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Short Communication

Greater need to belong predicts a stronger preference for extraverted faces☆

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ABSTRACT

Humans have a pervasive need to belong that subsequently elicits responses to facilitate affiliative opportunity, including enhanced perceptual acuity toward affiliative cues. Given past research indicating individuals can accurately detect another's extraversion from facial cues, and that extraversion is associated with sociality and larger social networks, we predicted that higher belongingness needs would be associated with stronger preferences for extraverted targets, based on facial cues. To test this hypothesis, participants viewed face pairs, with one face manipulated to be extraverted and another face introverted, and indicated their preferences; participants also completed the need to belong scale. Higher need to belong was associated with a greater preference for extraverted, relative to introverted, target faces, $r(147) = 0.160$, $p = 0.051$, [95% CI: 0.00, 0.31]. Results were not qualified by target or participant sex. The results are consistent with the hypothesis that greater belonging needs lead individuals to prefer others most likely to satisfy that need, specifically, more extraverted social targets.

1. Introduction

While stable access to social groups and relationships is a universal human need (Baumeister & Leary, 1995), individual differences exist in the strength of humans' belongingness need (Leary, Kelly, Cottrell, & Schreindorfer, 2013). It has been hypothesized that humans possess a sociometer, a psychological system that alerts them to unmet belongingness needs, thus motivating responses to effectively restore social belonging (Leary, Tambor, Terdal, & Downs, 1995). Activating this sociometer elicits concurrent activation of the social monitoring system, resulting in enhanced social perception of others' affiliative cues (Pickett & Gardner, 2005). For example, those whose belongingness needs have been thwarted demonstrate greater positive emotion recognition (e.g., Duchenne smiles; Bernstein, Young, Brown, Sacco, & Claypool, 2008). They are also more prosocial (Maner, DeWall, Baumeister, & Schaller, 2007) and contribute more on a group task (at least among women; Williams & Sommer, 1997). These responses are likely adaptive. Enhanced social perception helps those with a thwarted need to belong identify affiliative conspecifics. Increased effort on group tasks and prosocial intentions would also likely make one appear more desirable as a group member. In both cases, these responses would facilitate social affiliation.

Importantly, a thwarted need to belong also adaptively shifts individuals' preferences for certain social targets. For example, Bernstein, Sacco, Brown, Young, and Claypool (2010) found that individuals report heightened preferences for targets displaying Duchenne smiles, an indicator of genuine affiliative interest, following an acute experience of social rejection. Furthermore, this preference was partially mediated by threats to relational needs (i.e., threats to belonging and self-esteem). These findings suggest that preferences for others based on facial information is critical for identifying individuals best suited for satisfying affiliation goals and that such preferences are motivated by unmet relational needs. The current study extends these findings by testing the hypothesis that individual differences in the need to belong predict preferences for conspecifics whose facial *structure* communicates an affiliative disposition similarly to affective cues of affiliation. Much like how affiliative motives can hone an individual's accuracy in detecting dynamic cues of affiliation (e.g., Bernstein et al., 2008; DeWall, Maner, & Rouby, 2009), we posit that similarly motivated individuals can infer a social target's ability to satisfy the need to belong through static facial cues. Specifically, we hypothesized those higher in need to belong would indicate a greater preference for target faces communicating higher levels of the personality trait extraversion. Because extraversion is associated with gregariousness and larger social networks (Goldberg, 1993; Pollett, Roberts, & Dunbar, 2011; Swickert, Rosentreter, Hittner, & Mushrush, 2002), individuals with a dispositionally greater need to belong should prefer extraverted others. Extraverted individuals should

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better afford affiliative potential (relative to introverted), suggesting that extraverted individuals provide greater opportunity to satisfy belonging needs.

1.1. Need to belong and social perception

While acutely activated belongingness needs elicit numerous cognitive, affective and behavioral responses to facilitate subsequent social inclusion (e.g., Bernstein et al., 2008; Maner et al., 2007), dispositional belongingness needs are similarly associated with affiliative responses. For example, those higher in need to belong are more motivated to listen to a friend's emotional, but not descriptive, information, a response that may garner a positive reaction from the discloser (Hackenbracht & Gasper, 2013). Individuals higher in need to belong also display enhanced accuracy at identifying vocal tone and facial emotion and enhanced empathic accuracy (Pickett, Gardner, & Knowles, 2004). Given that individual differences in need to belong predict greater attention to, and accuracy in processing, social information, including social information communicated by faces, we predict that those higher in a dispositional need to belong will exhibit stronger *preferences* for more extraverted individuals, as indexed by their faces.

1.2. Extraversion and faces

The human face is a dynamic social stimulus. It communicates information about emotion, motivational tendencies, and biological health (Parkinson, 2005; Rhodes, 2006). Important information about personality may also be communicated by facial characteristics. For example, Little and Perrett (2007), using composite images of individuals scoring high and low on personality traits, found that individuals demonstrated above-chance accuracy in detecting trait conscientiousness and extraversion from target faces. Furthermore, individuals can extract important information about another's extraversion following very brief exposure to a target face. Borkenau, Brecke, Möttig, and Paelecke (2009) exposed individuals to images of target persons who had completed personality inventories for brief intervals (50–150 ms). Individuals demonstrated above-chance perceptual acuity in identifying these targets' self-reported personality such that their ratings of social targets as exemplifying certain traits were highly correlated with the targets' actually reported personality. Importantly, this correlation was strongest for extraversion. Individuals tend to be relatively accurate at identifying others' levels of extraversion from facial information alone.

Given individuals with dispositionally higher affiliative motives are motivated to identify conspecifics most capable of satisfying their belongingness needs, and because extraversion can be accurately inferred from a target's face, we predicted that individuals with higher need to belong would demonstrate stronger preferences for extraverted faces. Extraversion is associated with greater social network variety (Pollett et al., 2011). Thus, extraverts' greater sociality may offer more social opportunity than introverts, which would be particularly incentivizing for those higher in need to belong. Given the impossibility of interacting with every possible conspecific, and because not all individuals afford equivalent social affiliative opportunity, identifying those most likely to satisfy belonging needs would be adaptive for those with a stronger need to belong. Since extraverted individuals would be more likely to satisfy affiliative goals, targets whose faces communicate extraversion (relative to faces communicating introversion) should be preferred by those with a greater need to belong. To test this hypothesis, participants indicated their preferences among face pairs in which a target was manipulated to communicate high introversion or high extraversion and indicated their dispositional need to belong.

2. Method

2.1. Participants

A medium-effect-size power analysis ($\rho = 0.3$), indicated 134 participants would provide sufficient power to test our primary hypothesis. Due to the potential for careless and incomplete responses by some participants, we intentionally oversampled and recruited 154 American workers (81 women, 73 men; 69% White; $M_{Age} = 39.15$, $SD = 13.90$) through Amazon's Mechanical Turk for $0.35 (US). Five participants' data (3 male, 2 female) were excluded from analysis for careless responding (i.e., clicking the same button throughout study tasks); this resulted in a final sample of $N = 149$ participants.

2.2. Materials

2.2.1. Introversion-extraversion faces

We generated faces communicating extraversion and introversion through 20 male and 20 female Caucasian faces from the Aging Faces (Minear & Park, 2004) and Chicago Face Databases (Ma, Correll, & Wittenbrink, 2015) with an age range of approximately 18–40 years. Target faces were morphed with an extraversion and introversion composite face prototype (see Holtzman, 2011, for details on prototype generation). Specifically, Holtzman generated prototypes of average male and females faces communicating both extraversion and introversion from 10 individuals who scored highest and lowest on this dimension for either sex (combined peer and self-reports of extraversion). Using these 4 composite faces (female extravert, female introvert, male extravert, male introvert), we used morphing software (Morpheus Animation Suite v3.10) to blend each target face with the same-sex extravert and introvert prototype, such that the morphs were 50/50 blends (i.e., 50% original face/50% prototype, see Fig. 1). We created high- and low-extraversion versions of each target for 40 face pairs (i.e., 20 for each sex for both extraversion and introversion).

Participants were randomly presented with the face pairs, with one target being the extraversion morph of and the other introversion. We counterbalanced position of the morphs (i.e., left-, right-screen position), which was randomized on a between-participants basis. On each trial, participants selected the version of the face they preferred. The task was self-paced; participants viewed each pair until they indicated their preference before viewing the next pair. To calculate relative preference for extraverted faces (versus introverted), we summed frequency of participants' selection of extraverted targets and divided it by total number of trials, separately for male and female targets. Higher

Fig. 1. Faces communicating Extraversion (left) and Introversion (right).