The woman who wasn't there: Converging evidence that subliminal social comparison affects self-evaluation☆

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ABSTRACT

Although social comparison is often considered as an automatic process, the evidence in support of this idea is weak and inconclusive. In this paper, we reexamined the question of automaticity in social comparison by testing the hypothesis that subliminal social comparison affects explicit self-evaluations. In two high-powered experiments, young women were subliminally exposed (or not) to a high standard of comparison (media images of ultra-thin women). Next, they made explicit self-evaluations of their body appearance anxiety. Using both between-participants (Experiment 1) and within-participant (Experiment 2) designs, we found converging evidence that subliminal exposure to the thin ideal increases body appearance anxiety in women. Using Bayes factors as measures of evidence, the present experiments provided substantial (Experiment 1) and very strong (Experiment 2) evidence that social comparison takes place outside awareness and affects explicit self-evaluations. The present experiments can be easily replicated using a standardized procedure (replication script) that is publicly available on the Open Science Framework. We discuss how these findings contribute to reestablish confidence in the modern view of social comparison as an automatic process.

1. Introduction

People often evaluate themselves by comparing their own attributes and abilities with those of others, a process called social comparison (for comprehensive reviews, see Guimond, 2006; Mussweiler, 2003; Suls, Martin, & Wheeler, 2002). One of the most intriguing hypotheses of modern research on social comparison is the idea that it can operate automatically and without awareness (Alicke, 2007). If social comparison is automatic, then it is likely to operate spontaneously (without intention), unconsciously, effortlessly, and in an uncontrollable manner (Bargh, 1994). In the early 2000s, the notion of automatic social comparison was widely accepted, and it still remains quite popular today (see Want, 2009). However, a number of research findings previously considered as robust are being questioned in the framework of the replication crisis that the field of social psychology is currently undergoing (Open Science Collaboration, 2015). Indeed, several papers that purportedly demonstrated the automaticity of social comparison were retracted following the revelation of Diederick Stapel's massive fraud (Callaway, 2011). In addition, other, trustworthy experiments

relevant to this issue have been conducted at a time when methodological standards were much less stringent than today. As a consequence, even if they provide prima facie evidence in favor of the automaticity of social comparison, this evidence can be questioned on the basis of, for instance, power analyses. In this context, we revisit the hypothesis that social comparison is automatic from the lens of a skeptical researcher. After reviewing the available empirical reports, we conclude that there is at present no solid evidence to substantiate the claim that social comparison is automatic. Then, we report the results of two high-powered experiments conducted in an effort to provide further evidence in favor or against the hypothesis that social comparison is an automatic process.

1.1. Classical and modern views of social comparison

Social comparison has not always been considered as an automatic process. Festinger (1954), the forefather of social comparison theory, conceptualized social comparison as a deliberate and controlled process. In this perspective (hereafter referred to as the classical perspective),

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individuals do not automatically compare themselves with others. Rather, they intentionally select comparisons with similar others and neglect comparisons with dissimilar targets of comparison, because such comparisons are deemed as non-diagnostic for self-evaluation. Several effects documented in this line of research are generally considered robust (or highly replicable), such as effects of upward and downward social comparisons (Gibbons & Gerrard, 1989; Morse & Gergen, 1970; Taylor & Lobel, 1989) or effects of social comparisons with ingroup and outgroup members (Guimond, Chatard, Martinot, Crisp, & Redersdorff, 2006; Mussweiler & Bodenhausen, 2002).

In contrast to the classical perspective, Gilbert, Giesler, and Morris (1995) have advanced the idea that social comparison is a relatively spontaneous, effortless, and unintentional process that may occur even when the comparison is deemed as irrelevant or nondiagnostic. In this perspective (hereafter referred to as the modern perspective), social comparison involves two different and consecutive processes. The first one is automatic. When exposed to another person, or another group of persons, individuals automatically compare themselves to others. The second, correction process, is controlled and occurs only after initial comparisons are made. If and when individuals realize that the comparison is not relevant or nondiagnostic for self-evaluation, they make a correction to their self-evaluation to take into account the nondiagnostic feature of the comparison. In other words, they intentionally "undo" the comparison after it has been made.

To test this reasoning, Gilbert et al. (1995) conducted two experiments in which they manipulated cognitive load (low or high) in between-participants designs. High cognitive load was expected to disrupt controlled processes, and thus the correction made after initial social comparisons with nondiagnostic targets of comparison. When participants were able to make a correction (under low cognitive load), their self-evaluation was unaffected by nondiagnostic comparison information. However, when participants' ability to make a correction was reduced (under high cognitive load), their self-evaluation was affected by the social comparison with another person, even when the comparison was nondiagnostic. In other words, the social comparison process appeared to be efficient (resource-independent) and uncontrollable (occurred even if explicitly irrelevant). These findings provided evidence in favor of the modern view of social comparison as an automatic process.

1.2. A critical look at the automaticity of social comparison

Perhaps because it seems intuitively appealing, the modern perspective of social comparison has been quite popular in the past. However, the automaticity of social comparison is often assumed but rarely demonstrated (see Want, Botres, Vahedi, & Middleton, 2015). Bargh (1994) defined automaticity through 4 specific criteria: the absence of awareness, efficiency, unintentionality, and uncontrollability. Admittedly, a given process can have some features of automaticity and not others (Bargh, 1989). These four features are clearly distinct at a conceptual level. However, when a person is unaware of the presence of a stimulus, s/he is unlikely to be able to use it intentionally, or to attempt to control its influence on his or her cognition, emotion, or behavior (Bargh, 1994). This, of course, does not imply that such an influence cannot be controlled when the person is aware of the stimulus. Perhaps for this reason, previous research has typically focused on two criteria of automaticity: awareness and efficiency. By definition, automatic mental processes require relatively few mental resources (i.e., they are not impaired by cognitive load), and operate without awareness (or subliminally). Thus, social comparison can be considered as an automatic process if it can be shown that it requires very few mental resources, or that it takes place without awareness – upon subliminal presentation of stimuli (bearing in mind that absence of awareness makes intention and control highly unlikely).

Research examining whether social comparison is an efficient automatic process has produced inconsistent results. Recently, Want

and colleagues found no evidence that social comparisons are efficient mental processes (Want & Saiphoo, 2017; Want et al., 2015). In these high-powered experiments, exposure to a high standard of comparison (media images of ultra-thin women) decreased explicit self-evaluation and impaired mood among women who were not cognitively busy (low cognitive load), but not among those who were (high cognitive load). The results of these experiments cast doubt on the idea that social comparison is automatic.

Recently, we conducted a similar experiment with an implicit rather than an explicit measure as the dependent variable (Bocage-Barthélémy et al., 2017). In this high-powered experiment, a lexical decision task was used to assess the cognitive accessibility of negative words. Exposure to the high standard of comparison (the thin ideal), compared to a no comparison condition (pictures of women's fashion accessories), caused greater accessibility of negative words, but only among women who were cognitively busy (high cognitive load). There was no effect of the comparison among those who were not cognitively busy (low cognitive load). Here, the findings were more consistent with the modern view than with the classical view of social comparison.

All in all, these conflicting findings are puzzling. It remains unclear why Want et al. (2015) and Want and Saiphoo (2017) found no effects of social comparison under high cognitive load, while Bocage-Barthélémy et al. (2017) found no effects of social comparison under low cognitive load. Differences between procedures and dependent variables may account for this discrepancy. Clearly, further research is needed to address this issue. At present, the only conclusion that can be drawn is that research examining whether social comparison is an efficient process has produced inconsistent findings.

Using subliminal presentation of comparison information, a number of experiments have tested whether social comparison operates without awareness (Blanton & Stapel, 2008; Jansen & de Vries, 2002; Mussweiler, Rüter, & Epstude, 2004; Stapel & Blanton, 2004). However, some experiments published by Stapel and his coauthors have been retracted after he admitted fabricating his data. In addition, the few remaining experiments are suboptimal because they are underpowered. They all included about 20 participants per condition. Although it was a common research practice at the time these experiments were conducted, such low-powered experiments are clearly problematic. Experiments with such small sample sizes have only 23% power to detect the typical small-to-medium effect size found in social psychology (Richard, Bond, & Stokes-Zoota, 2003). Of course, with only 23% statistical power, most experiments would fail most of the time. Many failed experiments may not have been reported, making it difficult to gauge the true effect size from the published literature, or to draw any firm conclusions about the awareness of social comparison processes from this literature.

Jansen and de Vries (2002) conducted a single experiment with a total of 59 participants, randomly assigned into one of three experimental conditions. They found no effect of subliminal social comparisons and concluded that subliminal social comparisons do not affect self-evaluation. It is quite possible that the true effect size is not different from zero. However, an alternative explanation is that these researchers did not have enough power to detect a significant effect in their experiment. Indeed, the only conclusion that can be drawn from this experiment is that subliminal social comparisons do not have an extraordinarily large effect on self-evaluation.

At the same time, Mussweiler et al. (2004) reported different results. Their sample size was even smaller, yet they reported 3 successful experiments. Mussweiler et al. predicted that subliminal social comparisons with moderately low or high standards would lead to assimilation effects (participants evaluate themselves in line with the activated standard), whereas subliminal social comparisons with extremely low or high standards would lead to contrast effects (self-evaluations are contrasted away from the activated standards). In a first experiment (N = 32) including two independent conditions, they found that German students primed with the name of a moderately high standard of aggressiveness (the