific) on social comparison and body dissatisfaction. Chapter 3 presents the results of Experiment 2, which used eye tracking technology to establish whether women actually noticed the disclaimer labels, and whether specifically worded disclaimer labels directed women's visual attention to particular areas of the advertisements. Experiment 3 (Chapter 4) extended the findings of Experiment 2, to investigate whether this visual attention was related to social comparison and body dissatisfaction. Chapter 5 presents the results of the last experiment (Experiment 4), which investigated whether a brief informational message about digital alteration presented prior to thin ideal advertisement exposure enhanced the effectiveness of disclaimer labels affixed to those advertisements. Finally, Chapter 6 provides an overall integrated discussion of the findings of the four experiments.

All chapters in the thesis were prepared as manuscripts. Chapters 3 and 4 (Experiments 2 and 3) have been published in the journal *Body Image: An International Journal of Research*, while Chapter 2 (Experiment 1) and Chapter 5 (Experiment 4) are currently under review. As the chapters have been prepared as papers for different journals, their formatting varies slightly. In addition, as the chapters include some of the same basic background information and methodology, there is some repetition in the Introduction and Method sections of the four manuscripts/chapters.

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## CHAPTER 2: EXPERIMENT 1

### **The effect of digital alteration disclaimer labels on social comparison and body image:**

#### **Instructions and individual differences**

Belinda Bury<sup>a</sup>, Marika Tiggemann<sup>a</sup>, and Amy Slater<sup>b</sup>

<sup>a</sup>School of Psychology, Flinders University, South Australia

<sup>b</sup>Centre for Appearance Research, University of the West of England, United Kingdom

**Corresponding author:** Belinda Bury, School of Psychology, Flinders University, GPO Box 2100, Adelaide, 5001, South Australia. Email: [belinda.bury@flinders.edu.au](mailto:belinda.bury@flinders.edu.au)

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## ABSTRACT

The current study investigated the effect of digital alteration disclaimer labels appended to fashion magazine advertisements, as well as instructional set, on women's social comparison and body dissatisfaction. Participants were 378 female undergraduate students who viewed eleven thin ideal advertisements with either no disclaimer, a generic disclaimer, or a more detailed specific disclaimer. There were three instructional conditions: neutral, distractor, and social comparison. Disclaimer labels did not affect appearance comparison or body dissatisfaction, but instructional set did, with the social comparison instructions producing the highest appearance comparison and body dissatisfaction. In addition, there was a three-way interaction with trait appearance comparison, such that women high on trait appearance comparison who saw specifically worded disclaimers in the distractor instructional condition experienced increased body dissatisfaction, whereas women low on this trait experienced decreased body dissatisfaction. It seems that both instructions and individual differences may influence responses to disclaimer labels.

It has now been well established that exposure to thin idealised media images can impact negatively on women's body image (Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002; Levine & Murnen, 2009; Want, 2009). These negative effects happen particularly for more vulnerable women, that is, for those who have internalised the thin ideal to a greater extent (Dittmar & Howard, 2004; Grabe et al., 2008; Groesz et al., 2002; Heinberg & Thompson, 1995; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005) or who make comparisons on the basis of appearance because appearance is important to their self-concept (Dittmar & Howard, 2004; Halliwell & Dittmar, 2005). Negative body image, in particular body dissatisfaction, has been found to be associated with increased risk of depression, low self-esteem, and eating disorders (Dittmar, 2009; Posavac, Posavac, & Weigel, 2001; Stice, Schupak-Neuberg, Shaw, & Stein, 1994). Thus, the impact of thin ideal media imagery has become an important societal concern.

In an attempt to reduce negative effects due to exposure to thin ideal media imagery, in 2009 the Australian National Advisory Group on Body Image introduced the Voluntary Code of Conduct which targeted the fashion, media and advertising industries (Krawitz, 2014). One recommendation under this Code was that a disclaimer of digital alteration should be attached to a media image that had been digitally enhanced. Since the above Code was introduced, Israel passed a law in 2012 requiring the advertising industry to disclose when images have been digitally enhanced (Geuss, 2012; Krawitz, 2014). Then, in April 2015, legislation was approved by the French lower house requiring advertisements to carry disclaimers if images of models have been digitally altered. This legislation will need to be approved by the upper house to become law (Charlton, 2015) and, if passed, is expected to be in force by the end of 2015.

Disclaimers of digital alteration appended to advertisements, for instance in women's fashion magazines and displayed on public billboards, are appealing and attractive to policy

makers and governments because they are easy and relatively cheap to implement. However, before a strategy is implemented widely in society, there needs to be evidence of its effectiveness. More generally, media literacy programs which include a focus on the practice of digital alteration and enhancement (models made thinner and more attractive, including removing wrinkles and blemishes) have shown some promise in encouraging women to become more critical of images and messages presented to them by the media (Halliwell, Easun, & Harcourt, 2011; Ogden & Sherwood, 2008; Posavac et al., 2001; Yamamiya et al., 2005). Thus, it seems plausible that disclaimer labels indicating digital alteration might encourage women to be more critical of the unrealistic thin ideal images presented in fashion magazines. Based on the logic that negative body image results from comparisons with unrealistic thin ideal media images (Festinger, 1954; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Want, 2009), it is reasoned that a disclaimer label would highlight a model's appearance as unrealistic, reducing its appropriateness as a comparison target. The disclaimer label would thereby reduce social comparison on the basis of appearance, and thus preserve body satisfaction (Tiggemann, Slater, Bury, Hawkins, & Firth, 2013).

However, despite this plausibility, the existing research has produced mixed findings regarding the effectiveness of disclaimers of digital alteration applied to images from women's fashion magazines. Thus far, only one study by Slater, Tiggemann, Firth, and Hawkins (2012) has found that disclaimer labels attached to fashion shoots did indeed lead to reduced body dissatisfaction. However, studies which have investigated the use of disclaimer labels on advertisements in fashion magazines have found no such benefit (Ata, Thompson, & Small, 2013; Bury, Tiggemann, & Slater, 2015; Tiggemann et al., 2013). In fact, one form of disclaimer label has been found to exacerbate the negative effects of exposure to unrealistic thin ideal advertisements for some women. In particular, for women high on trait

appearance comparison, disclaimer labels which specified the body areas that had been digitally altered led to increased body dissatisfaction (Tiggemann et al., 2013).

One possible explanation as to why the previous studies found no reduction in body dissatisfaction is that the disclaimer labels may not in fact have reduced social comparison. Indeed, in their first experiment, Tiggemann et al. (2013) reported significantly higher appearance comparison for women who saw disclaimer labels, with a non-significant trend in the same direction for their second experiment. In addition, one eye-tracking study has shown that specifically worded disclaimer labels direct more, rather than less, visual attention toward body areas mentioned as digitally altered (Bury, Tiggemann, & Slater, 2014).

Comparisons on the basis of appearance can be made consciously, but alternatively, they can be unintentional and automatic (Bessenoff, 2006; Gilbert, Giesler, & Morris, 1995; Want, 2009). It has been suggested that women may only consider the relevance or appropriateness of such comparisons after they have already been made, and may then attempt to “undo” them if the situation, their cognitive engagement, and their level of motivation allow (Gilbert et al., 1995; Want, 2009). In all previous experimental investigations (Ata et al., 2013; Bury et al., 2015; Tiggemann et al., 2013), participants were requested to rate the viewed advertisements on non-appearance qualities such as creativity, layout, and effectiveness. Thus, it is possible that the cognitive load involved in the process of making these ratings inadvertently left participants with insufficient capacity to attend to the implications of the disclaimer labels and to consciously undo any inappropriate comparisons (Gilbert et al., 1995; Want, 2009).

More generally, there is evidence that experimental instructions, and thus the type of information processing women engage in, can impact the effect of thin ideal exposure. In particular, it has been shown that social comparison instructions lead to increased appearance comparison processing and body dissatisfaction for women exposed to thin ideal

advertisements (Cattarin, Thompson, Thomas, & Williams, 2000; Tiggemann & McGill, 2004; Tiggemann & Polivy, 2010; Tiggemann, Polivy, & Hargreaves, 2009). Accordingly, it is likely that experimental instructions might also affect how women process the information contained in digital alteration disclaimer labels, and consequently, the subsequent effects on body image.

Thus, the major aim of the current study was to investigate in more detail the role of social comparison processing in determining the effectiveness of disclaimer labels affixed to fashion magazine advertisements, by not only measuring it, but by also manipulating experimental instructions to induce greater or lesser amounts of social comparison processing. Following Tiggemann and McGill (2004), processing was manipulated via three different instructional conditions. In the neutral instructional condition, in order to reduce cognitive load, participants were simply asked to view the advertisements. The other two instructional conditions imposed some cognitive load. In the distractor instructional condition, participants were asked to rate non-appearance qualities of the advertisements (as per the procedures used by Ata et al. (2013), Bury et al. (2015), and Tiggemann et al. (2013)). In the social comparison instructional condition, participants rated items that subtly encouraged comparison with the models in the advertisements.

Based on the reasoning that preventing or undoing appearance comparison requires cognitive effort, it was expected that instructional set would interact with disclaimer label type in affecting both social appearance comparison and body dissatisfaction. In particular, in the neutral instructional condition where participants were not required to rate the advertisements, it was anticipated that the disclaimer labels would be effective in reducing social comparison and body dissatisfaction. That is, when participants were not made cognitively busy assessing non-appearance qualities of the advertisements, they would retain the cognitive resources necessary to mentally undo (inappropriate) comparisons with the



unrealistic thin ideal images. However, for participants in the distractor instructional condition, it was expected that results would replicate those of the previous studies in which disclaimer labels have not proved effective in reducing body dissatisfaction (Ata et al., 2013; Bury et al., 2015; Tiggemann et al., 2013). This same pattern was expected for the social comparison instructional condition, with both appearance comparison and body dissatisfaction expected to be highest for participants in this condition.

Finally, the effect of individual differences in trait levels of social comparison was assessed. Trait appearance comparison was expected to moderate the effect of disclaimer label type on body dissatisfaction, as has been found in previous research (Tiggemann et al. 2013). More precisely, it was expected that specifically worded disclaimer labels would be least effective for women high on the trait tendency to compare on the basis of appearance, as such women may be more cognitively primed (than women low on trait appearance comparison) to attend to any information related to appearance (Yamamiya et al., 2005), and also be less motivated to avoid such information or comparisons (Want, 2009).

## **Method**

### **Design**

The experiment employed a 3 x 3 between-subjects design, with three levels of both independent variables: disclaimer label (no label, generic, specific) and instructional set (neutral, distractor, comparison). The major dependent variables were state appearance comparison and body dissatisfaction. Trait tendency for appearance comparison was examined as a potential moderating variable.

### **Participants**

Participants were 378 female undergraduate students at a South Australian university who reported that English was their first language. Age ranged from 18 to 30 years, with a mean age of 20.1 years ( $SD = 2.9$ ). The average body mass index of 22.8 ( $SD = 4.4$ ) fell

within the normal weight range (World Health Organisation, 2011). The majority of participants identified as White (82.5%), with 14.8% Asian, and 2.7% ‘other’.

## **Materials**

**Thin ideal stimuli.** The stimuli consisted of eleven thin ideal advertisements (plus four product only advertisements) sourced from popular women’s fashion magazines readily available in Australia, including *Cleo*, *Marie Claire*, and *Vogue*. The fifteen advertisements were chosen from an initial pool of 50 advertisements (30 thin ideal, 20 product only) to represent a typical fashion magazine collection. The advertisements were all for fashion related items, such as clothes, accessories, and perfume. Each advertisement satisfied the following criteria: only one female model, the model represented the thin ideal, at least three quarters of the model’s body was visible, the model was not a well-known celebrity, and the advertisement did not refer to weight loss.

The advertisements were printed on high quality A4-size photographic paper and presented in a folder to imitate the layout of a fashion magazine. Three different versions of each thin ideal advertisement were constructed. These included the original advertisement with no disclaimer label, the same advertisement with a generic disclaimer label added using *Adobe Photoshop*, and the advertisement with a specifically worded disclaimer label. In the generic disclaimer label condition, the label read “Warning: This image has been digitally altered”. In the specific disclaimer label condition, the disclaimer label specified particular body areas that had been altered, tailored for each advertisement, e.g., “Warning: This image has been digitally altered to lengthen and thin legs”. Disclaimer labels were positioned in the corner that best suited the individual layout of the advertisement to ensure that the label was clearly visible. Labels were printed in size 12 Calibri font enclosed within a thin border, and were similar in size to those previously used by Ata et al. (2013) and Tiggemann et al. (2013). Previous research has demonstrated by manipulation check (Ata et al., 2013) and

analysis of eye movements (Bury et al., 2014) that participants do notice disclaimer labels of this size affixed to fashion magazine advertisements.

**Instructional set.** There were three instructional set conditions (neutral, distractor, comparison). In the neutral instructional condition, participants were asked to simply look at each advertisement. In both other conditions, participants were required to rate the advertisement in a ‘Consumer Response Questionnaire’. Following Tiggemann and McGill (2004), in the distractor instructional condition, participants were asked to indicate their agreement on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*) with the following items: “If I saw this advertisement in a magazine, it would catch my eye”; “I like the layout of this advertisement”; “I find this advertisement interesting”; “This advertisement is creative”; and “Overall, this advertisement is effective”. In the social comparison instructional condition, the second, third and fourth items were replaced by the following: “I would like my body to look like this woman’s body”; “The woman in the advertisement is thinner than me”, and “In a busy clothes shop, I would not like to try on clothes in the same change-room as this woman”.

**State appearance comparison.** Three 7-point items constructed by Tiggemann and McGill (2004) were used to measure state appearance comparison retrospectively. The first item asked participants to rate the extent to which they thought about their appearance while viewing the advertisements (1 = *no thought about my appearance*, 7 = *a lot of thought*). The second and third items asked participants to what degree they compared their overall appearance and specific body parts to those of the models in the advertisements (1 = *no comparison*, 7 = *a lot of comparison*). Responses on the three items were averaged, such that a higher score represented greater appearance comparison. Tiggemann and McGill (2004) reported high internal reliability ( $\alpha = .91$ ), as was found in the current study ( $\alpha = .92$ ).

**Body dissatisfaction.** Following Heinberg and Thompson (1995), seven visual analogue scales (VAS) were used to obtain measures of mood and state body dissatisfaction, both before and immediately after viewing the 15 magazine advertisements. The five mood items (not analysed here) were included to mask the focus on body dissatisfaction. Each scale consisted of a 100mm continuous horizontal line with endpoints labelled “none” and “very much”. Participants were asked to make a small vertical mark along each line to indicate how they felt “right now” on the measures of anxiety, depression, happiness, anger, confidence, weight dissatisfaction, and appearance dissatisfaction. Responses were measured to the nearest millimetre (mm) from the “none” endpoint. A score for body dissatisfaction was calculated by averaging the VAS measures of ‘weight dissatisfaction’ and ‘appearance dissatisfaction’. Scores ranged from a possible 0 to 100, with a higher score indicating greater body dissatisfaction.

Visual analogue scales carry a number of advantages in that they are quickly administered, reliably measure fluctuations, are sensitive to change, and are useful for repeated administration because it is hard for participants to recall exactly where a pre-exposure mark was made. Heinberg and Thompson (1995) reported good construct validity for the body dissatisfaction VAS in that they were strongly related to the Eating Disorders Inventory Body Dissatisfaction subscale (EDI-BD) (weight dissatisfaction,  $r = .66, p < .01$ ; appearance dissatisfaction,  $r = .76, p < .01$ ). In the current study, internal consistency was acceptable (pre-exposure  $\alpha = .79$ ; post-exposure  $\alpha = .88$ ).

**Trait tendency for appearance comparison.** The Physical Appearance Comparison Scale (PACS) of Thompson, Heinberg, and Tantleff (1991) was used to measure the trait tendency to engage in social comparison based on appearance. The five items (e.g., “At parties or other social events, I compare my physical appearance to the physical appearance of others”) were answered on a 5-point Likert-type scale (1 = *never*, 5 = *always*). Scores on

the items were averaged to obtain overall trait tendency for appearance comparison, where a higher score represented a greater tendency. Internal reliability for this scale was acceptable ( $\alpha = .78$ ) when used by Thompson et al. (1991), as it was in the current study ( $\alpha = .74$ ).

## **Procedure**

Women aged 18 to 30 years with English as their first language were recruited for a study on the effectiveness of fashion magazine advertisements targeted at women. Before commencing, a letter of introduction was read and a consent form completed. Participants were randomly allocated to one of the nine experimental cells, subject to equal  $n$  ( $n = 42$ ) per condition. Participants then completed a brief questionnaire about their magazine and fashion consumption, and the pre-exposure VAS measures of mood and body dissatisfaction.

Next, participants were handed a folder containing the 15 advertisements. All the advertisements were in the same order. Participants viewed each advertisement for 45 seconds and answered the relevant questions (where applicable). Next participants completed the post-exposure VAS (mood, body dissatisfaction) and the measures of state appearance comparison and trait appearance comparison. Participants were then asked to provide their age and ethnicity, and with their consent, height and weight were measured to calculate body mass index. Finally, participants completed a general recall task of associated brands (not analysed) to support the purported aim of researching the effectiveness of fashion magazine advertisements targeted at women. Each session lasted approximately 30 minutes, and participants received course credit for their participation. Feedback was provided to the participants via an online system once data collection was complete.

## **Results**

### **Sample Characteristics**

The nine experimental groups did not differ in age,  $F(4, 369) = 1.03, p = .389, \eta_p^2 = .01$ , body mass index,  $F(4, 369) = 1.53, p = .194, \eta_p^2 = .02$ , minutes spent looking at women's

magazines in the last month,  $F(4, 369) = 0.38, p = .827, \eta_p^2 < .01$ , or hours spent shopping for fashion in the last month,  $F(4, 369) = 1.70, p = .150, \eta_p^2 = .02$ . In addition, pre-exposure body dissatisfaction did not differ across experimental groups,  $F(4, 369) = 1.63, p = .166, \eta_p^2 = .02$ , indicating that random assignment was successful. Importantly, participants across the nine experimental cells did not differ in level of trait appearance comparison,  $F(4, 369) = 0.33, p = .860, \eta_p^2 < .01$ , demonstrating that this construct was not reactive to the experimental manipulation.

### **Effect of Disclaimer Label and Instructional Set on State Appearance Comparison**

A 3 x 3 between-groups analysis of variance was conducted to analyse the impact of disclaimer label and instructional set on state appearance comparison. As can be seen from the column total means in Table 1, although there was a trend for state appearance comparison to be higher in the conditions with disclaimer labels, especially the specific disclaimer label, the main effect for disclaimer label on state appearance comparison was not significant,  $F(2, 369) = 2.41, p = .091, \eta_p^2 = .01$ . In contrast, the main effect for instructional set was significant,  $F(2, 369) = 27.94, p < .001, \eta_p^2 = .13$ . Post hoc comparisons confirmed what can be seen from the row total means in Table 1, that state appearance comparison was greater in the social comparison instructional condition than in the neutral instructional condition,  $p < .001$ , which was in turn greater than in the distractor instructional condition,  $p = .033$ . Finally, the interaction between disclaimer label and instructional set was not statistically significant,  $F(4, 369) = 0.90, p = .462, \eta_p^2 = .01$ .

### **Effect of Disclaimer Label and Instructional Set on Body Dissatisfaction**

To analyse the impact of disclaimer label and instructional set on body dissatisfaction, a 3 x 3 between-groups analysis of co-variance was conducted, with pre-exposure body dissatisfaction entered as the co-variate to control for individual differences. As can be seen from the column total adjusted means in Table 2, the main effect for disclaimer label on body

dissatisfaction was not significant,  $F(2, 368) = 1.21, p = .299, \eta_p^2 = .01$ . In contrast, the main effect for instructional set was significant,  $F(2, 368) = 9.61, p < .001, \eta_p^2 = .05$ . Post hoc comparisons confirmed what can be seen from the row total adjusted means in Table 2, that body dissatisfaction was significantly greater in the social comparison instructional condition compared to both the neutral and distractor instructional conditions,  $p = .012$  and  $p < .001$  respectively. Finally, the interaction between disclaimer label and instructional set was not statistically significant,  $F(4, 368) = 0.88, p = .474, \eta_p^2 = .01$ .

Table 1

*Means (and Standard Deviations) for State Appearance Comparison*

	Disclaimer label condition			Total
	No label	Generic label	Specific label	
Instruction condition				
Neutral	3.80 (1.60)	4.52 (1.77)	4.19 (1.54)	4.17 (1.65)
Distractor	3.38 (1.84)	3.50 (1.88)	4.05 (1.85)	3.64 (1.87)
Social comparison	5.06 (1.27)	5.16 (1.60)	5.35 (1.56)	5.19 (1.48)
Total	4.08 (1.73)	4.39 (1.87)	4.53 (1.74)	

Table 2

*Adjusted Means (and Standard Errors) for Body Dissatisfaction*

	Disclaimer label condition			Total
	No label	Generic label	Specific label	
Instruction condition				
Neutral	50.22 (2.10)	53.14 (2.09)	49.07 (2.09)	50.81 (1.21)
Distractor	49.74 (2.10)	49.82 (2.09)	45.68 (2.10)	48.41 (1.21)
Social comparison	53.75 (2.09)	56.48 (2.09)	57.02 (2.09)	55.75 (1.21)
Total	51.24 (1.21)	53.14 (1.21)	50.59 (1.21)	

In summary, there were no main effects of disclaimer label on either state appearance comparison or body dissatisfaction. As expected, the social comparison instructional condition resulted in greater state appearance comparison and body dissatisfaction compared to the neutral and distractor instructional conditions. However, contrary to our prediction, instructional set did not interact with disclaimer label to affect either state appearance comparison or body dissatisfaction.

### **Role of State Appearance Comparison in Body Dissatisfaction Change**

As instructional set (not disclaimer label or their interaction) affected both state appearance comparison and body dissatisfaction, the potential mediating role of state appearance comparison in the effect of instructional set on body dissatisfaction was tested. State appearance comparison was itself significantly correlated with post-exposure body dissatisfaction,  $r(378) = .58, p < .001$ .

A hierarchical regression analysis was conducted, in which pre-exposure body dissatisfaction was entered at Step 1, state appearance comparison was entered at Step 2, and two dummy coded variables for instructional condition were created (distractor (0, 1, 0); comparison (0, 0, 1); neutral as the reference group) and entered at Step 3. Results at Step 1 were significant and indicated that pre-exposure body dissatisfaction explained significant variance in post-exposure body dissatisfaction,  $R^2 = .758, F(1, 376) = 1179.99, p < .001$ . Step 2 also explained significant additional variance,  $R^2_{Change} = .038, F_{Change}(1, 375) = 71.01, p < .001, B = 3.50, \beta = .22$ , indicating that, regardless of instructional set (and disclaimer label), the more appearance comparison that participants engaged in, the greater their increase in body dissatisfaction in response to thin ideal exposure. At Step 3, no further variance in post-exposure body dissatisfaction was explained,  $R^2_{Change} = .001, F_{Change}(2, 373) = 0.89, p = .412$ . As the effect of instructional condition (Step 3) was no longer significant, this meant that



state appearance comparison mediated the effect of instructional set on change in body dissatisfaction.

### **Trait Appearance Comparison as a Moderator on State Appearance Comparison**

A hierarchical regression analysis was conducted to test whether trait appearance comparison moderated the effect of disclaimer label or instructional set (or both) on state appearance comparison. As recommended by Aiken and West (1991), trait appearance comparison scores were centred around the mean ( $M = 3.34$ ). Four dummy-coded variables were created: generic (0, 1, 0) and specific (0, 0, 1) for the disclaimer label conditions (no disclaimer as the reference group), and distractor (0, 1, 0) and comparison (0, 0, 1) for the instructional conditions (neutral as the reference group). At Step 1, the four dummy coded variables and centred trait appearance comparison were entered. At Step 2, the eight two-way product terms were entered. At Step 3, the four three-way product terms were entered.

Step 1 accounted for significant variance in state appearance comparison,  $R^2 = .349$ ,  $F(5, 372) = 39.88$ ,  $p < .001$ . As trait appearance comparison explained unique variance within this step,  $B = 1.20$ ,  $\beta = .46$ ,  $p < .001$ , this indicated that trait appearance comparison was a significant predictor of state appearance comparison. Neither Step 2,  $R^2_{Change} = .019$ ,  $F_{Change}(8, 364) = 1.35$ ,  $p = .217$ , nor Step 3,  $R^2_{Change} = .005$ ,  $F_{Change}(4, 360) = 0.67$ ,  $p = .614$ , explained significant additional variance. Thus, trait appearance comparison did not moderate the effect of either disclaimer label or instructional set on state appearance comparison.

### **Trait Appearance Comparison as a Moderator on Body Dissatisfaction**

A similar hierarchical regression analysis was conducted to test whether trait appearance comparison moderated the effect of disclaimer label or instructional set on body dissatisfaction. Pre-exposure body dissatisfaction scores were centred around the mean ( $M = 47.91$ ), and were entered at Step 1. At Step 2, the four dummy coded variables and centred

trait appearance comparison were entered. At Step 3, the eight two-way product terms were entered. At Step 4, the four three-way product terms were entered.

At Step 1, pre-exposure body dissatisfaction accounted for significant variance in post-exposure body dissatisfaction,  $R^2 = .758$ ,  $F(1, 376) = 1179.99$ ,  $p < .001$ . At Step 2, significant additional variance was explained,  $R^2_{Change} = .025$ ,  $F_{Change}(5, 371) = 8.43$ ,  $p < .001$ . As trait appearance comparison explained unique variance,  $B = 5.02$ ,  $\beta = .12$ ,  $p < .001$ , this indicated that trait appearance comparison predicted change in body dissatisfaction. At Step 3, no significant additional variance was explained,  $R^2_{Change} = .003$ ,  $F_{Change}(8, 363) = 0.66$ ,  $p = .730$ , indicating that there were no two-way interactions. However, Step 4 did explain significant additional variance,  $R^2_{Change} = .008$ ,  $F_{Change}(4, 359) = 3.69$ ,  $p = .006$ , indicating a significant three-way interaction between trait appearance comparison, disclaimer label, and instructional set on post-exposure body dissatisfaction.

To specify the nature of this three-way interaction, the two-way interaction between trait appearance comparison and disclaimer label was analysed for each instructional condition. For the distractor instructional condition, this interaction proved significant,  $R^2_{Change} = .023$ ,  $F_{Change}(2, 119) = 5.46$ ,  $p = .005$ . Within this step, only the specific disclaimer label product term (specific disclaimer label x trait appearance comparison) was significant,  $B = 13.61$ ,  $\beta = .20$ ,  $p = .003$ . This indicates that the relationship between trait appearance comparison and body dissatisfaction was significantly more positive in the specific disclaimer label condition than in the no disclaimer label condition. In contrast, for both the neutral and social comparison instructional conditions, the interaction between trait appearance comparison and disclaimer label was not significant,  $R^2_{Change} = .006$ ,  $F_{Change}(2, 119) = 2.07$ ,  $p = .131$ , and  $R^2_{Change} = .003$ ,  $F_{Change}(2, 119) = 0.89$ ,  $p = .415$ , respectively.

To illustrate the form of the significant interaction for the distractor instructional condition, the relationship was graphed (see Figure 1). Following the recommendation of

Aiken and West (1991), one standard deviation below and above the mean was used to represent low and high levels of trait appearance comparison (the moderator). The y axis represented post-exposure body dissatisfaction, controlling for pre-exposure body dissatisfaction, where a higher value indicated greater dissatisfaction. As can be seen, trait appearance comparison made little difference to women who saw no disclaimer labels or generic disclaimer labels. In contrast, there was a strong positive relationship between trait appearance comparison and body dissatisfaction for women in the specific disclaimer label condition. Specific disclaimer labels led to increased body dissatisfaction for women higher on trait appearance comparison, but decreased body dissatisfaction for women lower on this trait.

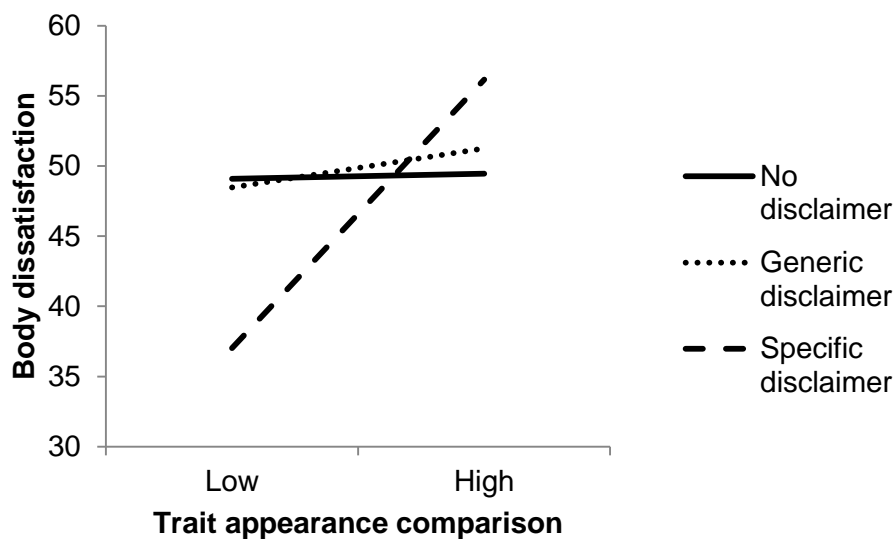


Figure 1. Body dissatisfaction as a function of disclaimer label condition and trait appearance comparison for the distractor instruction condition.

### Discussion

Overall, the major findings of the current study are clear. First, there was no main effect of disclaimer labels on social appearance comparison or body dissatisfaction, and therefore disclaimer labels did not reduce either. Second, there was a main effect of instructional set on both social appearance comparison and body dissatisfaction whereby,

irrespective of disclaimer label type, the social comparison instructional condition led to the highest levels of both social appearance comparison and body dissatisfaction. Finally, there was a three-way interaction between trait appearance comparison, disclaimer label type, and instructional set on levels of post-exposure body dissatisfaction. More precisely, for women in the distractor instructional condition who saw specifically worded disclaimer labels, those high on trait appearance comparison experienced increased levels of body dissatisfaction, whereas those low on trait appearance comparison experienced reduced levels of body dissatisfaction.

The lack of any overall protective effect of disclaimer labels on body dissatisfaction supports the previous research into the effectiveness of disclaimer labels affixed to thin ideal fashion magazine advertisements, where no benefits have been identified (Ata et al., 2013; Bury et al., 2015; Tiggemann et al., 2013). As suggested by Ata et al. (2013), it could be that a brief exposure to disclaimer labels affixed to advertisements presented within one short session does not give women the time or opportunity to reach the complex level of thinking required to fully consider the content of the messages, and to then start protecting themselves against the harmful effects of thin ideal exposure. It is possible that if women were repeatedly exposed to disclaimer labels over different sessions, they may be in a position to more fully consider and reflect on the implications of digital manipulation and thin ideal exposure, and thereby gain benefit from the disclaimer labels.

However, in the current study, far from decreasing levels of social appearance comparison and body dissatisfaction, women who saw disclaimer labels tended to have higher levels of both, consistent with the previous findings of Tiggemann et al. (2013). In addition, irrespective of disclaimer label type and instructional set, social appearance comparison predicted increased body dissatisfaction, consistent with research which has suggested that social appearance comparison is a key mechanism for increased body

dissatisfaction in response to thin ideal exposure (Thompson et al., 1999; Tiggemann & Polivy, 2010; Tiggemann et al., 2009).

The main effects observed for instructional set showed that instructional set was not irrelevant, as being asked to rate the advertisements in different ways influenced how participants processed the thin ideal images, supporting previous research in this area (Cattarin et al., 2000; Tiggemann & McGill, 2004; Tiggemann & Polivy, 2010; Tiggemann et al., 2009). The three social comparison items embedded within general items were sufficiently powerful to lead to increased levels of both social appearance comparison and body dissatisfaction. In contrast, in the distractor instructional condition, social appearance comparison and body dissatisfaction were lower than in both the other instructional conditions. Thus, focussing on non-appearance qualities of the advertisements seemed to block the normal level of social appearance comparison generated in response to thin ideal exposure. These findings for instructional set are consistent with suggestions by Tiggemann et al. (2009) and Want (2009) that experimental instructions can influence how participants process thin ideal imagery.

Although we predicted that instructional set would interact with disclaimer label type in determining both social appearance comparison and body dissatisfaction, this did not occur. On the other hand, there was a three-way interaction between trait appearance comparison, disclaimer label type and instructional set on post-exposure body dissatisfaction. In particular, trait appearance comparison was found to moderate the effect of disclaimer label type on body dissatisfaction for women in the distractor instructional condition, but not for women in the neutral or social comparison instructional conditions. It seemed that when women were cognitively busy rating the thin ideal advertisements on non-appearance qualities, exposure to specific disclaimer labels led to increased body dissatisfaction for women high on trait appearance comparison, but decreased body dissatisfaction for women

low on trait appearance comparison. This replicates the pattern of results found by Tiggemann et al. (2013), and shows that their finding (under similar ‘distractor’ instructions) was not a function of the particular stimuli used. In addition, the current results are congruent with eye-tracking research that has shown that specifically worded disclaimer labels direct women’s visual attention towards body areas mentioned, particularly for women high on trait appearance comparison (Bury et al., 2014).

The above finding shows that women low on trait appearance comparison, even when cognitively busy with non-appearance processing, were able to gain protective benefit from specifically worded disclaimer labels, resulting in reduced body dissatisfaction. However, the same cognitive load of non-appearance processing did not seem to enable women high on trait appearance comparison to stop experiencing body dissatisfaction after reading a specifically worded disclaimer label. This is consistent with the idea that appearance comparison can be automatic (Bessenoff, 2006; Gilbert et al., 1995; Want, 2009), and this seems to be particularly likely for women who are high on the trait of appearance comparison. Specific disclaimer labels may trigger automatic appearance comparison for these women (due to sensitisation to appearance-related information), and they may be less motivated to protect themselves against unfavourable comparisons (Want, 2009; Yamamiya et al., 2005). Thus, disclaimer labels may be powerless to tackle social comparison for women high on trait appearance comparison. As previous research has shown that the negative effects from thin ideal exposure happen particularly for women who have internalised the thin ideal to a greater extent (Dittmar & Howard, 2004; Grabe et al., 2008; Groesz et al., 2002), intervention efforts might be more effective if focussed on preventing internalisation of the thin ideal, rather than trying to reduce appearance comparison after the fact.

As with all research, the current findings should be interpreted in the context of some limitations. The findings cannot necessarily be generalised outside the current sample of young, predominantly white university students. Similarly, the findings only apply to women's fashion magazine advertisements, not other sources of thin ideal imagery available in magazines or more broadly in society, such as billboards or television programming (Want, 2009). As the research was conducted in a laboratory environment, participants viewed the magazine advertisements somewhat differently from how they would in a real world setting. As such, research could usefully extend investigations of the effects of disclaimer labels into naturalistic settings. Finally, ideally trait appearance comparison would have been assessed in a separate session. However, as a stable individual difference trait, it should not be reactive to experimental manipulation, as was found to be the case here.

In summary, it seems clear from the findings of the current study, together with the previous research findings of Ata et al. (2013), Bury et al. (2015), and Tiggemann et al. (2013), that disclaimers of digital alteration do not reduce body dissatisfaction following exposure to thin ideal fashion magazine advertisements. In addition, the present study showed that experimental instructions are important in determining body image outcomes following thin ideal exposure, as manipulating how participants processed advertisements influenced both social appearance comparison and body dissatisfaction. Finally, trait appearance comparison was found to be relevant as it moderated the effect of disclaimer label type on body dissatisfaction for women in the distractor instructional condition. To conclude, although experimental instructions can affect the type of processing women engage in, individual differences in the tendency to compare on the basis of appearance need to be considered in any future investigation of disclaimer label use. Thus, the current study well illustrates the complexity of the task ahead for policy makers in determining the most effective form of digital alteration disclaimer label.

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## CHAPTER 3: EXPERIMENT 2

### **Directing gaze: The effect of disclaimer labels on women's visual attention to fashion magazine advertisements**

Belinda Bury<sup>a</sup>, Marika Tiggemann<sup>a</sup>, and Amy Slater<sup>b</sup>

<sup>a</sup>School of Psychology, Flinders University, South Australia

<sup>b</sup>Centre for Appearance Research, University of the West of England, United Kingdom

**Corresponding author:** Belinda Bury, School of Psychology, Flinders University, GPO Box 2100, Adelaide, 5001, South Australia. Email: belinda.bury@flinders.edu.au

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## ABSTRACT

In an effort to combat the known negative effects of exposure to unrealistic thin ideal images, there is increasing worldwide pressure on fashion, media and advertising industries to disclose when images have been digitally altered. The current study used eye tracking technology to investigate experimentally how digital alteration disclaimer labels impact women's visual attention to fashion magazine advertisements. Participants were 60 female undergraduate students who viewed four thin ideal advertisements with either no disclaimer, a generic disclaimer, or a specific more detailed disclaimer. It was established that women did attend to the disclaimers. The nature of the disclaimer had no effect on time spent looking at particular body parts, but did affect the direction of gaze following reading of the disclaimer. This latter effect was found to be greater for women high on trait appearance comparison. Further research is paramount in guiding effective policy around the use of disclaimer labels.

It has now been well established, both correlationally and experimentally, that exposure to media images of the thin ideal can negatively impact on women's body image, affecting levels of body dissatisfaction and disordered eating (Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002; Levine & Murnen, 2009; Want, 2009). Correspondingly, this has now become an important social and political issue.

In 2009, the Australian Government released the Voluntary Industry Code of Conduct which targeted the fashion, media and advertising industries (National Advisory Group on Body Image, 2009). The recommendations under this Code included: to use a wide range of body shapes and sizes, not to use models under the age of sixteen, not to digitally alter images, and of most relevance here, that if images have been digitally altered, this should be disclosed. There have been many similar movements internationally around the issue of digital editing disclosure, including the enactment of a law in Israel in March 2012 requiring disclosure of any digital alteration in advertising media (Geuss, 2012), and the introduction of a bill into the French National Assembly to make it illegal to print digitally retouched images without a disclaimer (Boyer et al., 2009). The current study set out to use eye tracking technology to experimentally investigate how women's eye gaze patterns are altered by the addition to fashion magazine advertisements of disclaimers of digital editing. To the best of our knowledge, this is the first study using eye tracking technology for this purpose.

The implied reasoning behind the use of such disclaimer labels is that they inform readers that the image is unrealistic and therefore not relevant as a target of comparison. Appearance comparison processing, derived from Festinger's (1954) social comparison theory, has been postulated to be one of the main mechanisms by which women come to feel dissatisfied with their appearance, for example, in the Tripartite Influence Model (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). This has now received considerable empirical support (Bessenoff, 2006; Myers & Crowther, 2009; Tiggemann & McGill, 2004; Tiggemann

& Polivy, 2010; Tiggemann, Polivy, & Hargreaves, 2009; Tiggemann & Slater, 2003).

Specifically, women evaluate their appearance by comparing themselves with the cultural ideals of beauty and thinness presented in the media, and feel dissatisfied when they fall short of these predominantly unrealistic and artificial images (Strahan, Wilson, Cressman, & Buote, 2006; Want, 2009). Following this reasoning, disclaimers of digital enhancement should identify the targets as less realistic and therefore less relevant, rendering readers less likely to compare their own appearance with those ideals, and as a result preserving their body satisfaction.

While general media literacy training, including psycho-education about the airbrushing of media images, has been shown to successfully combat body image disturbance (Levine & Murnen, 2009; Levine & Piran, 2004; Ogden & Sherwood, 2008; Posavac, Posavac, & Weigel, 2001; Want, 2009; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005), as yet there is little research as to the effectiveness of disclaimer labels on media images. When added to fashion shoots in women's fashion magazines, one study reported that disclaimers of digital enhancement decreased levels of body dissatisfaction (Slater, Tiggemann, Firth, & Hawkins, 2012). In contrast, the majority of the known research has found no advantage to using these disclaimers. In particular, Bissell (2006) found no benefit for disclaimers used on a series of photographs of swimsuit models. Likewise, two other studies found no benefit for disclaimers on fashion magazine advertisements (Ata, Thompson, & Small, 2013; Tiggemann, Slater, Bury, Hawkins, & Firth, 2013). Further, the latter study reported that disclaimers which specified body parts that had been altered (e.g., "This image has been digitally altered to lengthen and thin legs") actually increased body dissatisfaction for women high on trait appearance comparison (Tiggemann et al., 2013). The authors speculated that specifically worded disclaimers may, paradoxically, serve to

encourage these women to pay more, rather than less, attention to the model's body than they normally would (Tiggemann et al., 2013).

Other than for the Ata et al. (2103) study, one general limitation of the above studies is that they did not definitively establish whether the women in the experiments had noticed and read the disclaimers. Thus the first aim of the present study was to use eye tracking technology to assess whether the women actually attended to the disclaimers, by measuring the length of their fixations when disclaimer labels were attached to thin ideal fashion advertisements. Length of eye gaze fixations is an established indicator of selective visual attention (Mischner, van Schie, & Engels, 2013).

The second aim was to examine where women looked in terms of particular parts of the fashion advertisements. First, based on the speculation by Tiggemann and colleagues (Tiggemann et al., 2013), it was predicted that participants who viewed advertisements containing specific disclaimers would look at the body areas specified longer than those viewing advertisements with either generic or no disclaimers. Second, it was predicted that participants viewing advertisements with specific disclaimers would be more likely to direct their gaze to the targeted body parts after reading the disclaimer, than would participants viewing advertisements with generic disclaimers. We reasoned that direction of gaze might reflect a more automatic response to the disclaimer. Finally, it was expected that the latter two effects would be moderated by trait appearance comparison, that is, they would be stronger for women high on trait appearance comparison.

## **Method**

### **Design**

A between subjects experimental design was employed to investigate the effect of digital enhancement disclaimers (no disclaimer, generic disclaimer, specific disclaimer) added to thin ideal advertisements sourced from women's fashion magazines. Using eye



tracking software we examined the proportion of time participants spent looking at various parts of the advertisement. Major dependent variables were the time spent looking at the disclaimers and body parts mentioned in the disclaimers, as well as direction of gaze immediately after noticing the disclaimer for the first time. Trait appearance comparison was assessed as a potential moderator.

## **Participants**

Participants were 60 female undergraduate students from a South Australian university who reported English as their first language. Age ranged from 18 to 30 years, with a mean age of 22.7 ( $SD = 3.37$ ) and an average body mass index (BMI) of 22.9 ( $SD = 4.3$ , range = 18.3–43.4) which fell within the normal weight range (World Health Organisation, 2011). The majority of participants identified as White (77.5%), with 20.0% Asian, and 2.5% ‘other’.

## **Materials**

**Fashion consumption.** Participants were asked to complete a brief questionnaire, estimating the number of hours spent in the previous month looking at fashion magazines, shopping and window shopping for fashion items (e.g., clothes, make-up, perfume), and online shopping and browsing for fashion items. They were also asked to rate how interested they were in fashion on a 7 point scale (1 = *not at all interested*, 4 = *moderately interested*, 7 = *extremely interested*).

**Thin ideal advertisements.** Four thin-ideal advertisements were sourced from current women’s fashion magazines (e.g., *Vogue*, *Cleo*). These four advertisements were selected from a pool of 30 advertisements that had been rated by a small panel ( $N = 7$ ) of female raters (university students aged 18 to 30 years) as glossy, attractive, colourful, and having general appeal. The models in the advertisements had also been rated as representative of the thin ideal ( $M = 4.30$ ,  $SD = 0.34$ ; where 1 = *not at all*, 5 = *extremely thin*). The particular

advertisements were selected to be suitable for setting up clear areas of interest for eye tracking monitoring. One product-only advertisement (a make-up) was also included to make the set of advertisements look typical of those in fashion magazines. All participants saw the advertisements in the same order, being *Chanel* (perfume), *Ralph Lauren* (formal wear, clutch handbag), *Napoleon Perdis* (make-up), *Wanted Shoes* (shoes), and *Roberto Cavalli* (perfume). Each advertisement was displayed in turn on the eye tracking computer screen, with exposure time being fixed for 45 seconds.

In one condition (control), participants were presented with the four original thin ideal advertisements with no disclaimer. In another condition (generic), participants saw the thin ideal advertisements with a generic disclaimer (“Warning: This image has been digitally altered”). In the third condition (specific), participants saw the thin-ideal advertisements with a specific disclaimer (e.g., “Warning: This image has been digitally altered to trim arms and waist”). The disclaimer labels were printed in Calibri style font size 12 enclosed within a thin border, and were positioned at either the bottom or top left or right corners of the advertisements, depending on the individual format of each advertisement.

**Tobii eye-tracking.** A Tobii T60 eye tracker was used to record eye gaze data (Tobii Technology AB, Danderyd, Sweden). As the eye tracker was embedded within the computer screen it did not require any attachments or chin rests to be used by participants, and as such was non-invasive. Infrared diodes created reflection patterns on the corneas of participants, which were then monitored by image sensors to detect and record eye movements.

Areas of interest (AOIs) were set up for each advertisement, with some variation between advertisements depending on which areas of the body were visible. General AOIs were set up for the disclaimer label, product, brand name, face, and whole body (not including the face). Then AOIs were set up for the body parts mentioned in the specific disclaimers, in particular for the arms, waist, breasts, and legs.

The Tobii T60 eye tracker produced measures of length of observations for the AOIs, as well as actual video recordings of eye gaze data. In the current study, the data examined were the time (in seconds) that a participant looked at a particular AOI as a percentage of the total time that the advertisement was viewed, and for the labelled images, the direction of gaze following looking at the disclaimer for the first time. To achieve the latter measure, two independent raters watched the gaze movement recordings produced by the Tobii eye tracker, and coded which area of interest participants looked at directly after looking at the disclaimer for the first time. Inter-rater reliability was good, with complete agreement between the independent codings for 88.12% of the recordings (19 out of 160 recordings were watched for a third time by the principal researcher to resolve discrepancies).

**Trait tendency for appearance comparison.** The Physical Appearance Comparison Scale (PACS) formulated by Thompson, Heinberg, and Tantleff (1991) was used to measure participants' tendency to compare their appearance with that of others. There were five items, e.g., "At parties or other social events, I compare my physical appearance to the physical appearance of others". The items were answered using a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*always*). Responses to item number four were reverse-coded. Scores on the five items were averaged to obtain an overall trait tendency for appearance comparison score, where a higher score represented a higher tendency. Internal reliability for this scale was acceptable ( $\alpha = .75$ ).

## **Procedure**

Women aged 18 to 30, with English as their first language, were invited to participate in this study labelled "Eye-Tracking Study Investigating Effectiveness of Magazine Advertising". After obtaining consent, participants were asked to complete the fashion consumption measure, before being randomly allocated to one of the three experimental

conditions (no disclaimer, generic disclaimer, specific disclaimer), subject to an equal  $n$  of 20 per condition.

Participants were individually tested and calibrated on the Tobii eye-tracking system. They sat approximately 60 centimetres from the screen and were free to move their heads within a range of 44 x 22 x 30 cm. They were directed to follow the instructions on the computer screen and were told that recordings would be taken of their eye movements when looking at the advertisements. Participants viewed each of the advertisements for a fixed exposure time of 45 seconds, and after viewing each advertisement were instructed to answer two questions about that advertisement in a paper-based booklet, before proceeding to the next advertisement. These questions asked them to rate whether the advertisement was “appealing” and “effective overall” (1 = *strongly disagree*, 5 = *strongly agree*).

Next participants completed the paper-based measure of trait appearance comparison. Although ideally this would have been done in a separate, earlier session, it was reasoned that a trait measure should not be reactive to experimental manipulation. Finally, participants were asked to provide their age and ethnicity, and with their consent height and weight were measured. Height and weight were used to calculate the BMI for each participant, by dividing weight (in kilograms) by height (in metres) squared. Participants received a \$10 reimbursement for their time. Feedback was provided to participants via an online system once data collection was complete.

## **Results**

### **Sample Characteristics**

As displayed in Table 1, the three experimental groups did not differ in age, BMI, general interest in fashion, time spent looking at magazines, or time spent shopping for fashion. Nor did they differ in ethnicity. The three experimental groups also did not differ in

levels of trait appearance comparison, which indicated that trait appearance comparison had not been reactive to the manipulation.

Table 1

*Means (and Standard Deviations) of Sample Characteristics for Each Group*

	No disclaimers ( <i>n</i> = 20)	Generic disclaimers ( <i>n</i> = 20)	Specific disclaimers ( <i>n</i> = 20)	<i>p</i>	$\eta^2$
Age	22.95 (3.12)	22.65 (3.44)	22.70 (3.39)	.95	< 0.01
BMI	24.79 (7.42)	23.71 (5.10)	22.12 (3.30)	.32	0.04
Interest in fashion	4.78 (1.22)	5.25 (1.16)	5.25 (0.97)	.31	0.04
Time look at mags	5.40 (8.88)	5.71 (13.00)	3.38 (4.15)	.70	0.01
Time shop fashion	16.43 (14.54)	18.90 (36.32)	20.90 (19.41)	.70	< 0.01
Trait app comp	3.56 (0.63)	3.20 (0.84)	3.38 (0.67)	.29	0.04

**Attention Paid to General and Disclaimer AOIs**

Table 2 presents the percentage of time spent looking at areas for the separate advertisements. Overall, it can be seen that a substantial amount of time was spent looking at the body, face and product advertised, with relatively less time spent looking at the brand name and disclaimer. However, this seemed to differ between advertisements. Variation in the areas attended to likely occurred across advertisements based on which features were more prominent. For instance, the product in the *Wanted Shoes* advertisement (a pair of shoes) occupied only a relatively small area of that advertisement and attracted less attention than products in other advertisements such as the large perfume bottle in the *Chanel* advertisement.

In particular, a one-way ANOVA was used to test whether participants exposed to advertisements with digital alteration disclaimers attended more to the disclaimer area of interest than participants in the no disclaimer condition. This proved significant,  $F(2, 57) = 45.53, p < .01, \eta^2 = .62$ . Tukey post hoc testing established that the three conditions were all significantly different from each other,  $p < .01$  (no disclaimer  $M = 0.02\%$ ,  $SD = 0.06$ ; generic

$M = 4.70\%$ ,  $SD = 2.47$ ; specific  $M = 9.98\%$ ,  $SD = 5.16$ ). Thus, it was clear that participants attended more to the disclaimer AOI in both disclaimer conditions than in the no disclaimer condition. Hence, we can conclude that participants did notice the disclaimers.

Table 2

*Means (and Standard Deviations) of Percentage of Time Looked at General AOIs for Each Advertisement by Condition*

AOI	Condition	Chanel	Ralph Lauren	Wanted	Roberto Cavalli
Disclaimer	N	0.00 (0)	0.03 (0.14)	0.00 (0)	0.06 (0.20)
	G	6.11 (2.88)	4.47 (3.12)	5.11 (3.55)	3.12 (3.66)
	S	11.69 (7.26)	9.05 (6.17)	10.32 (7.40)	8.86 (6.54)
Product	N	38.18 (10.38)	35.27 (9.50)	13.33 (8.65)	19.76 (9.61)
	G	33.07 (9.86)	35.10 (9.94)	10.95 (7.28)	18.32 (9.24)
	S	30.08 (11.89)	28.72 (12.75)	10.02 (8.37)	16.97 (8.01)
Brand name	N	6.84 (3.75)	15.07 (8.29)	7.00 (5.95)	6.07 (3.74)
	G	5.38 (2.35)	9.31 (4.66)	5.08 (3.34)	4.72 (1.80)
	S	7.34 (4.52)	10.63 (6.67)	6.33 (5.55)	5.73 (3.93)
Face	N	15.96 (8.82)	14.09 (9.49)	12.95 (10.49)	18.39 (10.10)
	G	17.66 (7.21)	12.85 (7.27)	8.87 (7.12)	19.92 (11.09)
	S	11.19 (6.51)	11.52 (7.63)	7.98 (6.46)	16.21 (7.17)
Whole body (not including face)	N	25.05 (10.78)	45.94 (13.55)	49.89 (14.64)	56.29 (10.69)
	G	25.49 (11.13)	50.76 (14.03)	52.26 (10.77)	52.17 (10.78)
	S	23.20 (11.94)	40.33 (14.03)	39.93 (10.32)	49.00 (11.59)

*Note.* AOI = Area of Interest; N = no disclaimer; G = generic disclaimer; S = specific disclaimer.

### Attention Paid to Body Part AOIs Across Disclaimer Conditions

Table 3 displays the average percentage of time directed to specific body parts for each advertisement across the three experimental conditions. The average times of

observations were very similar across the disclaimer conditions for all of the body AOIs targeted in the specific disclaimers.

Table 3

*Means (and Standard Deviations) of Percentage of Time Participants Looked at Body Areas Mentioned in Specific Disclaimers across the Disclaimer Conditions*

AOI	Condition	Chanel	Ralph Lauren	Wanted	Roberto Cavalli
Arms	N	13.84 (5.95)	6.36 (5.25) <sup>b</sup>	3.72 (3.15)	4.24 (4.57) <sup>d</sup>
	G	12.47 (5.05)	6.50 (4.52) <sup>b</sup>	5.03 (3.65)	4.54 (4.72) <sup>d</sup>
	S	9.99 (4.56)	6.97 (4.57) <sup>b</sup>	1.63 (1.30)	4.26 (3.61) <sup>d</sup>
Waist	N	1.35 (1.95)	6.56 (3.76) <sup>b</sup>	2.43 (2.24)	10.93 (5.71) <sup>d</sup>
	G	1.43 (2.23)	5.16 (3.25) <sup>b</sup>	3.44 (3.42)	9.31 (3.91) <sup>d</sup>
	S	1.14 (1.36)	5.65 (3.87) <sup>b</sup>	2.03 (1.92)	9.94 (5.22) <sup>d</sup>
Breasts	N	Not visible	7.63 (4.20)	4.31 (3.39)	12.66 (5.63) <sup>d</sup>
	G	Not visible	7.98 (4.84)	4.92 (3.76)	12.29 (7.00) <sup>d</sup>
	S	Not visible	7.46 (7.80)	2.64 (1.67)	10.02 (3.46) <sup>d</sup>
Legs	N	10.29 (5.85) <sup>a</sup>	10.29 (5.52)	27.87 (11.08) <sup>c</sup>	Not visible
	G	10.66 (5.54) <sup>a</sup>	11.57 (6.38)	25.96 (8.15) <sup>c</sup>	Not visible
	S	10.83 (4.54) <sup>a</sup>	6.96 (4.01)	26.42 (9.62) <sup>c</sup>	Not visible

*Note.* AOI = Area of Interest; N = no disclaimer; G = generic disclaimer; S = specific disclaimer.

<sup>a</sup>*Chanel* specific disclaimer = “Warning: This image has been digitally altered to lengthen and thin legs”.

<sup>b</sup>*Ralph Lauren* specific disclaimer = “Warning: This image has been digitally altered to trim arms and waist”.

<sup>c</sup>*Wanted Shoes* specific disclaimer = “Warning: This image has been digitally altered to lengthen and thin legs”.

<sup>d</sup>*Roberto Cavalli* specific disclaimer = “Warning: This image has been digitally altered to enlarge breasts, and to trim arms and waist”.

A series of one-way ANOVAs was used to analyse whether participants in the specific disclaimer condition looked longer at the body part(s) mentioned in that specific disclaimer (the means referred to in the specific notes in Table 3) than did participants in the generic and no-disclaimer conditions. Against expectations, no significant differences were found across the experimental conditions for time spent looking at any of the body parts

mentioned in the specific disclaimers: *Chanel* (legs)  $F(2, 57) = 0.05, p = .95, \eta^2 < .01$ ; *Ralph Lauren* (arms)  $F(2, 57) = 0.09, p = .92, \eta^2 < .01$ , (waist)  $F(2, 57) = 0.76, p = .47, \eta^2 = .03$ ; *Wanted Shoes* (legs)  $F(2, 57) = 0.21, p = .81, \eta^2 = .01$ ; *Roberto Cavalli* (arms)  $F(2, 57) = 0.03, p = .97, \eta^2 < .01$ , (waist)  $F(2, 57) = 0.54, p = .59, \eta^2 = .02$ , and (breasts)  $F(2, 57) = 1.32, p = .27, \eta^2 = .04$ .

### **Direction of Gaze After Looking at the Disclaimer for the First Time**

On average across all four advertisements, participants took 5.82 and 5.46 seconds respectively in the generic and specific conditions to look at the disclaimers the first time (minimum = 1s, maximum = 34s), with independent samples *t*-test analyses showing that these times were not significantly different for any of the four thin ideal advertisements:

*Chanel*  $t(38) = 0.03, p = .98, d = 0.01$ ; *Ralph Lauren*  $t(38) = 1.76, p = .09, d = 0.54$ ; *Wanted Shoes*  $t(38) = -1.12, p = .27, d = 0.35$ ; *Roberto Cavalli*  $t(38) = 0.23, p = .82, d = 0.07$ .

Table 4 shows where participants looked directly after seeing the disclaimer for the first time. The table displays the number (and percentage) of participants for the generic and specific conditions separately, with the results for the target area(s) highlighted by specific notes for each advertisement. The bottom of the table shows the total number and percentage of those who looked directly at the target area(s) for each advertisement. As expected, when this was combined and averaged for the four advertisements, there was a significant difference in the percentage of participants in the generic ( $M = 10\%$ ,  $SD = 13\%$ ) and specific ( $M = 54\%$ ,  $SD = 23\%$ ) disclaimer conditions who directed their gaze to the target body parts after looking at the disclaimer for the first time,  $t(38) = 7.38, p < .01, \eta^2 = .59$ . The magnitude of this mean difference of 44% was large (95% CI = 32% to 56%). A higher proportion of participants in the specific disclaimer condition did indeed look directly at the target areas after looking at the disclaimer for the first time.



Table 4

*Number (and Percentage) of Participants in the Generic and Specific Disclaimer Conditions Who Looked at Particular Areas after Looking at the Disclaimer for the First Time*

AOI	Condition	Chanel	Ralph Lauren	Wanted	Roberto Cavalli
Face	G	1 (5%)	1 (5%)	7 (35%)	9 (45%)
	S	0 (0%)	0 (0%)	4 (20%)	2 (10%)
Upper body	G	1 (5%)	2 (10%)	1 (5%)	1 (5%)
	S	0 (0%)	1 (5%)	0 (0%)	2 (10%)
Lower body	G	0 (0%)	2 (10%)	0 (0%)	0 (0%)
	S	0 (0%)	2 (10%)	0 (0%)	0 (0%)
Product	G	5 (25%)	3 (15%)	0 (0%)	7 (35%)
	S	1 (5%)	4 (20%)	1 (5%)	0 (0%)
Brand name	G	0 (0%)	2 (10%)	6 (30%)	1 (5%)
	S	0 (0%)	0 (0%)	2 (10%)	2 (10%)
Text	G	11 (55%)	0 (0%)	0 (0%)	0 (0%)
	S	11 (55%)	0 (0%)	0 (0%)	0 (0%)
Other background	G	0 (0%)	8 (40%)	0 (0%)	0 (0%)
	S	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Arms	G	0 (0%)	0 (0%) <sup>b</sup>	1 (5%)	0 (0%) <sup>d</sup>
	S	0 (0%)	4 (20%) <sup>b</sup>	2 (10%)	2 (10%) <sup>d</sup>
Waist	G	0 (0%)	1 (5%) <sup>b</sup>	1 (5%)	0 (0%) <sup>d</sup>
	S	0 (0%)	7 (35%) <sup>b</sup>	1 (5%)	2 (10%) <sup>d</sup>
Breasts	G	0 (0%)	1 (5%)	1 (5%)	2 (10%) <sup>d</sup>
	S	0 (0%)	2 (10%)	0 (0%)	10 (50%) <sup>d</sup>
Legs	G	2 (10%) <sup>a</sup>	0 (0%)	3 (15%) <sup>c</sup>	0 (0%)
	S	8 (40%) <sup>a</sup>	0 (0%)	10 (50%) <sup>c</sup>	0 (0%)
Total	G	20 (100%)	20 (100%)	20 (100%)	20 (100%)
	S	20 (100%)	20 (100%)	20 (100%)	20 (100%)
Target area totals	G	2 (10%)	1 (5%)	3 (15%)	2 (10%)
	S	8 (40%)	11 (55%)	10 (50%)	14 (70%)

Note. AOI = Area of Interest; G = generic disclaimer; S = specific disclaimer.

<sup>a</sup>Chanel specific disclaimer = "Warning: This image has been digitally altered to lengthen and thin legs".

<sup>b</sup>Ralph Lauren specific disclaimer = "Warning: This image has been digitally altered to trim arms and waist".

<sup>c</sup>Wanted Shoes specific disclaimer = "Warning: This image has been digitally altered to lengthen and thin legs".

<sup>d</sup>Roberto Cavalli specific disclaimer = "Warning: This image has been digitally altered to enlarge breasts, and to trim arms and waist".

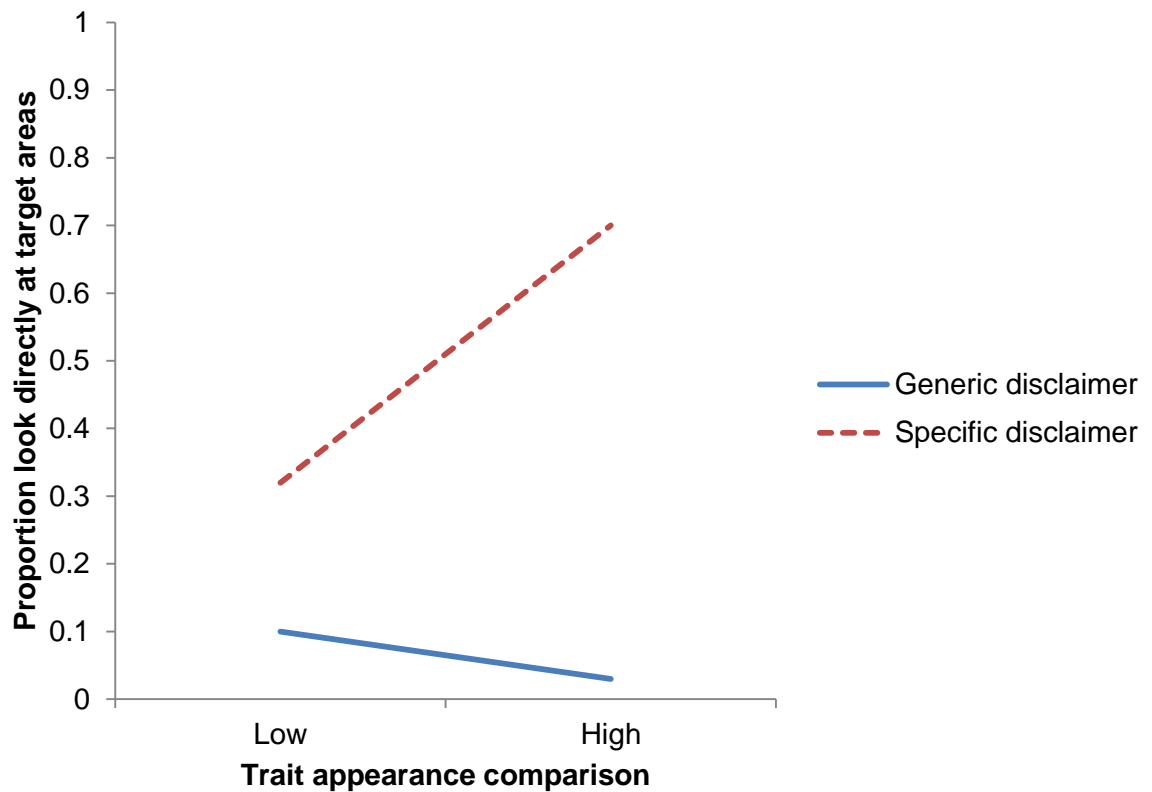
### **Moderation by Trait Appearance Comparison**

To investigate the potential moderation by trait appearance comparison on the effect of disclaimer condition on the time women spent looking at the target body parts, and on the proportion of women who directed their gaze to the target areas after noticing the disclaimer for the first time, hierarchical regression analyses were performed. Consistent with recommendations by Aiken and West (1991), trait appearance comparison scores were centred around the mean ( $M = 3.29$ ,  $SD = 0.76$ ).

For time spent looking at the target body parts, times across the four advertisements (highlighted in the specific notes in Table 3) were added and then averaged. Two dummy-coded variables (generic, specific) were created using the no disclaimer condition as the reference group. Two product terms were created by multiplying the generic and specific variables respectively by centred trait appearance comparison. In Step 1, the generic disclaimer variable, the specific disclaimer variable, and centred trait appearance comparison were entered, with both product terms entered at Step 2. Contrary to our prediction, the product terms did not add significant variance,  $R^2_{Change} = .02$ ,  $F_{Change}(2, 54) = 0.58$ ,  $p = .57$ . Thus trait appearance comparison did not moderate the effect of disclaimer condition on time spent looking at the target body parts mentioned in the specific disclaimers.

To test for an interaction effect on the proportion of women who directed their gaze to the target areas after reading the disclaimers, only participants in the generic and specific disclaimer conditions were included as the control condition did not include a disclaimer. The generic condition was recoded as '0' and the specific condition as '1'. A product term was created by multiplying the disclaimer condition variable by centred trait appearance comparison. In Step 1, the disclaimer condition variable and centred trait appearance comparison were entered, with the product term entered at Step 2. As predicted, Step 2 did explain an additional significant 5.40% of the variance in the proportion looking directly at

the target areas,  $R^2_{Change} = .05$ ,  $F_{Change}(1, 36) = 5.56$ ,  $p = .02$ . This indicated a significant interaction between trait appearance comparison and disclaimer condition in their effect on the proportion of participants who looked directly at the target areas after the disclaimer.



*Figure 1.* Proportion of participants who looked directly at target areas as a function of disclaimer condition and trait appearance comparison. Minimum and maximum values of centred trait appearance comparison were used to represent low and high levels.

Figure 1 illustrates the form of this interaction. Simple slopes analyses confirmed that the regression slope for the generic condition did not differ from zero indicating no relationship between trait appearance comparison and direction of gaze after reading the generic disclaimer ( $\beta = -.13$ ,  $B = -.05$ ,  $p = .32$ ). In contrast, the regression slope for the specific condition indicated a significant positive relationship ( $\beta = .35$ ,  $B = .14$ ,  $p = .03$ ). Put differently, for women low on trait appearance comparison, in terms of direction of gaze it did not matter which disclaimer type they viewed. For women high on trait appearance comparison, however, those in the specific disclaimer condition directed their gaze more to

the body parts mentioned after reading the disclaimer than those in the generic disclaimer condition. This confirmed our final hypothesis that women high on trait appearance comparison would be particularly likely to look at the target areas mentioned in the specific disclaimers.

## **Discussion**

There is a small but growing body of research knowledge from studies that have investigated the effects of disclaimer labels indicating digital enhancement in a variety of formats. One major aim of the present study was to establish whether women actually notice these disclaimers. The current study used eye tracking technology to investigate how disclaimers presented on thin ideal images in fashion magazine advertisements affect where, and for how long, women look in these advertisements. To the best of our knowledge this technology has not been used for this purpose before, and therefore the current study contributes to addressing this gap in the extant literature.

One finding of the current study was that women did selectively direct their attention to the disclaimer labels, as indicated by the greater length of time fixated on the disclaimer area of interest in both disclaimer conditions than in the no disclaimer condition (Mischner et al., 2013). Thus, we can conclude with more confidence that, on average, women do notice disclaimers of digital alteration when attached to advertisements from women's fashion magazines.

In contrast to our second prediction that women would pay more attention to the body parts mentioned in the specific disclaimers, there were no differences in the time spent looking at any targeted body part across the disclaimer conditions. Nevertheless, in support of our third prediction, specific disclaimers were more likely to direct women's gaze to the body part(s) mentioned following reading of the disclaimer. Thus, specifically worded disclaimers can influence women's direction of gaze in fashion magazine advertisements.

One possible reason for this apparent contradiction between the time and direction of gaze results may be that an exposure time of 45 seconds was simply too long. The women may have been obliged to look at the advertisements for longer than they normally would, and as a result may have scanned and rescanned all areas of each advertisement, in a way not possible with a shorter exposure time. Thus, although the specific disclaimers did direct women's attention to the specific body areas mentioned, the overly long exposure time may have overshadowed any time effect. Future research might usefully replicate this study with a shorter exposure time, as well as one that is self-paced, arguably more ecologically valid protocols akin to 'normal' glancing at advertisements while looking through magazines.

The current study in part supports the speculation by Tiggemann and colleagues that specifically worded disclaimers may inadvertently encourage women high on trait appearance comparison to pay more attention to the model's body than they would otherwise (Tiggemann et al., 2013). Importantly, the current finding that direction of gaze was moderated by trait appearance comparison, such that women high on trait appearance comparison more often looked directly at the target area(s) mentioned in specifically worded disclaimers, is consistent with the finding by Tiggemann and colleagues that specifically worded disclaimers were associated with increased body dissatisfaction for these women (Tiggemann et al., 2013). Future research needs to utilise eye tracking technology to examine the effect of disclaimers of digital alteration on women's body dissatisfaction. In particular, future research should investigate the impact of these disclaimers on the relationship between gaze duration, gaze direction, trait appearance comparison, and women's body dissatisfaction levels.

Like all studies, the findings of the current study need to be interpreted in the light of some limitations. The participants were young, university educated, and predominantly white women, so the results can not necessarily be generalised to individuals outside of these

categories. The sample size was also relatively small. The findings are restricted to the stimulus materials used, that is, advertisements from women's fashion magazines, and so may not be applicable to other magazine content or media images, such as fashion shoots or celebrity stories, as a matter of course (Want, 2009). The measure of trait appearance comparison would ideally have been administered in a separate session prior to exposure to the advertisements, although it was established that the manipulation did not impact participants' responses on this measure. Finally, because the study was conducted in a laboratory setting, the findings may not apply to women reading magazines in a natural setting at home or in a doctor's waiting room.

Despite these limitations, the study has demonstrated that eye tracking technology may be a useful methodology for examining the effects of disclaimer labels of digital editing on women's viewing patterns of advertisements. It has been shown that women do attend to these disclaimers. It has also been shown that women high on trait appearance comparison are more likely to look directly at the specific body areas targeted in disclaimers. This adds evidence to the suggestion that specifically worded disclaimers may actually be detrimental and thus should not be used. Hence it is clear that disclaimers of digital enhancement will not provide a 'one size fits all' solution in terms of reducing the known negative effects of exposure to thin ideal imagery. With governments acting to implement changes in this area, further research is vital in guiding policy makers towards the most effective form(s) of intervention.

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## CHAPTER 4: EXPERIMENT 3

### **Disclaimer labels on fashion magazine advertisements: Impact on visual attention and relationship with body dissatisfaction**

Belinda Bury<sup>a</sup>, Marika Tiggemann<sup>a</sup>, and Amy Slater<sup>b</sup>

<sup>a</sup>School of Psychology, Flinders University, South Australia

<sup>b</sup>Centre for Appearance Research, University of the West of England, United Kingdom

**Corresponding author:** Belinda Bury, School of Psychology, Flinders University, GPO Box 2100, Adelaide, 5001, South Australia. Email: belinda.bury@flinders.edu.au

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## ABSTRACT

Globally there is increasing advocacy for the implementation of laws requiring disclaimer labels to be attached to media images that have been digitally altered, with the goal of reducing the known negative effects of exposure to unrealistic thin ideal imagery for women. The current study used eye tracking technology to establish how digital alteration disclaimer labels affect women's visual attention to fashion magazine advertisements, and the interrelationship with body dissatisfaction and state appearance comparison. Participants were 120 female undergraduate students who viewed four thin ideal advertisements with either no disclaimer, a generic disclaimer, or a more detailed specific disclaimer. It was found that women did attend to the disclaimers. Specifically worded disclaimers directed visual attention toward target body areas, which resulted in increased body dissatisfaction, while state appearance comparison predicted increased body dissatisfaction. Further research is imperative to provide guidance on the most effective use of disclaimer labels.

Body dissatisfaction, particularly in the form of a desire for thinness, is widespread among women across a range of western industrialised countries (Frederick, Forbes, Grigorian, & Jarcho, 2007; Frederick, Peplau, & Lever, 2006; Swami et al., 2010). This spread has been attributed to the increasing globalisation of the mass media (Swami et al., 2010). There is supporting evidence, both correlational and experimental, that exposure to thin idealised images in the media can have a negative influence on women's body dissatisfaction, and is associated with disordered eating and depression (Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002; Levine & Murnen, 2009; Want, 2009). However, due to the small effect sizes observed, not all reviews have come to the same conclusion (Ferguson, 2013). Nevertheless, these negative effects have been shown to be more likely for women with pre-existing body dissatisfaction (Ferguson, 2013; Groesz et al., 2002). Accordingly, governments around the globe have begun to consider a variety of interventions with the important goal of reducing these media-induced negative effects (Krawitz, 2014).

For example, in 2009, the Australian Government released the Voluntary Industry Code of Conduct which targeted the fashion, media and advertising industries (Krawitz, 2014). This Code made several recommendations, the most relevant of which to the present research being that digitally altered images should not be used, and importantly, if images have been digitally altered, then this should be disclosed in some form of disclaimer. In March 2012, Israel became the first country to make it a legal requirement for the advertising industry to disclose when images have been digitally enhanced (Geuss, 2012; Krawitz, 2014). In April 2015, the French National Assembly lower house approved legislation requiring advertisements to carry disclaimers if models have been digitally altered, legislation that will now need to be passed by the Senate to become law (Charlton, 2015). Given the current widespread political interest in the implementation of some form of disclaimer on digitally

altered images, it is of considerable urgency that research be conducted into the effectiveness of such measures.

The theoretical reasoning behind the recommended use of disclaimer labels is that they should inform or remind the reader that the image is unrealistic, and therefore not relevant as a target of social comparison (Tiggemann, Slater, Bury, Hawkins, & Firth, 2013). Social comparison on the basis of appearance, derived from the original proposition of social comparison theory by Festinger (1954), has been postulated as one of the main mechanisms contributing to negative body image. It is argued that women compare their appearance with the unrealistic media ideals, and when they do not 'measure up' following these upward comparisons, they feel worse about themselves and their body (Myers & Crowther, 2009; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Want, 2009). Accordingly, disclaimers of digital enhancement should lead women to compare less with the unrealistic media images, and as a result, not experience increased body dissatisfaction.

Although general media literacy programs which encourage critical analysis of media imagery, including consideration of digital alteration, have been shown to successfully reduce negative body image effects (Levine & Murnen, 2009; Levine & Piran, 2004; Ogden & Sherwood, 2008; Posavac, Posavac, & Weigel, 2001; Want, 2009; Watson & Vaughn, 2006; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005), as yet there is little evidence that disclaimer labels affixed to media images reduce body dissatisfaction. To the best of our knowledge, only the study by Slater, Tiggemann, Firth, and Hawkins (2012) has demonstrated positive benefit from the use of such disclaimers. That study found that disclaimer labels attached to fashion shoot spreads reduced the level of body dissatisfaction.

On the other hand, a small but growing body of evidence has accumulated to show that disclaimers of digital alteration have no overall beneficial impact on body image (Ata, Thompson, & Small, 2013; Harrison & Hefner, 2014; Tiggemann et al., 2013; Veldhuis,

Konijn, & Seidell, 2014). Some researchers have even reported negative effects from the use of some forms of disclaimer. In particular, Bissell (2006) found that presenting a disclaimer of digital manipulation on a series of swimsuit model images, in combination with a visual literacy statement read before exposure, actually resulted in women reporting an increased desire to look like the models. In addition, Selimbegovic and Chatard (2015) reported that a disclaimer appended to airbrushed thin ideal images increased negative thought accessibility. Finally, of most relevance to the current research, Tiggemann et al. (2013) demonstrated that for women high on trait appearance comparison, specifically worded disclaimers attached to fashion magazine advertisements actually led to increased body dissatisfaction. The authors speculated that disclaimers which specify the digitally altered areas may promote more, rather than less, attention to the models' bodies.

In order to test this speculation, Bury, Tiggemann, and Slater (2014) used eye tracking technology to investigate the impact of digital alteration disclaimer labels on visual attention, i.e., on where women looked in fashion magazine advertisements. They found that specifically worded disclaimers (e.g., "Warning: This image has been digitally altered to lengthen and thin legs") directed gaze to the target body area (e.g., legs) mentioned in those disclaimers, with this effect being strongest for women high on trait appearance comparison. However, the disclaimers did not affect the number of fixations or percentage of time spent looking at the specified target body area. The authors suggested that a 45 second exposure time may have been too long and served to dilute the time spent looking at the target body area in reaction to the disclaimer labels. Thus, the first major aim of the present study was to test this suggestion. We chose to use a shorter exposure time of 15 seconds, more akin to natural viewing or 'flicking' through fashion magazines. It was predicted that under these conditions all indices of visual attention towards the target body areas would be higher for

women who saw specifically worded disclaimers, compared to women who saw generically worded or no disclaimers.

The second major aim of the present study was to examine the relationship between visual attention to the target body areas and change in body dissatisfaction. To the best of our knowledge, this has not been investigated previously in the literature. It was predicted that more visual attention towards target body areas in the specific disclaimer label condition would correspond to increased body dissatisfaction. In particular, it was expected that indices of visual attention (number of fixations on target body areas, percentage of time spent looking at target body areas, direction of gaze towards target body areas after reading the disclaimer for the first time) would predict an increase in body dissatisfaction. In addition, based on social comparison theory, we expected greater state appearance comparison to be reflected in increased visual attention towards target body areas, with state appearance comparison acting as a mechanism for increased body dissatisfaction. Finally, it was expected that the effect of disclaimer labels on all of visual attention, appearance comparison, and body dissatisfaction would be stronger for women higher in trait appearance comparison.

The specific hypotheses for the study were:

Hypothesis 1: Visual attention (fixations, time) to the disclaimer label area will be greater in both disclaimer label conditions than in the no disclaimer label condition.

Hypothesis 2: Visual attention (fixations, time) to the target body areas will be greater in the specific disclaimer label condition than in the generic and no disclaimer label conditions.

Hypothesis 3: Percentage of gaze directed to the target body areas following first fixation on the disclaimer label will be greater in the specific disclaimer label condition than in the generic disclaimer label condition.



Hypothesis 4: In the specific disclaimer label condition, greater visual attention (fixations, time, direction of gaze) towards the target body areas will result in increased body dissatisfaction.

Hypothesis 5: State appearance comparison will mediate any effect of disclaimer label condition on body dissatisfaction.

Hypothesis 6: State appearance comparison will be positively related to indices of visual attention (fixations, time, direction of gaze) towards the target body areas.

Hypothesis 7: Trait appearance comparison will moderate the effect of disclaimer label condition on visual attention, state appearance comparison, and body dissatisfaction, with all effects greater for participants higher in trait appearance comparison.

## **Method**

### **Design**

A between subjects experimental design was employed to investigate the effect of digital alteration disclaimer labels (no disclaimer, generic disclaimer, specific disclaimer) appended to thin ideal advertisements on visual attention and body dissatisfaction. Using eye tracking software we examined the visual attention directed to various parts of each advertisement that were of interest. Major dependent variables were the number of fixations and percentage of time spent looking at the disclaimers and body parts mentioned in the disclaimers, direction of gaze immediately after noticing the disclaimer for the first time, as well as body dissatisfaction. State appearance comparison was examined as a proposed mediator for change in body dissatisfaction. Trait appearance comparison was assessed as a potential moderator.

### **Participants**

Participants were 120 female undergraduate students from a South Australian university who reported English as their first language. They were randomly allocated to the

three experimental conditions, subject to equal  $n$  ( $n = 40$ ) per condition. Age ranged from 18 to 30 years, with a mean age of 20.51 ( $SD = 3.03$ ). The average body mass index (BMI) of 22.74 ( $SD = 4.14$ , range = 15.97-46.10) was within the normal weight range (World Health Organisation, 2011). The majority of participants identified as White (79.2%), with 18.3% Asian, and 2.5% ‘other’.

## **Materials**

**Thin ideal stimuli.** Stimuli were the four thin ideal advertisements used by Bury et al. (2014). These had been sourced from locally available women’s fashion magazines such as *Vogue* and *Cleo* and had been previously rated as glossy, attractive, colourful, generally appealing, and representative of the thin ideal. The advertisements were for appearance related items such as shoes and perfume. One product-only advertisement (make-up) [not included in analyses] was also included to make the set of advertisements appear typical of those found in women’s fashion magazines.

Each advertisement was displayed one at a time on the computer screen, with a fixed exposure time of 15 seconds. All participants saw the same five advertisements in a fixed order: *Chanel* (perfume), *Ralph Lauren* (formal wear, clutch), *Napoleon Perdis* (make-up), *Wanted Shoes* (shoes), and *Roberto Cavalli* (perfume). There were three experimental conditions based on the type of disclaimer label appended to the four thin ideal advertisements: no disclaimer (the original advertisement); generic disclaimer (“Warning: This image has been digitally altered”); specific disclaimer (e.g., “Warning: This image has been digitally altered to trim arms and waist”). The disclaimer labels were in Calibri style font size 12 enclosed within a thin border, and were positioned in the corner of each advertisement best suited to display the label.

**Tobii eye tracking.** A Tobii T60 eye tracker was used to record eye gaze data (Tobii Technology AB, Danderyd, Sweden). As the eye tracker was embedded within the computer

screen, it did not require any attachments or chin rests to be used by participants, and thus was non-invasive. Infrared diodes created reflection patterns on the corneas of participants, which were then monitored by image sensors to detect and record eye movements.

Areas of interest (AOIs) were set up for each advertisement. These were of two forms: general AOIs for the disclaimer label, product, brand name, face, and body (not including the face); and target AOIs for the body parts mentioned in the specific disclaimers, namely, arms, breasts, legs, and waist.

The Tobii T60 eye tracker records the number of fixations and length of observations for the AOIs, as well as video recordings of eye gaze data. In the present study, the data examined were the number of fixations and the time (in seconds) that a participant looked at a particular AOI as a percentage of the total time that the advertisement was viewed. In the two disclaimer label conditions, the direction of gaze immediately following looking at disclaimer label for the first time was also analysed to determine whether specifically worded disclaimers directed visual attention immediately toward the body areas mentioned. Two independent raters watched the gaze movement recordings produced by the Tobii eye tracker and coded the AOI where participants looked after looking at the disclaimer label. Inter-rater reliability was high, with complete agreement between the independent codings for 86.9% of the recordings, with the remaining 13.1% being watched a third time by the principal researcher to resolve discrepancies.

**Fashion consumption.** Participants were asked to complete a brief questionnaire containing estimates of how many hours they spent in the previous month looking at fashion magazines, shopping and window shopping for fashion items (e.g., clothes, accessories, perfume), and online shopping and browsing for fashion items. They were also asked to rate how interested they were in fashion on a 7 point scale (1 = *not at all interested*, 7 = *extremely interested*).

**State body dissatisfaction.** Following Heinberg and Thompson (1995), seven visual analogue scales (VAS) were used to obtain measures of mood and state body dissatisfaction, both before and after viewing the five magazine advertisements. Each scale consisted of a 100mm horizontal line with endpoints labelled “none” and “very much”. Participants were asked to make a small vertical mark along each line to indicate how they felt “right now” on the mood dimensions of anxiety, depression, happiness, anger, and confidence (mood not analysed here), and also the dimensions of weight dissatisfaction and overall appearance dissatisfaction (Heinberg & Thompson, 1995). Responses were measured to the nearest millimetre (mm) from the “none” endpoint. Heinberg and Thompson (1995) reported good construct validity, in that the body dissatisfaction VAS were strongly related to the Eating Disorders Inventory-Body Dissatisfaction subscale (EDI-BD) (weight dissatisfaction,  $r = .66$ ,  $p < .01$ ; appearance dissatisfaction,  $r = .76$ ,  $p < .01$ ). In the current study, an overall score for body dissatisfaction was obtained by averaging the scores for weight and overall appearance dissatisfaction. Possible scores ranged from 0 to 100, where higher scores represented greater body dissatisfaction. Internal reliability for body dissatisfaction was acceptable ( $\alpha = .76$  pre-exposure,  $\alpha = .84$  post-exposure).

**State appearance comparison.** To measure state appearance comparison, participants answered three items constructed by Tiggemann and McGill (2004). Participants were asked to rate the extent to which they thought about their appearance whilst viewing the advertisements (1 = *no thought*, 7 = *a lot of thought*), and the degree to which they compared their overall appearance and specific body parts to those of the models in the advertisements (1 = *no comparison*, 7 = *a lot of comparison*). These three questions were embedded within six other more general questions about the extent to which participants thought about features of the advertisements, such as the layout and creativity. Tiggemann and McGill (2004)

reported high internal reliability ( $\alpha = .91$ ) for the three comparison items, which was similar in the present study ( $\alpha = .92$ ).

**Trait tendency for appearance comparison.** The Physical Appearance Comparison Scale (PACS) of Thompson, Heinberg, and Tantleff (1991) was used to measure the trait tendency to engage in social comparison based on appearance. The five items (e.g., “At parties or other social events, I compare my physical appearance to the physical appearance of others”) were answered on a 5-point Likert-type scale (1 = *never*, 5 = *always*). Responses to item number four were reverse-coded. Scores on the items were averaged to obtain an overall trait tendency for appearance comparison score, where a higher score represented a higher tendency. Internal reliability for this scale was acceptable ( $\alpha = .78$ ) when used by Thompson et al. (1991), as it was in the current study ( $\alpha = .77$ ).

## **Procedure**

Women aged 18 to 30 years with English as their first language were recruited to participate in a study on the effectiveness of fashion magazine advertisements targeted at women. Before commencing, a letter of introduction was read and a consent form completed. Participants then completed the fashion consumption questions and pre-exposure VAS measures of mood and body dissatisfaction.

Next, participants were individually tested and calibrated on the Tobii eye tracking system. They sat approximately 60cm from the computer screen, and were free to move their heads within a range of 44cm x 22cm x 30cm. They were directed to follow the instructions on the screen. Each advertisement was viewed for a fixed exposure time of 15 seconds, and participants then rated two items as to whether the advertisement was “appealing” and “effective at selling its product” (1 = *strongly disagree*, 5 = *strongly agree*).

Following the last advertisement, participants completed the post exposure VAS measures (mood, body dissatisfaction) and state appearance comparison items. Participants

then completed a recall task (brand name and product), which acted as a ‘filler’ task before completion of the measure of trait appearance comparison. Finally, participants were asked to provide their age, ethnicity, and with their consent height and weight were measured. Height and weight were used to calculate BMI for each participant. Each session lasted approximately 30 minutes and participants received course credit for their participation. Debriefing information was provided to the participants via an online system once data collection was complete.

## Results

### Sample Characteristics

The three experimental groups did not differ in age,  $F(2, 117) = 2.41, p = .094, \eta^2 = .04$ , BMI,  $F(2, 117) = 0.18, p = .833, \eta^2 < .01$ , time spent looking at magazines,  $F(2, 117) = 1.25, p = .290, \eta^2 = .02$ , time spent shopping for fashion,  $F(2, 117) = 0.40, p = .671, \eta^2 = .01$ , or general interest in fashion,  $F(2, 117) = 1.55, p = .216, \eta^2 = .03$ . The three experimental groups also did not differ in ethnicity,  $\chi^2(6, n = 120) = 6.64, p = .356, \phi = .235$ . Importantly, participants across the experimental groups did not differ in levels of trait appearance comparison (no disclaimer,  $M = 3.18, SD = 0.65$ ; generic disclaimer,  $M = 3.37, SD = 0.68$ ; specific disclaimer,  $M = 3.31, SD = 0.68$ ),  $F(2, 117) = 0.89, p = .413, \eta^2 = .01$ , indicating that this construct was not reactive to the experimental manipulation.

### Attention Paid to General AOIs

Table 1 presents the mean number of fixations and percentage of time spent looking at the different general areas across the three experimental conditions. It can be seen that, for both fixations and percentage of time, the majority of visual attention was directed at the body, followed by the product advertised, with relatively less directed at the face, brand name or disclaimer label. A series of one-way ANOVAs was used to test whether participants exposed to advertisements with digital alteration disclaimers attended more to any of the

general areas than participants in the no disclaimer condition. For each analysis, the independent variable was disclaimer label condition (none, general, specific) and the dependent variables were the number of fixations on, and the percentage of time spent looking at, the relevant general area.

Table 1

*Means (and Standard Deviations) of Number of Gaze Fixations and Percentage of Time on General AOIs by Condition for the Four Thin-ideal Advertisements Combined*

AOI	Condition	Fixations	Time
Disclaimer label	N	0.01 (0.06)	0.02 (0.10)
	G	2.78 (1.25)	6.63 (3.07)
	S	5.73 (2.30)	13.89 (6.01)
Product	N	10.21 (3.16)	25.43 (7.35)
	G	8.86 (2.59)	21.51 (6.75)
	S	8.03 (1.94)	18.34 (4.10)
Brand name	N	4.15 (1.25)	9.70 (4.39)
	G	4.49 (1.73)	9.35 (3.73)
	S	3.59 (1.24)	7.84 (2.99)
Face	N	4.14 (1.76)	14.37 (6.52)
	G	4.06 (1.88)	14.43 (8.63)
	S	3.85 (1.58)	13.76 (5.77)
Body	N	21.76 (5.64)	58.57 (11.05)
	G	21.18 (4.24)	53.52 (12.38)
	S	21.92 (3.75)	54.75 (7.89)

*Note.* AOI = area of interest; N = no disclaimer; G = generic disclaimer; S = specific disclaimer.

In particular, testing whether the disclaimer labels were noticed (Hypothesis 1), the overall ANOVA proved significant for both number of fixations,  $F(2, 117) = 142.89, p < .001, \eta^2 = .71$ , and percentage of time,  $F(2, 117) = 126.69, p < .001, \eta^2 = .68$ . As is clear from the means in Table 1, post hoc comparisons showed that participants attended more to the disclaimer label area in both disclaimer conditions than in the no disclaimer condition ( $t(117) = 14.47, p < .001, d = 2.68$  and  $t(117) = 13.56, p < .001, d = 2.51$  for fixations and time respectively), establishing that participants did indeed notice the disclaimer labels. In addition, participants attended to the disclaimer label area more in the specific than the

generic disclaimer condition ( $t(117) = 8.74, p < .001, d = 1.62$ ;  $t(117) = 8.34, p < .001, d = 1.54$ ). Thus, these results support Hypothesis 1.

For the product, the overall ANOVA was significant for both number of fixations,  $F(2, 117) = 7.15, p = .001, \eta^2 = .11$ , and percentage of time,  $F(2, 117) = 12.98, p < .001, \eta^2 = .18$ . Post hoc comparisons established that there were more fixations and time spent on the product in the no disclaimer condition compared to both disclaimer conditions ( $t(117) = 3.50, p = .001, d = 0.65$  and  $t(117) = 4.56, p < .001, d = 0.84$  respectively). In addition, less time was spent looking at the product in the specific compared to the generic disclaimer condition ( $t(117) = 2.28, p = .025, d = 0.42$ ).

For the brand name, the overall ANOVA was significant for the number of fixations,  $F(2, 117) = 4.12, p = .019, \eta^2 = .07$ , but not for the percentage of time,  $F(2, 117) = 2.79, p = .066, \eta^2 = .05$ . Post hoc comparisons for fixations showed that only the difference between the generic and specific disclaimer conditions was statistically significant,  $t(117) = 2.84, p = .005, d = 0.53$ , with more fixations in the generic disclaimer condition.

For the face, the overall ANOVA was not significant for either number of fixations,  $F(2, 117) = 0.30, p = .740, \eta^2 = .01$ , or percentage of time,  $F(2, 117) = 0.11, p = .896, \eta^2 < .01$ . Likewise, for the body, the overall ANOVA was not significant for either number of fixations,  $F(2, 117) = 0.29, p = .751, \eta^2 < .01$ , or percentage of time,  $F(2, 117) = 2.47, p = .089, \eta^2 = .04$ . Thus, there were no differences across experimental conditions in visual attention directed to either the face or whole body areas.

In summary, the presence of a digital alteration disclaimer label meant that participants attended more to the label and less to the product. This was especially so for specifically worded disclaimer labels. However, there was little effect on visual attention to the brand name, face or body.



## Attention Paid to Target Body AOIs Across Disclaimer Conditions

Table 2 displays the mean number of fixations and percentage of time directed to target body areas that had been mentioned in the specific disclaimers. Because target body areas varied across advertisements, this is displayed for each advertisement across the three experimental conditions, with the top section of the table showing fixations and the bottom section showing percentage of time. It can be seen that mostly the fixations and times were very similar across disclaimer conditions. However, there were some notable differences, for example, percentage of time for the breast area in the *Roberto Cavalli* advertisement.

To test whether participants in the specific disclaimer condition had more fixations and looked for longer at target body areas than participants in the generic and no disclaimer conditions (Hypothesis 2), gaze fixations and percentage of observation time were summed and averaged for the seven target areas of interest (bolded areas in Table 2), and combined across the four advertisements. The resulting overall measures of gaze fixations and percentage of observation time on the target body areas were analysed by a planned comparison (contrast = -1, -1, +2).

For gaze fixations, there was a significant difference between the specific disclaimer condition ( $M = 4.95$ ,  $SD = 1.40$ ), and the combined no disclaimer ( $M = 4.19$ ,  $SD = 1.65$ ) and generic disclaimer ( $M = 4.13$ ,  $SD = 1.47$ ) conditions,  $t(117) = 2.70$ ,  $p = .008$ ,  $d = 0.50$ . For percentage of observation time, the planned comparison between the specific disclaimer condition ( $M = 11.73$ ,  $SD = 3.42$ ) and the combined no disclaimer ( $M = 10.70$ ,  $SD = 3.87$ ) and generic disclaimer ( $M = 10.05$ ,  $SD = 3.96$ ) conditions fell just short of statistical significance,  $t(117) = 1.86$ ,  $p = .065$ ,  $d = 0.34$ . However, a comparison which tested the difference between the generic and specific disclaimer conditions was statistically significant,  $t(117) = 2.00$ ,  $p = .047$ ,  $d = 0.37$ . Thus, there were more fixations on the target body areas for the advertisements with specific disclaimers compared to both other experimental conditions,

and more time spent looking at the target body areas for the advertisements with specific disclaimers compared to those with generic disclaimers. Together these results support Hypothesis 2.

Table 2

*Means (and Standard Deviations) of Number of Gaze Fixations and Percentage of Time on Target Body Areas Mentioned in Specific Disclaimers Across the Disclaimer Conditions for Each Thin-ideal Advertisement*

AOI	Condition	Chanel	Ralph Lauren	Wanted	Roberto Cavalli
<b>Fixations</b>					
Arms	N	5.30 (2.79)	<b>2.13 (1.96)<sup>b</sup></b>	1.15 (1.48)	<b>1.53 (1.99)<sup>d</sup></b>
	G	5.40 (2.81)	<b>2.17 (2.31)<sup>b</sup></b>	1.00 (0.91)	<b>2.08 (2.57)<sup>d</sup></b>
	S	5.33 (2.79)	<b>2.95 (2.25)<sup>b</sup></b>	1.48 (2.09)	<b>2.00 (2.08)<sup>d</sup></b>
Waist	N	0.50 (0.60)	<b>2.17 (1.63)<sup>b</sup></b>	0.90 (0.98)	<b>3.38 (2.50)<sup>d</sup></b>
	G	0.70 (0.91)	<b>1.95 (1.84)<sup>b</sup></b>	1.33 (1.40)	<b>4.08 (2.11)<sup>d</sup></b>
	S	0.40 (0.63)	<b>2.80 (1.71)<sup>b</sup></b>	1.08 (1.16)	<b>3.55 (2.24)<sup>d</sup></b>
Breasts	N	Not visible	3.18 (2.21)	2.03 (1.56)	<b>5.45 (3.50)<sup>d</sup></b>
	G	Not visible	2.80 (1.68)	1.43 (1.04)	<b>5.55 (2.58)<sup>d</sup></b>
	S	Not visible	2.73 (1.69)	1.68 (1.27)	<b>6.38 (2.62)<sup>d</sup></b>
Legs	N	<b>4.47 (3.64)<sup>a</sup></b>	4.08 (2.60)	<b>10.20 (4.59)<sup>c</sup></b>	Not visible
	G	<b>3.98 (3.34)<sup>a</sup></b>	3.33 (1.86)	<b>9.13 (4.07)<sup>c</sup></b>	Not visible
	S	<b>5.38 (2.93)<sup>a</sup></b>	3.30 (1.99)	<b>11.60 (4.42)<sup>c</sup></b>	Not visible
<b>Time</b>					
Arms	N	12.54 (7.23)	<b>6.73 (7.60)<sup>b</sup></b>	2.40 (3.47)	<b>3.08 (4.07)<sup>d</sup></b>
	G	12.29 (7.67)	<b>5.56 (7.12)<sup>b</sup></b>	2.25 (2.22)	<b>4.27 (6.18)<sup>d</sup></b>
	S	11.13 (6.47)	<b>7.54 (6.03)<sup>b</sup></b>	3.15 (4.95)	<b>4.06 (4.64)<sup>d</sup></b>
Waist	N	1.29 (1.89)	<b>6.11 (4.73)<sup>b</sup></b>	1.93 (2.61)	<b>9.42 (7.12)<sup>d</sup></b>
	G	1.67 (2.70)	<b>5.58 (5.65)<sup>b</sup></b>	3.18 (5.27)	<b>9.87 (5.85)<sup>d</sup></b>
	S	0.88 (1.67)	<b>7.51 (4.23)<sup>b</sup></b>	2.34 (2.95)	<b>9.06 (6.50)<sup>d</sup></b>
Breasts	N	Not visible	8.73 (6.54)	4.39 (3.85)	<b>12.16 (8.44)<sup>d</sup></b>
	G	Not visible	6.37 (4.55)	3.13 (2.80)	<b>11.57 (6.90)<sup>d</sup></b>
	S	Not visible	6.52 (4.88)	3.46 (2.86)	<b>15.91 (7.85)<sup>d</sup></b>
Legs	N	<b>9.59 (8.00)<sup>a</sup></b>	9.17 (5.25)	<b>27.83 (14.26)<sup>c</sup></b>	Not visible
	G	<b>8.40 (7.99)<sup>a</sup></b>	7.69 (5.43)	<b>25.07 (13.30)<sup>c</sup></b>	Not visible
	S	<b>11.85 (7.07)<sup>a</sup></b>	7.25 (4.49)	<b>26.19 (11.82)<sup>c</sup></b>	Not visible

*Note.* AOI = area of interest; N = no disclaimer; G = generic disclaimer; S = specific disclaimer.

**Bolded:**

<sup>a</sup> *Chanel* specific disclaimer = “Warning: This image has been digitally altered to lengthen and thin legs”

<sup>b</sup> *Ralph Lauren* disclaimer = “Warning: This image has been digitally altered to trim arms and waist”

<sup>c</sup> *Wanted Shoes* disclaimer = “Warning: This image has been digitally altered to lengthen and thin legs”

<sup>d</sup> *Roberto Cavalli* disclaimer = “Warning: This image has been digitally altered to enlarge breasts, and to trim arms and waist”

### **Direction of Gaze After Looking at the Disclaimer Label for the First Time**

On average across all four advertisements, participants took 4.87 ( $SD = 1.97$ ) and 4.26 ( $SD = 1.83$ ) seconds respectively in the generic and specific conditions to look at the disclaimer labels for the first time. An independent samples  $t$ -test showed that these times were not significantly different,  $t(53) = 1.17, p = .248, d = 0.32$ .

Table 3 displays the number (and percentage) of participants in the generic and specific conditions who looked directly at each target area of interest after seeing the disclaimer for the first time, with the totals for each advertisement at the bottom of the table. To test Hypothesis 3, these totals were averaged across all four advertisements to generate an overall percentage of participants for each experimental condition who looked directly at the target areas after viewing the disclaimers. It was found that there was a significantly higher percentage of participants in the specific disclaimer condition ( $M = 48.75, SD = 31.50$ ) than the generic disclaimer condition ( $M = 6.25, SD = 12.34$ ) who directed their gaze to the target body areas after looking at the disclaimer for the first time,  $t(78) = 7.95, p < .001, d = 1.78$ , supporting Hypothesis 3. The magnitude of this mean difference of 42.50% was large (95% CI = 32% to 53%).

### **Relationship of Visual Attention to Change in Body Dissatisfaction**

Table 4 displays the pre-exposure and post-exposure mean scores for body dissatisfaction across the three disclaimer conditions (none, generic, specific). A mixed between-within subjects ANOVA showed that there was a significant main effect of time,  $F(1, 117) = 7.56, p = .007, \eta_p^2 = .06$ , which indicated a significant increase in body dissatisfaction from pre-exposure to post-exposure with a moderate effect size. There was no significant main effect of disclaimer condition,  $F(2, 117) = 1.01, p = .368, \eta_p^2 = .02$ ; nor was there a significant interaction between disclaimer condition and time,  $F(2, 117) = 0.30, p =$

.741,  $\eta_p^2 = .01$ . Thus, irrespective of disclaimer label condition, participants showed a moderate increase in body dissatisfaction after viewing the thin ideal advertisements.

Table 3

*Number (and Percentage) of Participants in the Generic and Specific Disclaimer Conditions Who Looked Directly at Target Areas after Looking at the Disclaimer for the First Time*

AOI	Condition	Chanel	Ralph Lauren	Wanted	Roberto Cavalli
Target areas					
Arms	G	2 (5%)	<b>3 (7.5%)<sup>b</sup></b>	0 (0%)	<b>1 (2.5%)<sup>d</sup></b>
	S	4 (10%)	<b>5 (12.5%)<sup>b</sup></b>	1 (2.5%)	<b>0 (0%)<sup>d</sup></b>
Waist	G	0 (0%)	<b>2 (5%)<sup>b</sup></b>	2 (5%)	<b>0 (0%)<sup>d</sup></b>
	S	0 (0%)	<b>19 (47.5%)<sup>b</sup></b>	2 (5%)	<b>3 (7.5%)<sup>d</sup></b>
Breasts	G	0 (0%)	2 (5%)	0 (0%)	<b>0 (0%)<sup>d</sup></b>
	S	0 (0%)	2 (5%)	1 (2.5%)	<b>19 (47.5%)<sup>d</sup></b>
Legs	G	<b>2 (5%)<sup>a</sup></b>	0 (0%)	<b>2 (5%)<sup>c</sup></b>	0 (0%)
	S	<b>14(35%)<sup>a</sup></b>	0 (0%)	<b>18 (45%)<sup>c</sup></b>	0 (0%)
Total for target areas	G	2 (5%) <sup>a</sup>	5 (12.5%) <sup>b</sup>	2 (5%) <sup>c</sup>	1 (2.5%) <sup>d</sup>
	S	14 (35%) <sup>a</sup>	24 (60%) <sup>b</sup>	18 (45%) <sup>c</sup>	22 (55%) <sup>d</sup>

Note. AOI = area of interest; G = generic disclaimer; S = specific disclaimer.

**Bolded:**

<sup>a</sup> Chanel specific disclaimer = “Warning: This image has been digitally altered to lengthen and thin legs”

<sup>b</sup> Ralph Lauren disclaimer = “Warning: This image has been digitally altered to trim arms and waist”

<sup>c</sup> Wanted Shoes disclaimer = “Warning: This image has been digitally altered to lengthen and thin legs”

<sup>d</sup> Roberto Cavalli disclaimer = “Warning: This image has been digitally altered to enlarge breasts, and to trim arms and waist”

Table 4

*Means (and Standard Deviations) for Body Dissatisfaction (Pre and Post) and State Appearance Comparison*

	No disclaimer (n = 40)	Generic disclaimer (n = 40)	Specific disclaimer (n = 40)
Body dissatisfaction – pre	47.36 (24.79)	54.24 (26.09)	49.48 (22.17)
Body dissatisfaction – post	49.10 (28.01)	57.73 (27.63)	51.90 (23.54)
State appearance comparison	3.63 (1.99)	4.27 (2.03)	4.33 (1.73)

To test for any relationship between visual attention and change in body dissatisfaction, a series of hierarchical regression analyses was run, controlling for pre-exposure body dissatisfaction at Step 1. For each general AOI (disclaimer, product, brand name, face, body) entered in separate regression analyses at Step 2, neither the number of

fixations nor the percentage of time spent looking at the general AOIs significantly predicted change in body dissatisfaction (all  $R^2_{Change} \leq .002$ ,  $p > .05$ ). Thus, there was no relationship between visual attention towards the general AOIs and change in body dissatisfaction.

For the target AOIs (arms, breasts, legs, waist), individual hierarchical regression analyses were run for each disclaimer label condition (Hypothesis 4). For both the no disclaimer and generic disclaimer conditions, neither the number of fixations nor the percentage of time on the target AOIs entered at Step 2 predicted change in body dissatisfaction (all  $R^2_{Change} \leq .001$ ,  $p > .05$ ). However, in the specific disclaimer condition, both the number of fixations,  $R^2_{Change} = .033$ ,  $F_{Change}(1, 37) = 6.79$ ,  $p = .013$ ,  $B = 3.15$ ,  $\beta = .19$ , and the percentage of time on the target AOIs,  $R^2_{Change} = .044$ ,  $F_{Change}(1, 37) = 9.66$ ,  $p = .004$ ,  $B = 1.53$ ,  $\beta = .22$ , explained significant additional variance in body dissatisfaction at Step 2, and thus predicted an increase in body dissatisfaction.

Similarly, direction of gaze towards the target AOIs after looking at the disclaimer label for the first time (expressed as a proportion of times out of four that this occurred for the thin ideal advertisements) did not explain significant additional variance in body dissatisfaction for the generic disclaimer condition at Step 2,  $R^2_{Change} = .005$ ,  $F_{Change}(1, 37) = 1.68$ ,  $p = .203$ ,  $B = 17.05$ ,  $\beta = .08$ . However, for the specific disclaimer condition, this target proportion did explain a significant increase in body dissatisfaction at Step 2,  $R^2_{Change} = .026$ ,  $F_{Change}(1, 37) = 5.28$ ,  $p = .027$ ,  $B = 12.15$ ,  $\beta = .16$ .

In sum, for women in the specific disclaimer condition, more fixations on and time spent looking at the target areas of interest predicted an increase in body dissatisfaction from pre-exposure to post-exposure, as did a greater tendency to look directly at the target area after looking at the disclaimer for the first time. This was not the case for the generic disclaimer condition. It seems that when the specific disclaimers directed women's visual

attention to the target areas mentioned, those women did experience an increase in body dissatisfaction. Taken together, these results support Hypothesis 4.

### **The Role of State Appearance Comparison**

Table 4 also displays the means for state appearance comparison for the three disclaimer label conditions (none, generic, specific). It can be seen that the means for state appearance comparison were not lower in the disclaimer conditions; in fact, they were higher in both disclaimer conditions compared to the no disclaimer condition. However, this difference fell just short of significance,  $t(117) = 1.81, p = .072, d = 0.34$ . Thus, there was a tendency for state appearance comparison to be higher, rather than lower, in both conditions with disclaimer labels. As disclaimer label condition had no effect on state appearance comparison or body dissatisfaction, state appearance comparison did not mediate the effect of disclaimer label condition on body dissatisfaction (Baron & Kenny, 1986), and Hypothesis 5 was not supported.

Nevertheless, irrespective of disclaimer condition, state appearance comparison was strongly correlated with post-exposure body dissatisfaction,  $r(120) = .58, p < .001$ . A hierarchical regression analysis was conducted to test whether state appearance comparison was a significant predictor of change in body dissatisfaction from pre-exposure to post-exposure, regardless of disclaimer label condition. Controlling for pre-exposure body dissatisfaction at Step 1, state appearance comparison explained significant additional variance in post-exposure body dissatisfaction at Step 2,  $R^2_{Change} = .008, F_{Change}(1, 117) = 6.94, p = .010, B = 1.47, \beta = .11$ . Thus, regardless of disclaimer label condition, state appearance comparison significantly predicted an increase in body dissatisfaction in response to thin ideal images.

Table 5 provides the correlations between state appearance comparison and indices of visual attention for the target body AOIs. It can be seen that, for the overall sample, state

appearance comparison was significantly positively correlated with both fixations and percentage of time on the target AOIs. Thus, Hypothesis 6 was supported. When analysed separately for each disclaimer label condition, it can be seen that the only individual correlation to reach statistical significance was for the number of fixations on the target AOIs in the specific disclaimer condition,  $r(40) = .35, p = .028$ . That is, particularly for women who saw advertisements with specific disclaimers, increased state appearance comparison was associated with a greater number of times looking at the target areas specified by those disclaimers.

Table 5

*Correlations for State Appearance Comparison with Number of Gaze Fixations and Time on Target Areas of Interest Combined (Arms, Breasts, Legs, Waist) by Disclaimer Label Condition*

	Fixations	Time
Across conditions	.26*	.24*
No disclaimer	.21	.20
Generic disclaimer	.22	.25
Specific disclaimer	.35*	.29

*Note.* \*  $p < .05$ .

### **Moderation by Trait Appearance Comparison**

A series of hierarchical regression analyses was conducted to investigate whether trait appearance comparison moderated the effect of disclaimer condition (none, generic, specific) on indices of visual attention to target AOIs, state appearance comparison, or body dissatisfaction (Hypothesis 7). Consistent with recommendations by Aiken and West (1991), trait appearance comparison scores were centred around the mean ( $M = 3.29, SD = 0.67$ ). No significant interactions were found for any of: number of fixations on target AOIs,  $R^2_{Change} = .008, F_{Change}(2, 114) = 0.50, p = .611$ , percentage of time looking at target AOIs,  $R^2_{Change} = .006, F_{Change}(2, 114) = 0.33, p = .718$ , proportion of gaze directed to target AOIs after reading

disclaimers,  $R^2_{Change} = .004$ ,  $F_{Change}(1, 76) = 0.60$ ,  $p = .440$ , state appearance comparison,  $R^2_{Change} = .003$ ,  $F_{Change}(2, 114) = 0.32$ ,  $p = .729$ , or body dissatisfaction,  $R^2_{Change} < .001$ ,  $F_{Change}(2, 113) = 0.03$ ,  $p = .968$ . Thus, in contrast to Hypothesis 7, trait appearance comparison did not moderate any of the effects of disclaimer label condition on visual attention, state appearance comparison, or change in body dissatisfaction.

### **Discussion**

The present study used eye tracking technology to analyse the impact of disclaimer labels of digital alteration on the visual attention paid to various areas of women's fashion magazine advertisements, and the interrelationship with body dissatisfaction and state appearance comparison. The major findings are clear. First, women did indeed notice the disclaimer labels. Second, specifically worded disclaimers directed visual attention to targeted body areas of the thin ideal advertisements. Third, there was no effect of disclaimer label on body dissatisfaction. Fourth, for specifically worded disclaimers, greater state appearance comparison was associated with greater visual attention to the targeted body areas and predicted increased body dissatisfaction.

The results confirm that women do notice disclaimer labels when added to fashion magazine advertisements, even when exposed to advertisements for only 15 seconds. This replicates the finding of Bury et al. (2014) who used a longer 45 second exposure time. Interestingly, most likely reflecting the additional time required to read the disclaimers, women in the present study attended relatively less to the advertised product when disclaimers were present. As the prime purpose of an advertisement is to attract attention to and sell a featured product, any content which detracts attention from that product is unlikely to be endorsed. Thus the current finding of disclaimer labels redirecting attention away from the product may provide an additional reason as to why advertisers are unlikely to voluntarily adopt the use of such disclaimer labels.



As predicted, specifically worded disclaimer labels were shown to affect the amount of visual attention directed toward target body areas. Women who viewed specifically worded disclaimers spent more time and fixations looking at the target body areas than women who viewed generically worded disclaimers. They were also more likely to direct their gaze to the specified target body areas after reading disclaimers for the first time. While this latter finding replicates that of Bury et al. (2014), with a comparable moderate effect size, the finding for fixations and time is novel. Taken together, it is clear that specifically worded disclaimers have the power to influence where, and for how long, women look on fashion magazine advertisements.

Another novel contribution of the present study was the measurement of body dissatisfaction alongside visual attention. It was found that overall (irrespective of disclaimer label condition) participants experienced an increase in body dissatisfaction following exposure to the four thin ideal advertisements. This increase is consistent with the literature which has established a small-to-moderate negative effect of exposure to thin ideal imagery for most women (Grabe et al., 2008; Groesz et al., 2002; Levine & Murnen, 2009; Want, 2009). In addition, contrary to the assumed effectiveness of disclaimer labels by many of their advocates, the disclaimer labels had no effect on body dissatisfaction. This adds to the previous findings by Ata et al. (2013) and Tiggemann et al. (2013) who likewise found disclaimer labels to have no positive impact on women's body dissatisfaction. Here they also had no effect on reported social comparison processing. If anything, rather than disclaimer labels reducing comparison on the basis of appearance, comparison tended to be higher in the conditions with disclaimer labels, reflecting the pattern reported by Tiggemann et al. (2013).

Nonetheless, the major purpose of measuring body dissatisfaction was to examine its relationship to the indices of visual attention. Although visual attention was not associated with change in body dissatisfaction in the no disclaimer or generic disclaimer conditions, for

women who were exposed to advertisements with specifically worded disclaimers, greater visual attention (fixations, time, and direction of gaze) to the target body areas significantly predicted an increase in body dissatisfaction. In addition, social comparison on the basis of appearance was associated with gaze fixations on target body areas in the specific disclaimer condition, and predicted increased body dissatisfaction irrespective of disclaimer condition. Together, these results for state appearance comparison and body dissatisfaction are consistent with the speculation by Tiggemann et al. (2013) that specifically worded disclaimers may inadvertently encourage more, rather than less, attention to, and comparison with, thin ideal models in advertisements than would normally occur without disclaimers. Accordingly, there is now sufficient evidence against the use of specifically worded disclaimers of digital alteration.

In evaluating the effectiveness of more generically worded disclaimer labels, the present study found no effect on social comparison or body dissatisfaction, and thus they were neither explicitly beneficial nor detrimental. To the best of our knowledge, only one study has reported a positive benefit when appended to fashion magazine shoots (Slater et al., 2012). In contrast, some other research groups have reported negative effects from the use of generic disclaimers, specifically, an increased desire to look like models (Bissell, 2006) and increased negative thought accessibility (Selimbegovic & Chatard, 2015). Interestingly, the (commonly advocated) wording used in these latter two studies (“The image below has been digitally manipulated to enhance the model’s appearance”; “This image has been modified to alter a person’s bodily appearance”) can be seen as more directive toward the model’s body and appearance than the generic disclaimer we tested (“This image has been digitally altered”). It may be that seemingly small differences in wording will be pivotal in determining whether disclaimer labels direct attention towards idealised appearance, and ultimately, their effectiveness.

It follows, then, that more research is needed to address the potential effects of different formats of disclaimer label. It is possible that disclaimers of a different form from that currently proposed by legislators and concerned politicians will prove more beneficial. As an example, Veldhuis et al. (2014) recently found that an information label which stated that a model was underweight did lead to reduced body dissatisfaction for girls low in self-esteem. Future research should investigate the impact of such information labels about weight status, as well as a range of other kinds of label, on women's body dissatisfaction. It also should be noted that, irrespective of the effect on the individual, the implementation of disclaimer labels may carry broader social and educational benefits in terms of raising awareness and levels of media literacy. Nevertheless, whether disclaimer labels are attached or not, thin idealised media imagery still presents the 'ideal' for women and girls to aspire to (Strahan, Wilson, Cressman, & Buote, 2006) and, consistent with the Australian Voluntary Code of Conduct, primary advocacy efforts might best be directed toward changing media imagery to more realistic body representations.

As with all research, there are a number of limitations that warrant acknowledgement. The sample was restricted to young, university-educated women who were predominantly white, so these findings cannot be automatically generalised to people outside these categories. Although the eye tracking measurements were objective, the sample size was relatively small. As such, replication with a larger sample size is recommended. As the research was conducted in a laboratory setting, the results may not be applicable to women reading magazines in real life settings, such as at home or in the doctor's waiting room. These findings apply to advertisements in women's fashion magazines, not necessarily to other fashion magazine content such as fashion shoot spreads, celebrity stories or editorial content (Want, 2009), nor to other media formats such as billboards, television, or internet advertisements. In particular, the increasing prevalence of internet use by young women,

particularly for fashion and fitness inspiration, provides a challenge in conceptualizing and designing interventions which are effective within that domain.

In summary, the present study was successful in replicating the findings of Bury et al. (2014) that women do notice disclaimer labels, and that disclaimers have the power to direct gaze. In addition, it established that specifically worded disclaimers led to increased fixations and time looking at target body areas, increased body dissatisfaction was predicted by greater visual attention directed to target body areas in the specific condition, and that state appearance comparison predicted this increased body dissatisfaction. Accordingly, the study has added to the growing body of research globally that has of yet been unable to identify the particular characteristics required for disclaimers to be effective in protecting women's body image from exposure to digitally altered unrealistic media imagery. With laws being enacted and increased advocacy around the introduction of disclaimer labels, further research is urgently required to guide policy makers and legislators toward the most effective forms of intervention.

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**Disclaimer labels on fashion magazine advertisements: Does timing of digital alteration information matter?**

Belinda Bury<sup>a</sup>, Marika Tiggemann<sup>a</sup>, and Amy Slater<sup>b</sup>

<sup>a</sup>School of Psychology, Flinders University, South Australia

<sup>b</sup>Centre for Appearance Research, University of the West of England, United Kingdom

**Corresponding author:** Belinda Bury, School of Psychology, Flinders University, GPO Box 2100, Adelaide, 5001, South Australia. Email: [belinda.bury@flinders.edu.au](mailto:belinda.bury@flinders.edu.au)

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## ABSTRACT

The study aimed to investigate whether a digital alteration informational message read before exposure to thin ideal advertisements would enhance the effectiveness of disclaimer labels. Participants were 280 female undergraduate students who viewed eleven thin ideal fashion magazine advertisements. Half viewed the advertisements in their original format, and half viewed the same advertisements with a digital alteration disclaimer label. Prior to viewing the advertisements, participants read either a brief message informing them that advertisements are commonly digitally altered, or a control message. Irrespective of experimental condition, exposure to the thin ideal advertisements led to increased body dissatisfaction, with social comparison predicting this increase. Neither the disclaimer label nor the pre-exposure message, nor their combination, led to reductions in perceived realism, social comparison, or body dissatisfaction. However, trait appearance comparison moderated the effect of pre-exposure message on perceived realism. It was concluded that more research is needed to identify brief and easy-to-implement universal prevention strategies that can reduce the negative effects of thin ideal media imagery on women's body image.

Widespread body dissatisfaction among women in western societies has been well documented, with sociocultural factors generally considered to play a major role (Dittmar, 2009; Engeln-Maddox, 2005; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Tiggemann, 2011). Indeed, meta-analyses have identified idealised images in the media as having a pervasive negative influence on women's body image (Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002; Levine & Murnen, 2009; Want, 2009). This has generally been attributed to upward social comparison, whereby women compare their appearance with that of the idealised models and find themselves wanting (Thompson et al., 1999; Want, 2009). Recently, these ideals have been rendered even more unrealistic due to the common practice of digital altering and enhancing media images (Harper & Tiggemann, 2008; Krawitz, 2014). As body dissatisfaction has been identified as a major risk factor for eating disorders (Posavac, Posavac, & Weigel, 2001; Stice, 2002; Stice, Schupak-Neuberg, Shaw, & Stein, 1994), the negative effects of thin ideal media exposure have become an important societal concern.

Internationally, policy makers and governments have been searching for quick and easy-to-implement universal prevention strategies in an attempt to prevent women from feeling dissatisfied with their bodies following idealised media exposure (Krawitz, 2014; Paraskeva, Lewis-Smith, & Diedrichs, 2015; Paxton, 2015). A number of countries, including Israel, France, and Australia, have introduced population level preventative recommendations or legislation that suggest or require a disclaimer label be attached to any digitally altered media image (Charlton, 2015; Geuss, 2012; Krawitz, 2014; Paxton, 2015). The rationale underlying this social policy is that a disclaimer label will highlight the appearance of a model as unrealistic and therefore inappropriate as a comparison target, thereby reducing social comparison and resultant body dissatisfaction (Paraskeva et al., 2015; Tiggemann, Slater, Bury, Hawkins, & Firth, 2013).

There is good reason to expect that disclaimer labels would potentially ameliorate negative effects on body dissatisfaction, as media literacy programs which encourage participants to critically analyse media images and messages have shown some success (Levine & Murnen, 2009; Posavac et al., 2001; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005). However, investigations of the effectiveness of disclaimer labels have been less successful. One study has found that disclaimer labels attached to women's magazine fashion shoots led to reduced body dissatisfaction (Slater, Tiggemann, Firth, & Hawkins, 2012), but other studies that have investigated disclaimer labels on fashion magazine advertisements have found no such benefit (Ata, Thompson, & Small, 2013; Bury, Tiggemann, & Slater, 2015; Tiggemann et al., 2013).

One potential reason as to why disclaimer labels may not have been effective in reducing body dissatisfaction in the latter studies is that they may not have reduced social comparison, as reported by Bury et al. (2015) and Tiggemann et al. (2013). This negative finding is consistent with recent conceptualisations of social comparison that such comparisons can occur automatically, even when women realise that they are inappropriate (Bessenoff, 2006; Gilbert, Giesler, & Morris, 1995; Paraskeva et al., 2015; Want, 2009). Thus, it may be that the digital alteration message contained in a disclaimer label comes too late, after women have already spontaneously made their upward comparisons with the models. Hence providing women with information about digital alteration *before* exposure to thin ideal advertisements may better allow them to inhibit appearance comparison processing, and thereby preserve body satisfaction.

Thus the major aim of the current study was to investigate whether a brief digital alteration informational message presented before viewing fashion magazine advertisements would increase the effectiveness of disclaimer labels in reducing body dissatisfaction. It was expected that such a message would prime women to prepare themselves to avoid making

inappropriate comparisons (Gilbert et al., 1995; Want, 2009). Specifically, it was predicted that prior information would interact with the disclaimer label, such that with the provision of prior information, disclaimer labels would reduce perceived realism, social appearance comparison, and body dissatisfaction. State appearance comparison was expected to mediate change in body dissatisfaction. Trait appearance comparison was also assessed as a possible moderator of effects. Women who have a higher tendency to compare on the basis of appearance may be more cognitively primed to attend to any information related to appearance (Yamamiya et al., 2005) and, as a result, may not be able to prevent themselves from making (inappropriate) comparisons. Accordingly, they would be expected to benefit less from any intervention.

## **Method**

### **Design**

A 2 x 2 between subjects experimental design was employed to investigate the effect of pre-exposure informational message (control, digital alteration) and disclaimer label (no label, label) appended to thin ideal fashion magazine advertisements. Major dependent variables were body dissatisfaction, state appearance comparison, and perceived realism. Trait tendency for appearance comparison was examined as a potential moderating variable.

### **Participants**

Participants were 280 female undergraduate students at a South Australian university aged between 18 and 30 years, with a mean age of 20.42 ( $SD = 2.99$ ). The average body mass index of 22.69 ( $SD = 5.26$ ) was within the normal weight range (World Health Organisation, 2011). The majority of participants identified as White (76.8%), with 18.6% Asian, and 4.6% 'other'.

## Materials

**Pre-exposure message.** A short printed informational message (control, digital alteration) was presented to participants on the cover of a folder. The digital alteration information message read: “As you may be aware, nearly all images in fashion magazine advertisements (like those you are about to view) are airbrushed or digitally altered to improve the appearance of the models in the advertisements”. The control message was designed to be of the same structure and length, and read: “As you may be aware, there are many different types of magazines available such as fashion, gardening, celebrity news and gossip, home styling, craft and hobbies, parenting, lifestyle, television, pets and business”.

**Thin ideal stimuli.** The stimuli consisted of eleven thin ideal advertisements (plus four product advertisements) sourced from popular women’s fashion magazines, including *Cleo*, *Marie Claire*, and *Vogue*. The fifteen advertisements were chosen from an initial pool of 50 advertisements (30 thin ideal, 20 product) to represent a typical fashion magazine collection. Each advertisement contained one female model representative of the thin ideal, with at least three quarters of the model’s body visible.

The advertisements were printed on high quality A4-size photographic paper. There were two different versions of each advertisement: the original advertisement, and that advertisement with a disclaimer label (“Warning: This image has been digitally altered”). Labels were in size 12 Calibri font enclosed within a thin border. Research has demonstrated that participants do notice such disclaimer labels when affixed to fashion advertisements (Ata et al., 2013; Bury, Tiggemann, & Slater, 2014; Bury et al., 2015).

**Body dissatisfaction.** Following Heinberg and Thompson (1995), seven visual analogue scales (VAS) were used to obtain measures of mood (five items) and state body dissatisfaction (weight dissatisfaction, appearance dissatisfaction) both before and immediately after viewing the 15 magazine advertisements. The mood items (not analysed

here) were included to mask the focus on body dissatisfaction. Each scale consisted of a 100mm continuous horizontal line with endpoints labelled “none” and “very much”. A score for body dissatisfaction was calculated by averaging the VAS measures of ‘weight dissatisfaction’ and ‘appearance dissatisfaction’. Scores ranged from a possible 0 to 100, with a higher score indicating greater body dissatisfaction. Heinberg and Thompson (1995) reported good construct validity for the body dissatisfaction VAS. In the current study, internal consistency was acceptable (pre-exposure  $\alpha = .83$ ; post-exposure  $\alpha = .88$ ).

**State appearance comparison.** Three items constructed by Tiggemann and McGill (2004) were used to measure state appearance comparison retrospectively. The first item asked participants to rate the extent to which they thought about their appearance while viewing the advertisements (1 = *no thought about my appearance*, 7 = *a lot of thought*). The second and third items asked participants to what degree they compared their overall appearance and specific body parts to those of the models in the advertisements (1 = *no comparison*, 7 = *a lot of comparison*). Internal reliability was high ( $\alpha = .92$ ).

**Perceived realism.** The four-item scale developed by Tiggemann et al. (2013) was used to measure perceived realism of the models in the advertisements, where a higher score indicated greater realism (e.g., “The models in the advertisements looked like they would look like in person”). For each item, participants indicated their agreement using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Internal reliability was acceptable ( $\alpha = .81$ ).

**Trait tendency for appearance comparison.** The Physical Appearance Comparison Scale (PACS) of Thompson, Heinberg, and Tantleff (1991) was used to measure the trait tendency to engage in social comparison based on appearance. The five items (e.g., “At parties or other social events, I compare my physical appearance to the physical appearance



of others”) were answered on a 5-point Likert-type scale (1 = *never*, 5 = *always*). Internal reliability was acceptable ( $\alpha = .73$ ).

## **Procedure**

Women aged 18 to 30 years with English as their first language were recruited for a study on “The effectiveness of fashion magazine advertisements targeted at women”. Participants were randomly allocated to one of the four experimental cells, subject to equal  $n$  ( $n = 70$ ) per condition. Participants then completed a brief questionnaire about their magazine and fashion consumption, and the pre-exposure VAS measures of mood and body dissatisfaction.

Next, participants were handed a folder containing the 15 advertisements. They were asked to read the message on the cover while the researcher collected the previous questionnaires. All the advertisements were viewed in the same order for 45 seconds, and in order to ensure that participants attended to the advertisements, they were asked to rate the effectiveness and creativity of each advertisement. Next participants completed the post-exposure VAS (mood, body dissatisfaction) and the measures of state appearance comparison, perceived realism, and trait appearance comparison. Participants were then asked to provide their age and ethnicity, and with their consent, height and weight were measured. Finally, participants completed a general recall task of associated brands (not analysed). Each session lasted approximately 30 minutes, and participants received course credit for their participation.

## **Results**

### **Sample Characteristics**

The four experimental groups did not differ in age,  $F(1, 276) = 0.04, p = .843, \eta^2 < .01$ , body mass index,  $F(1, 276) = 0.01, p = .914, \eta^2 < .01$ , ethnicity,  $\chi^2(2, n = 280) = 0.89, p = .642, \phi = .056$ , time spent looking at magazines,  $F(1, 276) = 0.81, p = .369, \eta^2 < .01$ , or time

spent shopping for fashion,  $F(1, 276) = 1.83, p = .177, \eta^2 = .01$ . Pre-exposure body dissatisfaction also did not differ across experimental groups,  $F(1, 276) = 0.16, p = .692, \eta^2 < .01$ . Importantly, trait appearance comparison did not differ across the four experimental groups,  $F(1, 276) = 2.13, p = .146, \eta^2 = .01$ , which demonstrated that it was not reactive to the experimental manipulation.

### Body Dissatisfaction

A mixed between-within subjects ANOVA showed that there was a significant main effect of time on body dissatisfaction,  $F(1, 276) = 6.44, p = .012, \eta_p^2 = .02$ . As can be seen from the means in Table 1, there was an increase in body dissatisfaction from pre-exposure to post-exposure for all conditions. There was no significant interaction between disclaimer label and time,  $F(1, 276) = 1.03, p = .311, \eta_p^2 < .01$ , message type and time,  $F(1, 276) = 0.60, p = .440, \eta_p^2 < .01$ , or between disclaimer label, message type and time,  $F(1, 276) = 0.11, p = .737, \eta_p^2 < .01$ . Thus, there were no effects of disclaimer label or message type on change in body dissatisfaction.

Table 1

*Means (and Standard Deviations) for Body Dissatisfaction, State Appearance Comparison, and Perceived Realism*

	Control message		Digital alteration message	
	No disclaimer ( $n = 70$ )	Disclaimer ( $n = 70$ )	No disclaimer ( $n = 70$ )	Disclaimer ( $n = 70$ )
Pre-exposure body dis	46.37 (25.14)	52.12 (26.01)	43.64 (26.64)	46.98 (23.71)
Post-exposure body dis	47.88 (27.19)	55.71 (27.73)	44.47 (26.92)	48.86 (26.44)
State appearance comp	3.38 (1.70)	3.61 (1.77)	3.21 (1.74)	3.40 (1.79)
Perceived realism	2.55 (1.10)	2.52 (1.13)	2.59 (1.24)	2.57 (1.17)

### **State Appearance Comparison**

As can be seen in Table 1, state appearance comparison appeared highest for participants who read the control message and saw a disclaimer label. However, the results of a two-way between-groups ANOVA showed that neither main effect for disclaimer label,  $F(1, 276) = 0.94, p = .334, \eta^2 < .01$ , or message type,  $F(1, 276) = 0.81, p = .370, \eta^2 < .01$ , nor their interaction,  $F(1, 276) = 0.10, p = .919, \eta^2 < .01$ , was statistically significant.

Nevertheless, state appearance comparison was significantly correlated with post-exposure body dissatisfaction,  $r(280) = .43, p < .001$ . A hierarchical regression analysis was conducted to test whether state appearance comparison predicted change in body dissatisfaction, irrespective of disclaimer label and message condition. With pre-exposure body dissatisfaction entered at Step 1, state appearance comparison explained significant additional variance in body dissatisfaction at Step 2,  $R^2_{Change} = .013, F_{Change}(1, 277) = 17.24, p < .001, B = 1.91, \beta = .12$ . Thus state appearance comparison significantly predicted increased body dissatisfaction in response to thin ideal exposure, irrespective of disclaimer label and message condition.

### **Perceived Realism**

As can be seen in Table 1, perceived realism was quite similar across all experimental cells. An ANOVA confirmed that there were no significant main effects for disclaimer label,  $F(1, 276) = 0.03, p = .857, \eta^2 < .01$ , or message type,  $F(1, 276) = 0.11, p = .738, \eta^2 < .01$ , or for their interaction,  $F(1, 276) = 0.00, p = 1.000, \eta^2 < .01$ . However, irrespective of disclaimer label and message condition, perceived realism was significantly associated with state appearance comparison,  $r(280) = .23, p < .001$ . It was not associated with post-exposure body dissatisfaction,  $r(280) = .03, p = .656$ .

### **Moderation by Trait Appearance Comparison**

A series of hierarchical regression analyses was conducted to investigate whether trait appearance comparison moderated the effect of disclaimer label or message type (or both) on body dissatisfaction, state appearance comparison, or perceived realism. Consistent with recommendations by Aiken and West (1991), trait appearance comparison scores were centred around the mean ( $M = 3.26$ ). At Step 1, centred trait appearance comparison, disclaimer label (0, 1), and message type (0, 1) were entered (and centred pre-exposure body dissatisfaction when testing for moderation on body dissatisfaction). At Step 2, the three two-way product terms were entered, and at Step 3 the three-way product term was entered.

Step 2 as a whole did not explain significant additional variance in body dissatisfaction, state appearance comparison, or perceived realism, all  $R^2_{Change} < .019, p > .05$ . However, the individual product term for the interaction of trait appearance comparison and message type on perceived realism was significant,  $B = 0.40, \beta = .17, p = .036$ . No significant three-way interactions were found at Step 3, all  $R^2_{Change} < .001, p > .05$ .

To illustrate the nature of the significant interaction between trait appearance comparison and message type on perceived realism, the relationship was graphed using minimum and maximum values to represent low and high levels of trait appearance comparison. As can be seen in Figure 1, the positive relationship between trait appearance comparison and perceived realism was significantly stronger in the digital alteration message condition than in the control message condition. For women who read the control message, there was no difference in perceived realism regardless of their level of trait appearance comparison. However, for women who read the digital alteration message, those lower on trait appearance comparison rated the models as less realistic, whereas those higher on trait appearance comparison rated the models as relatively more realistic.

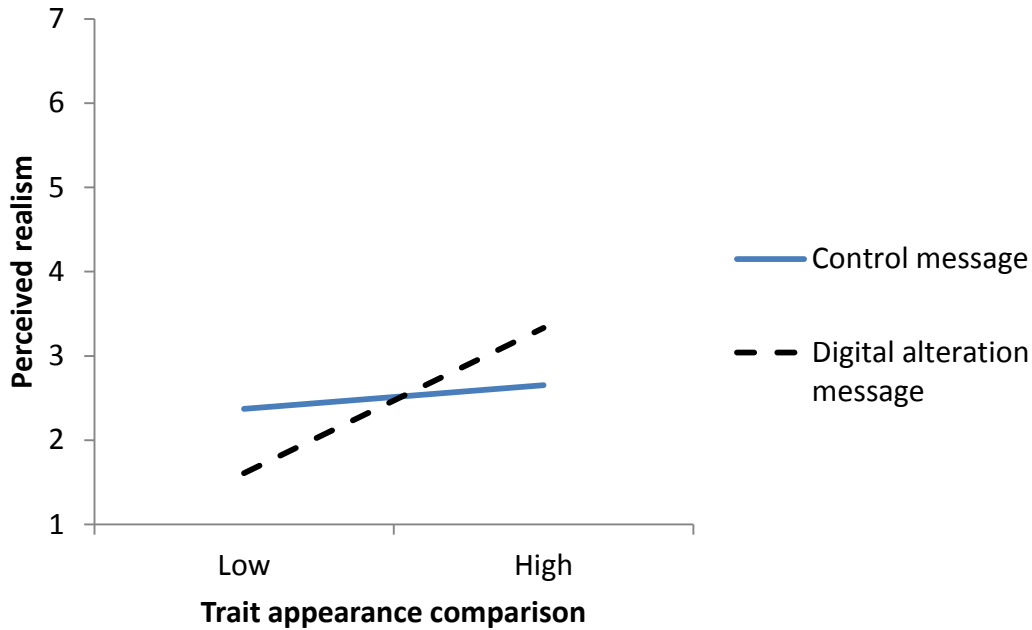


Figure 1. Moderation by trait appearance comparison of the effect of message type on perceived realism.

### Discussion

The findings of the current study are clear. Disclaimer labels did not reduce levels of perceived realism, social comparison, or body dissatisfaction. Likewise, a brief digital alteration informational message read before exposure to the fashion advertisements did not reduce perceived realism, social comparison, or body dissatisfaction in its own right, nor did it increase the effectiveness of disclaimer labels. However, regardless of pre-exposure message or disclaimer label, exposure to thin ideal advertisements did result in increased body dissatisfaction, with social comparison predicting the increase in body dissatisfaction, and perceived realism predicting social comparison. Individual differences in the trait tendency to compare on the basis of appearance moderated the effect of pre-exposure message on how realistic women rated the models. Specifically, for women who read the digital alteration message, those low on trait appearance comparison rated the models as less realistic, whereas those high on trait appearance comparison rated the models as relatively more realistic.

The finding that the disclaimer label did not improve women's body satisfaction following thin ideal exposure is consistent with the previous findings for fashion advertisements (Ata et al., 2013; Bury et al., 2015; Tiggemann et al., 2013). Further, in contrast to the underlying rationale, the disclaimer label did not decrease social comparison, consistent with the results of Bury et al. (2015) and Tiggemann et al. (2013). In addition, as the brief digital alteration informational message presented before the advertisements did not improve the effectiveness of the disclaimer labels, the reason for the ineffectiveness of disclaimer labels must be more complicated than women simply not having enough time to consciously inhibit the otherwise spontaneously made appearance comparisons. Accordingly, it remains unclear as to why media literacy programs have generally proved effective in ameliorating negative body image effects from thin idealised media exposure (Levine & Murnen, 2009; Posavac et al., 2001; Yamamiya, et al., 2005), while disclaimer labels have not. It may be that the pre-exposure message tested here was not presented sufficiently early for women to fully consider the implications and consciously prepare to challenge the idealised imagery. Or it may be that active involvement and advocacy are the critical components of media literacy programs (Levine & Murnen, 2009; Levine & Smolak, 2008).

The current study also showed that the trait tendency to make comparisons on the basis of appearance has some influence on the effectiveness of body image interventions. Although trait appearance comparison had no effect here on body dissatisfaction or social comparison, women low on trait appearance comparison who read the pre-exposure digital alteration message rated the appearance of the models as less realistic. However, for women high on this trait tendency, the pre-exposure message seemed to have a counterintuitive effect, as they rated the appearance of the models as relatively more realistic. It is possible that the text of the pre-exposure message, which mentioned improvement of appearance via digital alteration, may have primed the elaborate appearance schemas of women high on trait

appearance comparison (Yamamiya et al., 2005). This finding is consistent with previous studies which have found negative effects from some forms of disclaimer labels for women high on trait appearance comparison (Bury et al., 2015; Tiggemann et al., 2013).

As with all research, the current findings should be interpreted in the context of some limitations. The findings cannot necessarily be generalised outside the current sample of young, predominantly white university students. Similarly, the findings apply to advertisements from women's fashion magazines, and so cannot necessarily be generalised to other sources of thin ideal imagery (Want, 2009). Further, the current laboratory investigation could usefully be extended into naturalistic settings. Finally, trait appearance comparison would ideally have been assessed in a separate session, but was shown not to be reactive to experimental manipulation.

In conclusion, it is clear from the present set of results that the inclusion of a brief digital alteration informational message before exposure to fashion magazine advertisements did not increase the effectiveness of a disclaimer label in reducing negative effects of thin ideal exposure. The finding that trait appearance comparison moderated the effect of pre-exposure message type on how realistic women perceived the models suggests that individual differences should not be neglected in further research on interventions. Although disclaimer labels seem like a good idea, as yet no brief, workable, and easy-to-implement universal prevention measure has been identified that effectively reduces the negative effects of exposure to unrealistic thin ideal media imagery. Thus body image advocacy efforts might best be directed towards challenging and changing the representation of women's bodies in the media.

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## CHAPTER 6 – GENERAL DISCUSSION

### **Chapter Overview**

As outlined in Chapter 1, the overall purpose of the thesis was to investigate the effectiveness of disclaimer labels indicating digital alteration appended to fashion magazine advertisements as a form of universal body dissatisfaction prevention. This investigation followed proposals by policy makers and governments internationally and in Australia for the introduction of such disclaimer labels, and importantly, the lack of research evidence as to their effectiveness. Four separate experiments with varying manipulations were conducted under the framework of Social Comparison Theory. On the whole, the findings of the thesis showed that digital alteration disclaimer labels of the kind tested were not an effective universal body dissatisfaction prevention strategy. This final chapter integrates the findings of the four experiments in the thesis, and provides a discussion of the theoretical and broader practical implications.

### **Summary of Findings**

Experiment 1 (Chapter 2) investigated the impact of experimental instructions on the effectiveness of two forms of disclaimer label. Neither the generic disclaimer label nor the specific disclaimer label (specifying the body areas that had been altered) was found to affect social appearance comparison or body dissatisfaction. As social appearance comparison has been identified as an underlying mechanism for negative body image in response to thin ideal exposure, if the disclaimer labels were unable to reduce social appearance comparison, it logically follows that they would not result in lower body dissatisfaction. However, instructional set did affect appearance comparison and body dissatisfaction, with social comparison instructions leading to the highest levels of both. Further, regardless of which experimental condition the women were in, the more appearance comparison they engaged in, the greater their increase in body dissatisfaction in response to thin ideal exposure. In

addition, there was a three-way interaction between experimental instructions, disclaimer label, and trait appearance comparison for body dissatisfaction. For women in the distractor condition who saw specific disclaimer labels, those high on trait appearance comparison experienced increased body dissatisfaction, whereas those low on this trait experienced decreased body dissatisfaction. Thus it was suggested that specifically worded disclaimer labels may lead these women to look more, rather than less, at the body areas specified as altered. It was also possible that the lack of effectiveness of disclaimer labels in general was due to the women not noticing the labels.

Thus, Experiment 2 (Chapter 3) used eye tracking technology to first check that women noticed the labels, and then to test the suggestion that specific disclaimer labels lead women to direct more attention towards the specified body areas. The results showed that the women did notice and attend to the disclaimer labels appended to the fashion magazine advertisements. Although the disclaimer labels had no effect on the amount of time spent looking at particular body areas, the specifically worded disclaimer labels did direct visual attention towards the body areas specified as altered after women looked at the label for the first time. This confirmed the suggestion (Experiment 1) that specific disclaimer labels lead women to attend more to the altered body areas. Furthermore, this effect was found to be stronger for women high on trait appearance comparison.

Experiment 3 (Chapter 4) aimed to replicate these findings using a shorter exposure time of 15 seconds (compared to 45 seconds in Experiment 2), as well as extend the previous experiment by including measures of social appearance comparison and body dissatisfaction to investigate their association with visual attention. With this shorter exposure time, Experiment 3 found that specifically worded disclaimer labels led to both more time and fixations on the specified body areas, as well as directing visual gaze as in Experiment 2. Although the disclaimer labels did not influence social appearance comparison or body

dissatisfaction in their own right, for women in the specific disclaimer label condition, the three measures of visual attention (time, fixations, direction of visual attention) all predicted increased body dissatisfaction. In addition, irrespective of disclaimer label, social appearance comparison was associated with greater visual attention to the target body areas and predicted increased body dissatisfaction.

Thus, on the basis of the first three experiments, it was concluded that specifically worded disclaimer labels have the potential to do harm and hence should not be used. Following this, Experiment 4 (Chapter 5) investigated whether providing a brief informational message about digital alteration before exposure to thin ideal advertisements might render a generically worded disclaimer label more effective at reducing body dissatisfaction. Because social appearance comparison can occur automatically and outside of conscious awareness, it was reasoned that a disclaimer label appended to a thin ideal advertisement might come too late to be effective. Thus, it was hypothesised that a brief digital alteration informational message presented before the actual advertisements might give women more opportunity to prepare themselves to prevent appearance comparison with the models in the advertisements. However, neither the disclaimer label, nor the pre-exposure message, nor their combination, led to reduced perceived realism, social comparison, or body dissatisfaction. Irrespective of experimental condition, exposure to the thin ideal advertisements did lead to increased body dissatisfaction, with social comparison predicting this increase. In addition, trait appearance comparison was found to moderate the effect of the pre-exposure message on how realistic women rated the models. Specifically, for women who read a digital alteration informational message, those high on trait appearance comparison rated the models as more realistic, whereas those low on trait appearance comparison rated the models as relatively less realistic.

To summarise, the main findings from the set of experiments as a whole are clear. First, and most importantly, there was no evidence of reduced body dissatisfaction from the use of disclaimer labels (Experiments 1, 3, and 4), despite testing their effectiveness under conditions of different experimental instructions (Experiment 1) and with the inclusion of a pre-exposure digital alteration informational message (Experiment 4). As exposure to the thin ideal advertisements led to the women becoming more dissatisfied with their bodies, the lack of effectiveness of disclaimer labels was clearly not a function of the particular stimuli used.

Second, using eye tracking technology it was confirmed that women did notice and read the disclaimer labels (Experiments 2 and 3). Thus, the lack of effectiveness was not due to the women not noticing the disclaimer labels. On the contrary, as shown in Experiments 2 and 3, specifically worded disclaimer labels actually directed visual attention towards body areas specified as altered, with this heightened visual attention itself resulting in increased body dissatisfaction in Experiment 3.

Third, the disclaimer labels did not reduce social appearance comparison. Quite the opposite, there was a trend for social appearance comparison to be actually higher (rather than lower) for women who saw disclaimer labels (Experiments 1, 3, and 4), especially the specifically worded disclaimer labels. In addition, regardless of disclaimer label, experimental instructions, or the addition of a pre-exposure message, social appearance comparison was found to predict increased body dissatisfaction (Experiments 1, 3, and 4), consistent with its suggested role as a mechanism for increased body dissatisfaction.

Finally, trait appearance comparison was found to moderate the effect of some forms of disclaimer label. For women with a greater tendency to compare on the basis of appearance, specific disclaimer labels resulted in worse body satisfaction (Experiment 1), with such women being more likely to look directly at body areas specified as altered (Experiment 2), and to rate the models as more realistic (Experiment 4).



## **Implications**

The first major aim of the thesis was to investigate whether there are certain conditions that may render disclaimer labels on fashion magazine advertisements more effective at preventing body dissatisfaction. However, regardless of trialling the disclaimer labels under different instructional and informational conditions, they were still found to not be effective. This lack of effectiveness is consistent with the previous findings reported in the literature for disclaimer labels appended to fashion magazine advertisements (Ata, Thompson, and Small, 2013; Tiggemann, Slater, Bury, Hawkins, and Firth, 2013).

These findings for fashion magazine advertisements contrast with the one previous study which found that disclaimer labels reduced body dissatisfaction (Slater, Tiggemann, Firth, & Hawkins, 2012), in that case when affixed to fashion shoots from women's magazines. As yet it is unclear why disclaimer labels were found to be effective when appended to fashion shoots but not advertisements. Tiggemann et al. (2013) suggested that the models in fashion shoots may appear more realistic and natural than the artificial 'perfected' images presented in advertisements which are so obviously highly constructed. Thus, women may not assume that the images in fashion shoots have been digitally altered. In contrast, disclaimer labels on fashion advertisements may offer less benefit because women may already 'know' that those images have been digitally enhanced, as the whole purpose of an advertisement is to create an idealistic portrayal of a happy and successful life with the product being advertised (Engeln-Maddox, 2006; Tiggemann & Polivy, 2010). It is possible, then, that different effects might be found with younger samples of adolescent girls, who may not yet 'know' that images have been altered and who are still developing their sense of self and body image throughout the important formative years of adolescence.

Another possible reason for the difference in effectiveness of disclaimer labels appended to fashion advertisements and fashion shoots could be the amount of background

detail. Bissell (2006) suggested that women may not fully process written content provided in disclaimer labels when faced with competition for attention from other visual information. This might be the case for fashion magazine advertisements where the background is generally much more detailed than that provided in a typical fashion shoot (although Experiments 2 and 3 showed that the disclaimer labels were noticed here). To investigate this speculation, future studies could manipulate the amount of background detail in fashion images. In addition, to rule out the possibility that the findings of Slater et al. (2012) were a function of the particular fashion shoot stimuli used, future studies could replicate their experiment with a new set of stimuli.

One important point highlighted by the findings of the present experiments is that the precise wording of disclaimer labels might matter. While it was found that a generic disclaimer label which read “Warning: This image has been digitally altered” had no effect, a disclaimer label which specifically mentioned the altered areas (e.g., “Warning: This image has been digitally altered to lengthen and thin legs”) increased body dissatisfaction for some women (those high on trait appearance comparison). The wording of disclaimer labels proposed by different countries actually lies somewhere between the generic and specific wordings used in the current thesis, usually being somewhat directive towards the model’s appearance. For example, Valerie Boyer (the original proponent of disclaimer labels in France in 2009) suggested the following wording: “Photograph retouched to modify the physical appearance of a person” (Crumley, 2009). Similarly, the Israeli ‘Photoshop Law’ requires a clear warning (covering at least seven percent of the advertisement) that specifies that the appearance of a model has been digitally manipulated to make her thinner (Krawitz, 2014).

Thus, it is plausible that seemingly small differences in the wording of a disclaimer label may be important in determining its effectiveness. Indeed, Veldhuis, Konijn, and Seidell

(2014) found that a different form of label, namely an informational label which informed adolescent girls of the underweight status of models (“These models are underweight”) led to lower body dissatisfaction, especially for girls with low self-esteem. However, a label which also contained a warning (“These models are underweight. Unconsciously, exposure to media models may negatively impact your self-image”) did not lead to lower body dissatisfaction. The mechanism for this difference in effectiveness remains unclear. Perhaps ‘factual’ reference to the weight status of the models triggered less body dissatisfaction because the information implied that the model was unhealthily thin. In contrast, the warning label may have inadvertently directed the adolescent girls to process the image on a self-evaluative (rather than self-improvement) dimension (Wood, 1989), thereby increasing their body dissatisfaction. Clearly more research is required to identify a form of disclaimer label (if any) that effectively protects women’s body image.

### **The Role of Social Comparison**

The second major aim of the thesis was to investigate the potential role of social comparison as a mechanism underlying the effectiveness (or ineffectiveness) of digital alteration disclaimer labels. Social comparison has been identified as both a mechanism for increased body dissatisfaction following thin ideal exposure (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Tiggemann & McGill, 2004), as well as moderating the negative effects of thin ideal exposure on body image (Dittmar & Howard, 2004; Tiggemann et al., 2013). Thus, social comparison was conceptualised at both state and trait levels in the current thesis. In addition, social appearance comparison was subtly manipulated via experimental instruction in Experiment 1. The social comparison instructional manipulation was successful in increasing the amount of state appearance comparison, consistent with previous research that has shown that experimental instructions can be important in determining the type of

processing that participants engage in (Tiggemann & Polivy, 2010; Tiggemann, Polivy, & Hargreaves, 2009).

A major finding of the thesis was that the disclaimer labels did not reduce social appearance comparison processing in any of the three experiments where it was measured. This finding is consistent with that of Tiggemann et al. (2013). Following this lack of effect on social appearance comparison, it logically follows (if social comparison is the assumed mechanism) that disclaimer labels would not reduce body dissatisfaction either (as was found). However, irrespective of disclaimer labels, experimental instructions, and the pre-exposure informational message, social appearance comparison processing was found to predict change in body dissatisfaction. This is consistent with the postulation of the Tripartite Influence model (Thompson et al., 1999) and more recent research which has identified social appearance comparison as a mediator of the effect of thin ideal media exposure on women's body dissatisfaction (for meta-analyses, see Myers & Crowther, 2009; Want, 2009).

Social comparison was also measured as a trait tendency to engage in comparisons on the basis of appearance, to assess whether it moderated the effect of disclaimer labels, experimental instructions, pre-exposure digital alteration informational message, or visual attention towards specified body areas. In Experiment 1, consistent with the findings of Tiggemann et al. (2013), for women in the distractor instructional condition who saw specific disclaimer labels, those high on trait appearance comparison experienced increased body dissatisfaction, whereas those low on this trait experienced decreased body dissatisfaction. In Experiment 2, the effect of specifically worded disclaimer labels on direction of visual attention toward the body areas specified as altered was stronger for women high on trait appearance comparison. This is consistent with the speculation by Tiggemann et al. (2013) that specifically worded disclaimer labels encourage women high on trait appearance comparison to pay more, rather than less, attention to the appearance of models in

advertisements. Finally, trait appearance comparison also had an influence in Experiment 4, where it moderated the effect of the pre-exposure digital alteration message on how realistic women rated the models.

Thus, it is clear that individual differences in the tendency to compare on the basis of appearance should be considered when developing and testing prevention strategies such as the use of disclaimer labels. Indeed, across the three experiments where state appearance comparison and body dissatisfaction were measured, trait appearance comparison was found to be a major predictor of both in its own right. As trait appearance comparison was the only individual difference measured in the thesis, future research could usefully include other possible moderators of the effects of disclaimer labels, in particular thin ideal internalisation, which the Tripartite Influence model proposes as a mechanism underlying the negative effects of thin ideal exposure (Thompson et al. 1999). It seems likely that trait thin ideal internalisation may also moderate the effectiveness of disclaimer labels.

Unfortunately for women vulnerable to socio-cultural appearance pressures (such as those high on trait appearance comparison), it appears unlikely that digital alteration disclaimer labels will help combat the negative effects of exposure to unrealistic thin ideal imagery. Even though women may know that media images are not real, they have been shown to identify with the images as representations of the societal ideal, and as such aspire to look like the models they see in fashion magazines (Strahan, Wilson, Cressman, & Buote, 2006). So rather than leading women high on trait appearance comparison to avoid inappropriate comparisons, disclaimer labels may actually communicate to these women that they do not measure up to the societal ideal and that they probably never will. For example, a disclaimer label may stimulate such a woman to think that if images of the already thin and attractive professional models need to be digitally altered to represent what society considers ideal, then what chance does a regular woman (such as myself) have to achieve this ideal?

Relatedly, the original postulation of Social Comparison Theory (Festinger, 1954) stipulated that people choose comparison targets that are similar to themselves because they provide the most salient source of information. However, since the original theory was proposed, it has been shown that women do (upwardly) compare their appearance to thin ideal media images of models dissimilar to themselves (as they did in the present experiments) because they provide relevant information on the societal ideal of attractiveness (Engeln-Maddox, 2005; Grogan, 2008; Strahan et al., 2006). A more recent conceptualisation of social comparison is that it often occurs spontaneously and effortlessly, even when the person making the comparison realises that the comparison is inappropriate (Bessenoff, 2006; Gilbert, Giesler, & Morris, 1995; Want, 2009). In particular, Gilbert et al. (1995) suggested that people do make irrelevant comparisons, and that it is only after the fact that they consider the appropriateness or inappropriateness of those comparisons, and then attempt to mentally ‘undo’ the inappropriate comparisons. Similarly, more recent research has described the ‘mindlessness’ of social comparisons, also suggesting that social comparison processing can occur automatically outside of conscious awareness, with evaluation only coming later as an outcome of the comparison process (Langer, Pirson, & Delizonna, 2010).

Based on these descriptions of social comparison as spontaneous, automatic, and mindless, it is possible that disclaimer labels actually encourage readers to become mindful of any comparison processing already underway, which for women high on trait appearance comparison is likely to be motivated by self-improvement as appearance is important to them (Halliwell & Dittmar, 2005). So for these women, it may be that this mindful consideration stimulated by reading the disclaimer labels causes a change in the comparison process from self-improvement to one of self-evaluation (Halliwell & Dittmar, 2005; Wood, 1989). This self-evaluation may then lead these women to feel worse about their appearance when they fail to measure up to the societal ideal.

## **Broader Practical Implications**

Despite much focus by governments and policy makers on the introduction of digital alteration disclaimer labels, and since the experiments in the thesis were conducted, research has indicated that women are sceptical about the effectiveness of disclaimer labels in protecting body image (Paraskeva, Lewis-Smith, & Diedrichs, 2015). In addition, survey results have shown that women are generally already aware that media images have been digitally altered, and can be critical of the imagery presented by the mass media (Engeln-Maddox, 2005; Grogan, 2008; Paraskeva et al., 2015). These survey results and the consumer scepticism reported by Paraskeva et al. are certainly consistent with the lack of effectiveness of disclaimers of digital alteration in protecting women's body image in the current thesis, as well as in the previous research by Ata et al. (2013) and Tiggemann et al. (2013). Relatedly, this consumer scepticism is also consistent with studies which have found no benefit from applying disclaimers of digital alteration to forms of thin ideal media other than fashion magazine advertisements (Bissell, 2006; Harrison & Hefner, 2014; Selimbegovic & Chatard, 2015).

Although disclaimer labels on fashion advertisements did not reduce body dissatisfaction (or social appearance comparison) in the current thesis, or for Ata et al. (2013) or Tiggemann et al. (2013), it must be remembered that the experiments only investigated the short term impact of one-off exposures to disclaimer labels. It is possible that with repeated exposure over different sessions that disclaimer labels may become more effective at preserving women's body satisfaction. As it takes time for the societal thin ideal to be internalised (Cash, 2011), so maybe it will take time (repeated exposures) for disclaimer labels to have a beneficial effect. That is, disclaimer labels may have a cumulative effect, with women needing time to reflect on and process the implications before they can start to effectively question the appropriateness of comparisons and unlearn the well-worn process of

spontaneous appearance comparison (Paraskeva et al., 2015). As suggested by Wilksch and Wade (2009), media literacy psycho-education (which has shown promise in terms of encouraging women to be more critical of media images and messages) is more effective at changing attitudes and behaviour if it is interactive, presented over multiple sessions, and reinforced over a longer term, and so too this may apply for interventions such as disclaimer labels.

Relatedly, cognitive behaviour therapy (CBT) has shown promise in treating body image and eating disorders, by encouraging women to cognitively challenge and restructure cultural messages of body image ideals (Grogan, 2008). However, CBT takes time and multiple sessions as an ongoing process of re-learning. Indeed, Cash (2011) identified societal pressures and influences, particularly the media, as repeatedly precipitating and maintaining thin ideal internalisation, such that CBT needs to be a process of ongoing re-learning to combat these influences. Thus, a one-off presentation of digital alteration disclaimer labels is unlikely to be sufficient to have a substantial effect on body satisfaction, and it may be that repeated exposure to disclaimer labels is needed to enable gradual and lasting change in women's perceptions. As such, longitudinal research on the effectiveness of disclaimer labels as a universal body disturbance intervention is needed before we 'throw out the baby with the bathwater' (Neumark-Sztainer, Levine, Paxton, Smolak, Piran, & Wertheim, 2006; Paraskeva et al., 2015).

Finally, even though effective forms of digital alteration disclaimer labels for fashion magazine advertisements have not yet been identified, it must be remembered that their introduction is only a small part of broader social policy activism aimed at preventing the development of body image and eating disorders (Paxton, 2001, 2015). Hopefully, the advocacy surrounding their introduction as a form of universal body dissatisfaction



prevention may at least serve to raise awareness of the negative effects of unrealistic thin ideal media imagery on women's body image.

### **Conclusion**

The thesis found no overall benefit from the use of either generic or specific disclaimer labels appended to thin ideal fashion magazine advertisements. Rather, specifically worded disclaimer labels actually directed visual attention toward body areas specified as altered, with this increased visual attention itself resulting in increased body dissatisfaction and being worse for women high on trait appearance comparison. The presentation of digital alteration information before exposure to advertisements with disclaimer labels did nothing to enhance the effectiveness of the labels, nor did instructional set. However, both social comparison instructions and individual differences in trait appearance comparison were identified as influencing women's responses to disclaimer labels. Thus, further research on the effectiveness of different forms of disclaimer label is warranted. However, until such time as empirical research has identified a format of digital alteration disclaimer that is effective, social policy efforts might best be directed towards changing the representation of women's bodies in the media, rather than spending time and resources enforcing the use of potentially ineffective disclaimer labels.

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