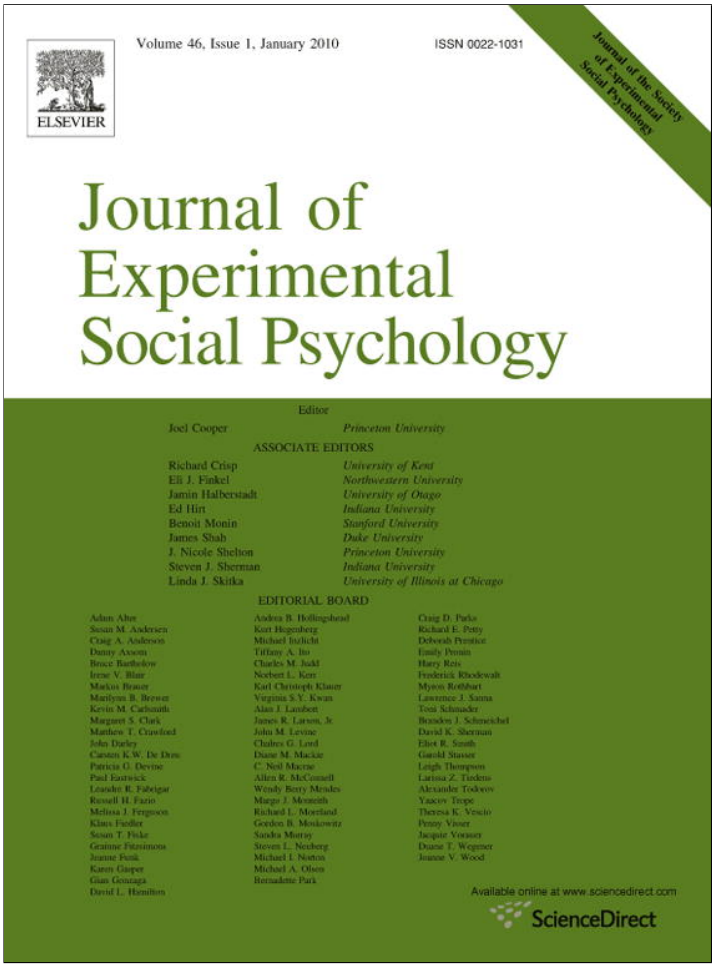

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FlashReport

A preference for genuine smiles following social exclusion

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ABSTRACT

Research indicates that rejected individuals are better than others at discriminating between genuine (Duchenne) and deceptive (non-Duchenne) smiles (i.e., true versus false signals of affiliative opportunity). We hypothesized that rejected individuals would show a greater preference to work with individuals displaying Duchenne versus non-Duchenne smiles. To test this, participants wrote essays about experiences of inclusion, exclusion, or mundane events. They then saw a series of 20 videos of smiling individuals (10 with Duchenne and 10 with non-Duchenne smiles). Participants then indicated how much they would like to work with each target. Analyses revealed that compared to included and control participants, excluded individuals showed a greater preference to work with individuals displaying "real" as opposed to "fake" smiles. This effect was partially mediated by threats to "relational needs" (Williams, 2007) and fully mediated by threats to self-esteem. These results suggest that exclusion yields adaptive responses that could facilitate reconnection with others.

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Introduction

Being included in groups is essential, and failing to secure stable social relationships feels highly aversive (Baumeister & Leary, 1995). Inclusion is so important that humans appear to have evolved mechanisms capable of detecting deficits in belongingness to facilitate reconnection with others (e.g., Leary, Tambor, Terdal, & Downs, 1995). For example, individuals dispositionally high in their need to belong better identify social information, like facial expressions (Pickett, Gardner, & Knowles, 2004), and those who experience exclusion engage in greater behavioral mimicry (Lakin, Chartrand, & Arkin, 2008), an indication that individuals fearing or experiencing rejection show increased attention to social cues useful for securing reaffiliation.

One rather powerful cue of affiliation intent is positive affect, which is often communicated by smiling (e.g., Brown, Palameta, & Moore, 2003). Specifically, "Duchenne" (genuine) smiles occur automatically in response to the experience of happiness (Ekman, Davidson, & Friesen, 1990). Non-Duchenne smiles, which are under greater performer control, can conceal negative emotions or fake the desired positivity associated with a real smile (Ekman, Friesen, & O'Sullivan, 1988). Unlike non-Duchenne smiles, Duchenne smiles are strong signals of the person's cooperative intent (Brown & Moore, 2002); people tend to exhibit more Duchenne smiles while engaging in pro-social behaviors than when not (Mehu, Grammer, & Dunbar, 2007). Thus, "real" smilers are good candidates for potential affiliation whereas fake smilers are potentially deceptive.

Given the hazards facing the socially rejected, it may be useful for such persons to quickly and accurately discriminate between facial expressions of emotion (e.g., happy versus sad), and to accurately distinguish between real and false signals of motivational intent, especially affiliation intentions. Consistent with this logic, we previously found that those recalling an exclusion experience could better discriminate between Duchenne and non-Duchenne smiles than those recalling an acceptance or mundane experience (Bernstein, Young, Brown, Sacco, & Claypool, 2008). Accurate identification of non-verbal signals of approach affords an avenue for successful reaffiliation. Because excluded persons have a greater reaffiliative need, it would be essential for them to focus on partners most likely to meet these needs, which may be facilitated by accurate perception of real and deceptive smiles.

Though this previous work showed that rejected individuals have an acute ability to differentiate between Duchenne and non-Duchenne smiles, it did not show whether rejected individuals "use" this information in any way. The identification of such smiles is only beneficial if such discrimination produces responses useful for satiating current needs. Thus, excluded individuals should also prefer to interact with persons expressing true approach displays (e.g., Duchenne smiles) rather than those not expressing such displays, which is an untested hypothesis. Moreover, previous researchers explicitly directed participants' attention to the veracity of the smiles. It remains unclear whether rejected individuals

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will attend to and act on these differences in smile types spontaneously, without having their sincerity explicitly questioned.

The current research will investigate these issues. We randomly assigned participants to an exclusion, inclusion, or control condition and asked them to rate their desire to work with targets displaying both Duchenne and non-Duchenne smiles. Importantly, we did not draw participants' attention to the targets' smiles, nor did the instructions ever suggest that smile sincerity varied. We predicted that all perceivers would show a preference for working with targets exhibiting Duchenne rather than non-Duchenne smiles, but that this pattern would be strongest for rejected individuals.

Furthermore, we examined possible mechanisms driving this outcome. Williams (2007) has shown that four basic needs are thwarted following rejection which can be grouped into two categories: "relational" needs (belonging, self-esteem) and "efficacy/existence" needs (control, meaningful existence). He has proposed that individuals engage in reaffiliative (rather than antisocial) reactions when "relational needs" are most impacted. Given that the outcome under investigation is affiliative, these "relational" as opposed to "efficacy" needs may operate as the mediator of the Duchenne preference. Additionally, work on the sociometer model (Leary et al., 1995) argues that self-esteem drops following perceived inclusion threats and motivates humans to engage in behaviors to re-establish their social ties. From this perspective, self-esteem alone may be the key mediator of our proposed finding. This work will investigate which of these need threats mediate differential preferences for working with individuals displaying real versus deceptive smiles.

Methods

Participants and design

One hundred and twenty-five individuals (81 females) participated for course credit and were randomly assigned to a 3 (social experience: exclusion, inclusion, or control) × 2 (smile: Duchenne, non-Duchenne) mixed-model design with repeated measures on the latter. There were no effects of target or participant sex which are not discussed further.

Materials

The facial stimuli were those used in Bernstein et al. (2008) and were obtained from the BBC science website (http://www.bbc.co.uk/science/humanbody/mind/surveys/smiles).[1] Participants watched 20 videos (approximately 4 s each) one at a time, each depicting an individual with an initially-neutral expression that shifted to a smiling expression, that then returned to a neutral expression (10 Duchenne and 10 non-Duchenne smiles). Thirteen men and seven women were depicted in the videos.[2] Presentation order was counterbalanced, such that participants saw one of two possible stimuli orders.[3]

Procedure

Participants performed two ostensibly unrelated tasks. They first completed an essay task constituting the manipulation of social experience. Participants wrote about a time they felt "rejected or excluded," "accepted or included," or "their morning yesterday" (control condition). This manipulation has been used previously with success (e.g., Maner, DeWall, Baumeister, & Schaller, 2007). Participants then responded to 16 items assessing their levels of belonging, control, self-esteem, and meaningful existence (four items each) felt during the experience (adapted from Zadro, Williams, & Richardson, 2004).

Once completed, participants were told they would see videos of individuals and that they were to imagine that the person in each was a potential partner for a project on which they might work. Participants were to indicate how much they would like to work with each person on a Likert-scale (1 = not at all; 7 = very much) for all 20 videos. Upon completion, participants responded to demographic questions, were probed for suspicion, thanked, and debriefed.

Results

Basic needs

To examine if the social-experience manipulation was successful, we calculated each of the four basic needs (belonging, control, self-esteem, meaningful existence) separately for each participant. In all cases, exclusion led to less basic-need satisfaction compared to control and included participants ($ps < .001$), while the latter two groups did not differ from one another ($ps > .35$).

Preference scores

Of primary interest was whether social exclusion influences the desire to work with targets exhibiting Duchenne and non-Duchenne smiles. For each participant, we averaged (separately) their preference scores for targets with real smiles and those with fake smiles. These averages were subjected to a 3 (social experience: exclusion, control, inclusion) × 2 (smile: Duchenne, non-Duchenne) mixed-model ANOVA, with repeated measures on the latter. There was no main effect of social experience ($p > .52$), but there was a main effect of smile. Participants preferred working with individuals exhibiting Duchenne rather than non-Duchenne smiles, $F(1, 122) = 24.46$, $p < .001$, $\eta^2 = .17$. As predicted, this effect was qualified by an interaction between social experience and smile, $F(2, 122) = 3.26$, $p = .04$, $\eta^2 = .05$ (Fig. 1). Participants in the control condition showed a marginal preference for individuals exhibiting Duchenne ($M = 4.43$, $SD = .76$) versus non-Duchenne smiles ($M = 4.28$, $SD = .67$; $p = .096$; $\eta^2 = .02$). Participants in the inclusion condition showed a similar marginal effect, Duchenne ($M = 4.60$, $SD = .88$) versus non-Duchenne smiles ($M = 4.43$, $SD = .83$; $p = .055$; $\eta^2 = .03$). Excluded participants, however, showed a significant and larger preference for working with those with Duchenne ($M = 4.57$, $SD = .74$) versus non-Duchenne smiles ($M = 4.15$, $SD = .71$; $p < .001$; $\eta^2 = .17$).

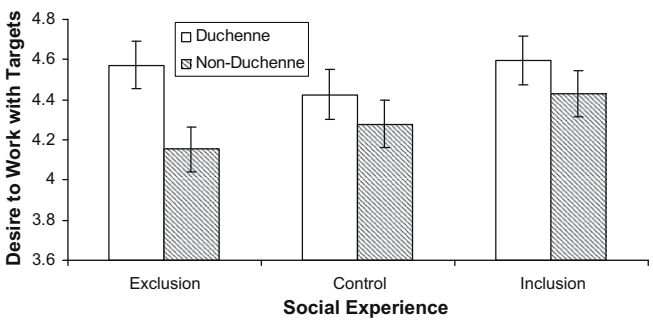

Fig. 1. The effect of social experience on desire to work with targets exhibiting real and fake smiles (error bars represent the standard error of the mean).

[1] Pre-testing revealed that faces displaying Duchenne versus non-Duchenne smiles did not differ in perceived attractiveness, trustworthiness, or positivity ($p > .37$).

[2] The stimuli included three ethnic minorities. Removing these from the analyses left the results unchanged. Thus, all analyses included all stimuli.

[3] There were no counterbalancing effects on any results.

To further examine the differences between social-experience conditions, for each participant we subtracted his/her average preference score for fake-smile targets from his/her average preference score for real-smile targets, thus creating a "preference–difference" score where higher numbers indicated a greater preference to work with real-smile targets. A one-way ANOVA on this was significant, $F(2122) = 3.26$, $p = .04$; post hoc analyses revealed that while control ($M = .15$, $SD = .55$) and inclusion participants ($M = .16$, $SD = .59$) did not differ ($p > .85$), both significantly differed from rejected participants ($M = .42$, $SD = .51$; $ps < .035$). These results are consistent with the hypothesis that excluded individuals would show an even greater preference for working with Duchenne versus non-Duchenne targets.

Mediational analyses

As mentioned earlier, Williams (2007) has shown that rejection thwarts four psychological needs. These needs can be divided into two categories which are purported to account for different behavioral reactions to rejection. When belonging and self-esteem are most impacted, individuals tend to engage in reaffiliative behaviors, whereas threats to control and meaningful existence lead to antisocial responses (Williams, 2007). Because our outcome variable related to reaffiliation, we suspected that threats to the belonging/self-esteem needs, and not the control/meaningful existence needs, might act as a mediator of our primary effect. We chose to begin our examination by looking at these subcategories of the basic needs as possible mediators.

Belonging and self-esteem needs were highly correlated ($r = .79$, $p < .001$), as were control and meaningful existence ($r = .75$, $p < .001$). We thus averaged belonging and self-esteem needs into one index (Relational Needs) and did the same with control and meaningful existence (Efficacy Needs). In all cases, higher values indicate more satisfaction of the need state.[4]

Given that the preference scores and basic needs did not differ between inclusion and control conditions, we combined these conditions and dummy coded the social-experience variable (0 = inclusion/control, 1 = exclusion). We then used the "preference–difference" score as our dependent measure.

Following Baron and Kenny (1986), we first examined the relation between social experience (dummy coded) and the preference–difference score. This relation was significant, $\beta = .26$, $p = .012$. Excluded individuals showed a greater preference for working with Duchenne-smile targets than those in the control/inclusion conditions. We then found significant relationships between social experience and both possible mediators, threats to relational ($\beta = -1.00$, $p < .001$) and efficacy needs ($\beta = -1.04$, $p < .001$). In both cases, excluded participants had less satisfaction of those needs. Relational needs were further related to preference–difference scores ($\beta = -.107$, $p = .008$), but efficacy was not ($p > .13$) and thus cannot act as a mediator. Thus, as individuals felt less satisfaction of their relational needs, they showed a greater preference to work with Duchenne-smile (versus non-Duchenne-smile) targets. Finally, when regressing social experience and relational needs simultaneously onto preference–difference scores, the effect of relational needs remained marginally significant ($\beta = -.08$, $p = .068$), whereas the effect of social experience became non-significant, $\beta = .18$, $p = .10$. A Sobel test revealed the drop in the magnitude of the relationship between social experience and the preference–difference score was marginally significant, $z = 1.71$, $p = .087$ (Fig. 2).

[4] The indices of the four basic needs were all significantly correlated with each other ($rs > .63$, $ps < .001$), and the relational and efficacy indices were as well ($r = .82$, $p < .001$).

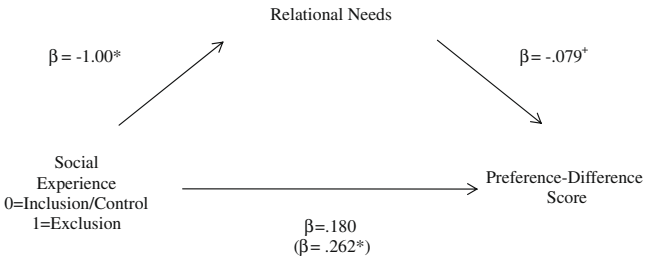

Fig. 2. The effect of social experience on desire to work with real- versus fake-smiling targets as mediated by relational needs satisfaction (∗ indicates significant at <05; + indicates marginal significance).

Given the marginal findings above, we examined belonging and self-esteem separately as possible mediators to compare William's (2007) and Leary and colleagues' (1995) models. Both belonging ($\beta = -1.13$, $p < .001$) and self-esteem ($\beta = -.88$, $p < .001$) were predicted by social experience, such that excluded individuals experienced less of each than those in the inclusion/control conditions. Further, both belonging ($\beta = -.07$, $p = .05$) and self-esteem ($\beta = -.132$, $p = .002$) predicted the preference–difference score, such that as the participants' satisfaction of these needs decreased, they showed a greater preference to work with people exhibiting Duchenne versus non-Duchenne smiles. When regressing social experience and belonging simultaneously onto the preference–difference scores the effect of social experience remained significant, ($\beta = .22$, $p = .05$) whereas belonging did not ($p > .25$). Thus satisfaction of belonging needs was not a mediator. However, when regressing social experience and self-esteem simultaneously onto the preference–difference scores, full mediation occurred (Fig. 3); self-esteem remained significant ($\beta = -.11$, $p = .01$) whereas the effect of social experience dropped to below significance ($\beta = .17$, $p = .12$). A Sobel test revealed that this drop in the magnitude of the relationship between social experience and our preference–difference score was significant, $z = 2.16$, $p = .03$. Such results are quite consistent with Leary and colleagues' (1995) sociometer hypothesis.

Discussion

Bernstein and colleagues (2008) showed that rejected individuals better discriminate real from deceptive smiles when directly asked to do so. The current work extends this finding by showing that excluded individuals show a greater desire to work with targets exhibiting real versus fake smiles, compared to included or control participants. Duchenne smiles function to convey true feelings of positive affect and signal a desire to cooperate while non-Duchenne smiles function only to mask some unknown intent. Thus, individuals with Duchenne smiles exhibit an affiliative signal. Because rejected individuals should have the strongest

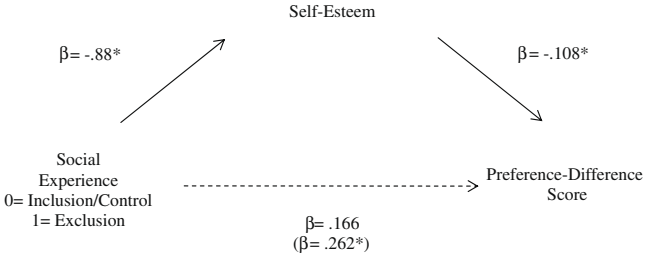

Fig. 3. The effect of social experience on desire to work with real- versus fake-smiling targets as mediated by self-esteem needs satisfaction (∗ indicates significant at <05; + indicates marginal significance).

reaffiliative need, we predicted that they should show the greatest desire to work with such targets, and our findings supported this hypothesis. Importantly, participants were not told that smile sincerity varied across targets. Thus, without drawing participants' attention to smile veracity, we illustrated that perceivers, especially excluded ones, spontaneously made judgments favoring Duchenne-smile targets.

This work also found that the primary finding was marginally mediated by perceivers' relational needs satisfaction (the combination of belonging and self-esteem needs). This meditational model showed that exclusion decreased one's sense of relational needs, and that the more these needs were threatened, the bigger (marginally) one's preference for Duchenne-smile targets. Interestingly, efficacy needs showed no relationship with the preference measure. Examining these findings vis-à-vis Williams' (2007) model, which suggests that threats to relational needs are good predictors of pro-social and affiliative responses whereas threats to efficacy needs result in more antisocial and self-focused responses, reveals that the current evidence is congruent with his theorizing.

However, the fact that self-esteem *alone* fully mediated the effect warrants further discussion. Self-esteem is the mechanism by which Sociometer Theory operates (Leary et al., 1995). In this model, self-esteem acts as a gauge of belongingness, and when a threat occurs, individuals take actions to ameliorate that threat. From this perspective, a threat to self-esteem *specifically* might motivate one to engage in behaviors that could lead to reaffiliation. Because targets with real smiles offer better opportunities for reaffiliation, choosing to work with such targets could be one way to restore social belonging and improve self-esteem. That threats to self-esteem fully mediate the real-smile preference is congenial with the sociometer account and also provides partial support for Williams' model.

Future research might examine the extent to which threatened belonging and self-esteem needs mediate attentional differences toward signs of affiliation. Presumably, heightened threat to these needs results in a differential search process, enabling individuals to be more facile with their discrimination abilities. Future work might also focus on whether rejection heightens a preference for Duchenne smiles, decreases a preference for non-Duchenne smiles, or both. That is, are the observed effects primarily driven by rejected individuals preferring Duchenne-smile targets because they offer reaffiliation opportunities, or a dislike of non-Duchenne-smile targets as they pose a danger to reaffiliation? Examination of the exclusion versus the control means (in Fig. 1) suggests that both processes may be occurring, but future work should further elucidate this issue. Finally, our outcome measure is best characterized as a behavioral intention. Future work should examine actual behavior, determining whether social exclusion affects, for example, behavioral mimicry of those exhibiting Duchenne or non-Duchenne smiles.

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