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Just loving these people: Extraverts implicitly associate people with reward

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ABSTRACT

Several prominent theories have suggested that extraverts implicitly associate people with rewards. Two studies involving 268 participants were conducted in order to test this prediction. Study 1 utilized a traditional implicit association test, and Study 2 utilized a single-category implicit association test capable of providing separate indices for different associations in memory. Across both studies, extraverted participants displayed a more robust association between people and reward. Study 2 also indicates that extraversion was unrelated to the association between punishments and the absence of people. These studies therefore confirm an important prediction following from reward sensitivity theories of extraversion and may help to explain extraverts' increased sociability.

1. Introduction

1.1. Extraversion and reward sensitivity

It is now well-accepted that extraversion is a prominent dimension of human personality (Wilt & Revelle, 2009). In psychometric research, factor analyses have repeatedly yielded a personality dimension characterized by adjectives such as "talkative", "assertive", and, of course, "extraverted" (e.g., Goldberg, 1990; John, 1990; Norman, 1963). Moreover, these results have replicated across languages and cultures (e.g., Saucier, 1997; Saucier, Hampson, & Goldberg, 2000; Somer & Goldberg, 1999). Consistent with extraversion's major markers, early researchers considered individual differences in sociable behaviors as the core, defining feature of this trait (e.g., McCrea & Costa, 1987).

However, more recent theories of extraversion have emphasized its emotional and motivational basis (e.g., Carver, Sutton, & Scheier, 2000; Depue & Collins, 1999; Elliot & Thrash, 2002; Lucas, Diener, Grob, Suh, & Shao, 2000; Smillie, 2013; Watson, Wiese, Vaidya, & Tellegen, 1997; Zelenski & Larsen, 1999). While these theories differ in emphasis and in details, they all propose that individuals high on the extraversion continuum (henceforth "extraverts") have a more sensitive reward system than individuals low on the extraversion continuum (henceforth "introverts").

Research on the emotional and motivational consequences of extraversion certainly supports this view. One of the most robust findings in the personality literature is that extraverts report higher levels of positive affect than introverts (see Lucas & Fujita, 2000; Watson, 2000; Wilt & Revelle, 2009, for relevant reviews). This relationship is especially pronounced while individuals are in the process of pursuing a rewarding outcome (Gomez, Cooper, & Gomez, 2000; Larsen & Ketelaar, 1991; Smillie, Cooper, Wilt, & Revelle, 2012). Beyond this, extraverts also condition to rewards more effectively (see Matthews & Gilliland, 1999; Smillie, Pickering, & Jackson, 2006, for relevant reviews). Perhaps as a result, they expect positive situations to be more rewarding (Zelenski & Larsen, 2002; Zelenski et al., 2013), and they actually seek out positive situations more frequently (e.g., Lucas, Le, & Dyrenforth, 2008; Mehl, Gosling, & Pennebaker, 2006; Srivastava, Angelo, & Vallereux, 2008).

Research on the neurological and psychological basis of extraversion is also consistent with this view. For example, extraverts exhibit a stronger response to positive incentive stimuli within areas of the neurological reward system (e.g., the caudate nucleus; Canli et al., 2001), as well as its projections (e.g., the anterior cingulate cortex; Canli et al., 2001; Smillie, Cooper, & Pickering, 2011). At a cognitive level, research shows that extraverts allocate more attention to rewarding stimuli (Derryberry & Reed, 1994; Paelecke, Paelecke-Haberman, & Borkenau, 2012), and they exhibit stronger implicit associations between different positive concepts in memory (Robinson, Moeller, & Ode, 2010).

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1.2. People as rewards

Despite this large body of research on extraversion and reward sensitivity, increased sociability remains an important, defining feature of extraversion (Wilt & Revelle, 2009). Research shows that it is impossible to divorce measures of extraversion from their original focus on sociability (Ashton, Lee, & Paunonen, 2002). Extraverts also seek out social situations more frequently than introverts (Lucas et al., 2008; Mehl et al., 2006; Srivastava et al., 2008), and allocate more attention to social stimuli (Fishman, Ng, & Bellugi, 2011).

This raises an interesting puzzle: If reward sensitivity is a core feature of extraversion, then why does sociability remain so central to this construct? In the current investigation, we built upon an idea proposed by Lucas et al. (2000, p. 455), among others. These authors suggested that extraverts seek out and enjoy social situations so much more than introverts simply because they are a prominent and important reward for human beings (cf. Lucas & Diener, 2001). According to this view, there is nothing truly unique that draws extraverts to social situations other than the fact that these situations are so frequently rewarding.

This suggestion is consistent with a multitude of theories (e.g., Baumeister & Leary, 1995; Bowlby, 1969; Maslow, 1968; Ryan, 1991) which have proposed that human beings possess an innate psychological need for relationships with conspecifics. According to Baumeister and Leary's (1995) influential evolutionary analysis, our species evolved in interdependent social groups. Thus, the desire to establish and maintain social relationships promoted survival and reproduction in multiple fashions. Relationships could allow individuals to provide mutual aid and support to one another; to more effectively exchange information and expertise; and to more effectively obtain shared goals (cf. Park & Hinsz, 2006). Consistent with these theories, empirical research indicates that social acceptance (Blackhart, Nelson, Knowles, & Baumeister, 2009), social power (Keltner, Gruenfeld, & Anderson, 2003), and social situations more generally (e.g., Clark & Watson, 1988; Emmons & Diener, 1986; Fleeson, Malanos, & Achille, 2002; Pavot, Diener, & Fujita, 1990) all increase positive affect.

1.3. Extraversion, conditioning, and implicit associations in memory

If the increased sociability of extraverts is due to the rewarding nature of social situations, this generates a number of testable predictions regarding the psychological basis of this trait. Given that extraverts condition to reward more effectively (Matthews & Gilliland, 1999; Smillie et al., 2006), these individuals should also develop stronger associations between people and positivity following positive social experiences. Bliss-Morreau, Feldman Barrett, and Wright (2008) provided support for this proposal. Participants were first briefly exposed to pictures of people paired with positive, neutral, or negative social behaviors. Afterward, participants were instructed to make "snap" judgments about the valence of those faces. The results indicated that extraverted participants were more capable of learning that faces paired with positive social behaviors were indeed positive.

While Bliss-Morreau et al.'s (2008) study is extremely important, it focused solely on short-term learning in response to an experimental manipulation. It did not investigate whether such effects endure over time; whether extraverts naturalistically form such memory associations as a result of their daily experiences; or how such associations are stored in memory. The purpose of the current investigation was to build upon this prior research and fill these gaps.

We specifically tested the idea that extraverts have come to automatically associate people in general with reward. Robinson (2007) has proposed that extraversion is specifically linked with a tendency to form automatic associations in memory with positivity. This emphasis on automaticity is consistent with a longer line of theorizing which suggests that extraversion is linked with subcortical neural systems (i.e., the dopaminergic reward system; Depue & Collins, 1999), which operates on the basis of reflexive information processing systems (see Lieberman, 2000; Lieberman, Gaunt, Gilbert, & Trope, 2002).

Research demonstrates that conditioning procedures do not just affect people's behaviors or conscious judgments. They also affect people's automatic associations in memory (Hermans, Baeyens, & Eelen, 2003). After a previously-neutral stimulus is repeatedly paired with a rewarding stimulus, participants begin to implicitly associate that stimulus with positivity. This result has been obtained using a variety of paradigms, including Fazio, Sanbonmatsu, Powell, and Kardes (1986) affective priming paradigm (e.g., De Houwer, Hermans, & Eelen, 1998) and Greenwald, McGhee, and Schwartz's (1998) implicit association test (e.g., Olson & Fazio, 2001).

Robinson et al. (2010) recently provided evidence that extraverts do indeed display stronger positive implicit associations in memory. Across three studies, these authors found that extraverts displayed more robust interconnections between different positively-valenced concepts in memory. By contrast, extraversion was not systematically related to the strength of negative implicit associations in memory.

If social interactions are indeed rewarding, then they should come to be associated with positivity at a general level. Given that extraverts condition to reward more effectively (Bliss-Morreau et al., 2008; Matthews & Gilliland, 1999; Smillie et al., 2006), these individuals should develop stronger associations between people and reward. Two studies were thus conducted to test the prediction that extraverts would exhibit a more robust implicit association in memory between the broad category of people and reward.

2. Studies 1 and 2

In Study 1, participants completed an implicit association test (IAT; Greenwald et al., 1998), which is one of the most frequently-used and well-validated measures of implicit associations in the social cognition literature (e.g., Fazio & Olson, 2003). The IAT was designed to measure participants' implicit associations between reward and the broad category of people. Following this task, participants completed a well-validated measure of extraversion (Goldberg, 1999). It was predicted that extraverted participants would display a stronger implicit association between people and reward.

In Study 2, we sought to replicate and extend the findings of Study 1. A weakness of the traditional IAT is that it cannot provide separate indices of different associations in memory (Bluemke & Friese, 2008). For example, Quek and Ortony (2012) recently used a computer simulation to demonstrate that IAT compatibility effects can arise from a variety of different underlying memory associations. In the context of the current study, this is important because theories suggest that extraversion is associated with positive affectivity and appetitive conditioning, and not with negative affectivity or aversive conditioning (e.g., Watson, 2000). Thus, participants in Study 2 completed the single-category IAT (Bluemke & Friese, 2008). This is a relatively minor modification of the original IAT which is nonetheless capable of providing separate indices of people–reward associations in memory and no-people–punishment associations in memory (Quek & Ortony, 2012). It was predicted that extraverts would display a stronger implicit association between people and reward, and that they would not display a stronger implicit association between the absence of people and punishment.