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## Social comparisons with media images are cognitively inefficient even for women who say they feel pressure from the media



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#### ABSTRACT

The present study investigated whether social comparisons with media images are cognitively efficient (demanding minimal mental effort) or cognitively effortful processes, in a sample of female undergraduate students (*N* = 151) who reported feeling pressure from the media regarding their appearance. Two groups were shown 12 images of thin and attractive female models. One group was asked to memorize a complex 8-digit number during exposure to the images (Cognitively Busy condition), while the other memorized a much simpler number (Free View condition). A third group (Control condition) viewed images without people. Participants in the Free View condition demonstrated significantly increased negative mood and lowered appearance satisfaction from before to after exposure, while participants in the Cognitively Busy and Control conditions did not. We argue that these results suggest social comparisons with media images are at least somewhat cognitively effortful even among women who say they feel pressure from the media.

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#### 1. Introduction

Meta-analyses demonstrate that in-lab exposure to images of thin and physically attractive women from media images (e.g., magazines, websites) causes small decreases in appearance satisfaction and increases in negative mood (e.g., anger) among university-aged women (Groesz, Levine, & Murnen, 2002; Want, 2009), although these effects may be moderated by pre-existing concerns about appearance (Ferguson, 2013; Hausenblas et al., 2013). Research has consistently identified upward social comparisons (Festinger, 1954) that viewers make between their own appearance and these extremely thin and attractive images as the mechanism of these short-term detrimental effects (Tiggemann & Polivy, 2010; Tiggemann, Polivy, & Hargreaves, 2009). However, much remains to be learned about the way in which these comparisons operate.

One question that has yet to be conclusively answered is how cognitively efficient social comparisons with media images are. A cognitively efficient mental process is one that requires little time or mental effort to carry out (Bargh, 1994), as for example, when a skilled reader merely glances at a word and the meaning of it becomes apparent. The cognitive efficiency of a mental process is

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theoretically distinct from other aspects of its automaticity, such as whether the process is spontaneously (versus deliberately) initiated, whether it can be interrupted once initiated, and whether we are aware of its operation (for a discussion, see Bargh, 1994). Taking their lead from Gilbert, Giesler, and Morris (1995), many researchers (e.g., Dalley, Buunk, & Umit, 2009; Want, 2009) have speculated that social comparisons with media images are highly cognitively efficient processes. However, data directly addressing this question are currently sparse.

There are two accepted indicators that a mental process is highly cognitive efficient (Payne, 2012): (1) if it operates when little time can be devoted to it, and; (2) if it operates while we are engaged in another, simultaneous task (i.e., while we are cognitively busy). Thus, if social comparisons with media images are highly cognitively efficient, then such images should cause detrimental effects on viewers even if presented only briefly, or while viewers are distracted with another task. To date, studies using these two different approaches have found mixed results.

On the one hand, Brown and Dittmar (2005) found that exposure to a series of media images for just 150 ms per image increased weight-related anxiety for women who scored above the mean on the Internalization subscale of the Sociocultural Attitude Towards Appearance Questionnaire (SATAQ: Heinberg, Thompson, & Stormer, 1995). This result suggests that participants had made social comparisons to the images despite seeing them only briefly, and thus that the comparisons were somewhat cognitive efficient.

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On the other hand, in two experiments, Want, Botres, Vahedi, and Middleton (2015) found no detrimental effects of a series of media images on young women when they were made cognitively busy (by having to memorize a complex number) during exposure. Want et al.'s results suggest that social comparisons with media images are relatively inefficient, in that occupying participants' cognitive resources with a simultaneous task seemed to prevent them.

What might explain the discrepancy in the results of these two studies? We assume that social comparisons become efficient the same way other mental processes do, through practice (Mussweiler, Rüter, & Epstude, 2004). The more routine or habitual a social comparison, the fewer cognitive resources are likely needed to make it (just as the resources needed for reading decline with practice). One possibility is that Brown and Dittmar's (2005) participants were simply more practiced at making comparisons with media images than Want et al.'s (2015). As noted, the participants who were affected by brief presentations of media images in Brown and Dittmar (2005) scored above the mean of the Internalization subscale of the original SATAQ. The items on this subscale all ask respondents whether they compare with, or wish to look like, women in media images (TV, movies, music videos, magazines, models). As such, this scale taps into two potentially separate issues: (1) the desire to have a thin body type, and; (2) the extent to which participants are routinely influenced by, and compare with, media images. Having scored above the mean on this subscale, Brown and Dittmar's participants may have all been individuals who routinely and habitually compared themselves with media images. Want et al. (2015) did not exclusively study women who reported habitually making such comparisons, leaving open the possibility that social comparisons with media images are cognitively efficient only among this highly-practiced subset of the population.

Thus, in the present study, we directly replicated the procedures and analyses from Want et al. (2015) but added a pre-screen to recruit a sample of women who habitually compared themselves with media images. Our pre-screening measure was the Pressures: Media subscale of the updated SATAQ-4 (Schaefer et al., 2015), which includes four items assessing the extent to which participants feel pressure from the media to change their weight, shape, and appearance. We reasoned that the major component of feeling pressure from the media is tied up with seeing and comparing oneself to the appearance standards presented therein, and thus this subscale provides the purest measure of the extent to which participants habitually compare specifically with media images. Other SATAQ-4 subscales, such as the Internalization: Thin/Low Body Fat subscale, measure the general desire for a thin body type. As recognized by the Tripartite Model (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999), such a desire can stem from the influence of the media, peers, or the family, and so this subscale is less likely to reflect the extent to which comparisons specifically with media images have habitually been made.

We measured participants' satisfaction with their appearance and their levels of negative mood before and after exposure to a series of images. Participants were randomly assigned to a Cognitively Busy condition (exposure to media images while memorizing a complex 8-digit number), a Free View condition (exposure to media images while memorizing a simple 8-digit number), or a Control condition (exposure to control images). If social comparisons with media images are highly cognitively efficient in this group of young women, the images should cause decreases in appearance satisfaction and increases in negative mood in both the Cognitively Busy and Free View conditions (Hypothesis 1). However, if such comparisons are relatively cognitively inefficient, such effects should only occur in the Free View condition; participants in the Cognitively Busy condition should be relatively unaffected (Hypothesis 2). The Control condition was included to

assess whether the hypothesized detrimental effects in the Free View condition were caused by viewing media images specifically (rather than resulting from simply asking participants to reflect on their mood and appearance satisfaction twice, with a pause in-between).

#### 2. Method

#### 2.1. Participants

Our sample consisted of 151 female undergraduates from introductory psychology classes at Ryerson University who participated in exchange for course credit. The number of participants in each condition, and their demographic characteristics are shown in Table 1.

#### 2.2. Materials and procedure

At the beginning of the semester, all introductory psychology students at Ryerson University may complete a pre-screen that determines their eligibility for individual studies. Eligible participants were tested singly in a dedicated testing room. After consent, the experimenter left the room and all measures were completed via a computer. The steps in the procedure are outlined, in order, below.

**2.2.1. Pre-screen.** The Pressures: Media subscale of the SATAQ-4 asks participants to rate their agreement on a 5-point scale ( $1 = Definitely\ disagree\ to\ 5 = Definitely\ agree$ ) with four statements, such as "I feel pressure from the media to improve my appearance". Only those who scored a mean of 3.75 or higher on the Pressures: Media subscale were eligible. A score of 3.75 on the Pressures: Media subscale is slightly above the mean score for noneating-disturbed North American women (M = 3.70; Schaefer et al., 2015) meaning that our participants all said they felt above-average pressure from the media regarding their appearance.

**2.2.2. Cover story.** To reduce demand characteristics, we described the study in all materials as addressing the question "Does mood affect perception and short-term memory?" Participants were told that their mood would be measured and they would memorize either a complex or simple number while they looked at various images. Mood was described as a potential moderator of memory for the number, to give a plausible reason for presenting the mood and appearance satisfaction measures.

2.2.3. Visual Analogue Scale (VAS) items (pre-test). Participants first completed 10 computerized Visual Analogue Scale (VAS; Heinberg & Thompson, 1995) items, scored from 1 to 100. These VASs were identical to those used by Want et al. (2015) and we used them to ensure comparability with Want et al.'s experiments. Three VASs asked participants to rate their mood (with end-points marked as Happy-Unhappy, Confident-Insecure, and Angry-Calm). These items were averaged (with the Angry-Calm item reversed) to create a negative mood score, with higher scores indicating greater negative mood. Cronbach's  $\alpha$  for these three items was .75 at pretest. Four VASs asked participants to rate their satisfaction with their facial appearance, weight, and overall appearance (with endpoints marked from Very dissatisfied to Very satisfied), and to rate how attractive they felt (with end-points marked Very unattractive to Very attractive). These four items were averaged to create an appearance evaluation score, where higher scores indicate greater satisfaction with appearance. Cronbach's  $\alpha$  for these four items was .85 at pre-test. There were also three VASs that asked participants about their levels of relaxation (Worried-Relaxed), alertness (Alert-

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