Reaching out by changing what's within: Social exclusion increases self-concept malleability

CrossMark

Stephanie B. Richman [a,*], Erica B. Slotter [b], Wendi L. Gardner [c], C. Nathan DeWall [d]

[a] Westminster College, USA
[b] Villanova University, USA
[c] Northwestern University, USA
[d] University of Kentucky, USA

HIGHLIGHTS

- Socially excluded people alter the self to gain social connection.
- Excluded people expanded their self-concept to incorporate new attributes.
- The attributes were characteristic of a novel social target, but not themselves.
- This effect was limited to targets that were construed as potential friends.
- It occurred regardless of whether the potential friend was aware of the change.

ARTICLE INFO

ABSTRACT

People have a fundamental need to belong that, when thwarted, can affect cognition and behavior in ways designed to regain social connection. Because one of the best predictors of social connection is similarity, the current investigation tests the *self-malleability hypothesis*, which predicts social exclusion encourages people to modify their self-concepts to increase similarity to others, presumably in pursuit of renewed affiliation. Five studies supported the self-malleability hypothesis. Excluded people expanded their self-concept to incorporate new attributes characteristic of a novel social target but which they did not originally perceive as characteristic of themselves (Study 1). This effect was limited to targets that were construed as potential friends (Study 2) and occurred regardless of whether the potential friend was aware of the change (Study 3). Additionally, after recalling an exclusion experience, people modified even existing self-views to increase similarity to a potential friend (Studies 4a and 4b). Thus, socially excluded people alter the self to gain social connection.

© 2014 Elsevier Inc. All rights reserved.

"The gift of making friends …it involves many things, but above all, the power of going out of one's self and appreciating whatever is noble in another."

[Thomas Hughes]

Given the fundamental importance of social connections to well-being, few gifts trump that of making friends. People possess a basic need for social belonging and connection, are motivated to engage in behaviors that promote others' inclusion, and are driven to regain social acceptance whenever they feel excluded (e.g., Baumeister & Leary, 1995).

Fortunately, an arsenal of affiliation-driven cognitions and behaviors seem available to assist excluded people to regain social connection.[1] Social exclusion can heighten attunement to others (e.g., Bernstein, Young, Brown, Sacco, & Claypool, 2008, Bernstein, Young, Brown, Sacco, & Claypool, 2010; Gardner, Pickett, & Brewer, 2000), bias evaluations of others (e.g., Mallott, Maner, DeWall, & Schmidt, 2009; Maner, DeWall, Baumeister, & Schaller, 2007), and encourage the outward expression of affiliative behavior such as mimicry, ingratiation, or prosociality (e.g., Lakin, Chartrand, & Arkin, 2008; Maner et al., 2007; Romero-Canyas et al., 2010). Thus, in a variety of ways people attempt to reach out to others and regain acceptance when belonging has been threatened. The current research examines a previously unexplored strategy in pursuit of acceptance, one that focuses upon changes within

* Corresponding author at: Westminster College, New Wilmington, PA 16172.
  E-mail address: richmasb@westminster.edu (S.B. Richman).

[1] In the current article, we use the terms social rejection, social exclusion, and ostracism interchangeably.

the self-concept rather than toward perceptions of others. Specifically, by going "out of one's self" when trying to enhance social connection, we hypothesized that one path to this affiliation might be a willingness to mold the self to be more similar to others—a process we have termed *self-concept malleability*.

Exclusion-induced self-concept malleability may take the form of expanding the self-concept to take on new characteristics (self-expansion), or even of modifying existing self-views to become more similar to a potential friend (self-modification). Because perceived similarity is a robust predictor of liking and relationship benefits in a variety of social contexts (e.g. Amodio & Showers, 2005; Byrne, 1971; Murray, Holmes, & Griffin, 2000), self-concept malleability may be an effective means through which socially excluded people can earn acceptance.

To test this self-concept malleability hypothesis, we conducted five experiments. Specifically, we tested whether exclusion motivates people to attempt affiliation with another person by taking on new attributes of this person (Study 1). We also examined whether this motivation applies only to others with whom there is the potential for friendship and thus the opportunity to regain social connection (Study 2). Additionally, we investigated whether this effect occurred above and beyond concerns with self-presentation, specifically to situations in which potential friends were unaware of the change (Study 3). Finally, we examined whether excluded people would modify their existing self-views, (for example, views of themselves as risky or cautious, or as financially risky or cautious), to be more similar to a potential friend (Studies 4a and 4b).

The stable and malleable self-concept

The self-concept is a person's sense of "me:" the physical appearance, material belongings, set of roles, prototypes, scripts, attitudes, beliefs, and attributes that a person thinks or feels are characteristic of who he or she is (James, 1890; Markus & Wurf, 1987). Often thought of as a self-theory more than a self-concept (Epstein, 1973), it consists of a variety of cognitive generalizations about the self, each of which is supported by relevant "data" such as episodic memories. Like any theory built from a large store of prior data, the self-concept is relatively stable, resisting change unless faced with a preponderance of new evidence. Moreover, existing self-beliefs bias the processing of new information in ways that support self-consistency (Markus, 1977), and even allow for the rejection of explicit feedback inconsistent with prior self-views (Markus & Kunda, 1986; Shrauger, 1975; vanDellen, Campbell, Hoyle, & Bradfield, 2011). Finally, because the self is inherently socially created and maintained (Cooley, 1902; Mead, 1934), people often craft social environments that stabilize and support their self-views (Swann, 1990).

Of course, self-concepts can and do change, often as a result of changes in the social environment. For example, children's self-concepts are most likely to change when their social network changes (e.g. Harter, 1993). In adults, self-concepts are most likely to change in the context of a life transition (Kling, Ryff & Essex, 1997), or in close interpersonal relationships (Aron, 2003). In romantic relationships, people's self-concepts often expand to incorporate characteristics of the relationship partner's self into their own sense of identity (e.g., Aron, 2003; Aron, Aron, & Norman, 2001; Aron, Aron, Tudor, & Nelson, 1991). The shared time together, resources, and self-disclosure that occurs in close interpersonal relationships contributes to people expanding their self-concepts to incorporate characteristics of the partner that they did not previously possess. For example, married people experience self-other confusion when asked to differentiate between traits characteristic of the self and traits characteristic of the spouse (Aron et al., 1991). Participants showed longer response latencies when rejecting characteristics that described their spouse but not themselves, compared to characteristics that described neither their spouse nor themselves. These findings demonstrate that participants had expanded their self-concept to include their spouse and therefore had a difficult time separating out which attributes belonged to whom. Crucially, self-expansion over time in romantic contexts is associated

with a variety of beneficial relationship outcomes (e.g., Aron, 2003; Aron, Paris, & Aron, 1995).

Research on self-concept expansion in romantic contexts showed that the mere motivation to affiliate with another was sufficient to facilitate self-concept malleability. Single participants were slower to reject characteristics that described a potential romantic partner but not themselves, compared to characteristics that described neither the potential romantic partner nor themselves (Slotter & Gardner, 2009). This effect was limited to targets that participants believed were open to potential relationships. The same effect was not found when participants were responding to characteristics of targets presented in a non-relational context. Self-expansion to include attributes of a potential romantic partner was also increased by a participant's liking for and desire to date the potential romantic partner, further suggesting that participants unconsciously expanded their self-concepts for the purpose of romantic affiliation. Thus, romantic desire is sufficient to evoke self-concept malleability.

But why? Given the benefits of perceived similarity in relationships, changing the self to increase similarity to the potential partner may increase likability, facilitate affiliation, and ease interactions. These benefits should not be limited to romantic relationships, however, as perceived similarity is a robust predictor of liking across romantic and non-romantic contexts (e.g., Byrne, 1971). Therefore self-concept malleability may represent a pathway to affiliation more generally. Situations in which people especially desire affiliation may also evoke self-concept malleability. Social exclusion represents a strong candidate for one such situation.

The need to belong

People have a fundamental need for social belonging and connection, specifically termed the need to belong (Baumeister & Leary, 1995). Copious research demonstrates that not having one's need to belong met negatively impacts health, adjustment, and well-being (Baumeister & Leary, 1995). More recent evidence shows links between a lack of social connection and negative emotional functioning (e.g. Leary, 2010; Zadro, Williams, & Richardson, 2004), reduced cognitive performance (Baumeister, Twenge, & Nuss, 2002), poor self-regulation (Baumeister, DeWall, Ciarocco, & Twenge, 2005), and increased self-defeating behavior (Twenge, Cantanese, & Baumeister, 2002).

Given the consequences of thwarting the need to belong, experiencing social exclusion or rejection should motivate people to engage in behaviors aimed at satisfying it (Baumeister & Leary, 1995; Gardner et al., 2000). People who have recently experienced social exclusion are highly sensitive to potential sources of social acceptance and generally engage in attempts to restore their sense of social belonging (e.g. Gardner et al., 2000). These attempts can be consciously (e.g. purposefully seeking out new friends) or unconsciously (e.g. viewing people in a more favorable light) driven.

Consistent with these ideas, exclusion can motivate people to consciously change their behavior to gain renewed affiliation. For example, excluded people, compared to their non-excluded counterparts, have been shown to be willing to buy social acceptance. Compared to accepted participants, excluded participants awarded more money to a partner based on their partner's average drawing—even when doing so meant they were less likely to win the money back (Maner et al., 2007; see also Romero-Canyas et al., 2010). Additionally, compared to people in a control condition, excluded people are more willing to spend money to buy products that potential friends or groups favor or even to try illegal drugs if doing so would boost their chances for reconnection (Mead, Baumeister, Stillman, Rawn, & Vohs, 2011). In other words, excluded people willingly choose to behave unwisely or even illegally in the pursuit of social connection.

After being socially excluded, people are generally more interested in forming new connections with others and even view potential sources of reconnection in a more positive light. For example, people who have been excluded prefer working with others instead of alone

and are more interested in using services aimed at initiating friendships than their non-excluded counterparts (Maner et al., 2007). They also viewed potential sources of acceptance through an optimistic lens, rating others as more friendly and desirable (Maner et al., 2007).

Non-conscious processes are also invoked in the service of social connection. For example, Gardner and colleagues (e.g., Gardner et al., 2000) have proposed a social monitoring system that spontaneously tunes information processing in ways that should facilitate social connection when belonging needs are threatened. When belonging needs are heightened, excluded individuals show attention and memory biases toward social information (Gardner et al., 2000) as well as better decoding of vocal cues and facial expressions (Gardner, Pickett, Jefferis, & Knowles, 2005), and heightened empathic accuracy (Pickett, Gardner, & Knowles, 2004). Compared to accepted people, excluded people are better at determining whether or not a person's smile is authentic (Bernstein et al., 2008, 2010). Similarly, excluded participants are faster to identify smiling faces, fixate their attention on smiling faces, and are slower to disengage their attention from smiling faces than their non-excluded counterparts (DeWall, Maner, & Rouby, 2009). In sum, social exclusion often acts as a powerful motivating factor, biasing attention, cognition, and behavior, even outside of conscious awareness, in ways that promote the re-establishment of social connection.

People do not always act in ways that are likely to gain them social connection after exclusion, however. When the target person is someone who previously excluded them or someone with whom they did not expect to interact with in the future, previously excluded people did not act in a positive or affiliative manner toward the target (Maner et al., 2007), presumably because this individual did not represent a potential opportunity for social reconnection. Thus, responses to social exclusion depend on the prospect of future social reconnection and acceptance (for a review see DeWall & Richman, 2011).

As outlined above, social exclusion tunes cognition and behavior toward regaining social connection when it is a viable option. In the current research, we proposed that one pathway to social connection might be increased self-concept malleability, in addition to the internal and external affiliative behaviors documented in previous work. We predicted that excluded people would expand or modify their self-concepts to increase similarity to another person—but only if this person was seen as a potential friend.

Research overview and hypotheses

The current research examined the effects of social exclusion on self-concept malleability. We predicted that socially excluded people would expand their self-concepts to increase similarity to a novel target, but this self-other merging would only occur when the target could serve as a potential source of social connection. Because post-exclusion affiliative behaviors occur both consciously and through social tuning, we predicted that this self-expansion would occur regardless of whether the target knew it was taking place—in both public and private conditions. Finally, we predicted that this effect would emerge not only via self-expansion (e.g., Aron, 2003; Slotter & Gardner, 2009), in which people change their self-concepts to be more similar to another person by including *new* information into their self, but also via self-modification, in which people change *existing* self-views to be more similar to another's self-views.

Study 1

In Study 1, we tested our central hypothesis that social exclusion would cause people to attempt to restore their social connections by expanding their self. We operationalized this self-concept malleability as the extent to which people expanded their self-concepts to include attributes of a novel target, which they did not originally perceive as characteristic of them, into their self-concept. We either excluded or accepted participants via a well-validated laboratory paradigm before

presenting them with the profile information of a novel target person, who was construed as a potential friend. We then assessed participants' inclusion of attributes of the novel target's self-concept into their own self-concept as a function of the type of experience they had previously recalled.

Method

Participants

Sixty-seven college students (55 women) participated in the current study in order to partially fulfill a course requirement for their introductory psychology course. On average, participants were 18.95 years of age ($SD = .81$). Although we did not measure the racial/ethnic demographics of our sample, the demographic makeup of the college students at the university where data were collected is 75% Caucasian, 7% Hispanic, 5% African American, 6% Asian, and 7% Other or Unknown.

Measures

Self-rating task

Participants rated a series of 10 attributes, taken from Anderson's (1968) work on personality traits, with regard to the degree that each attribute was characteristic of their sense of self ($1 = $ *not at all characteristic of me*, $7 = $ *extremely characteristic of me*; Slotter & Gardner, 2009, 2012). The attributes were neutral or mildly positively valenced, and included the following: athletic, artistic, musical, warm, intelligent, thoughtful, funny, enthusiastic, adventurous, and creative. Participants first completed this self-rating task at a pre-testing session. Importantly, one idiographic attribute was selected from participants' self-ratings at the beginning of the study that they had rated as being "not characteristic of me" (e.g., a 1 or 2). Thus, each participant generated an idiographic *not me* attribute for use in the current study. If more than one attribute was rated as "not characteristic of me," the target *not me* attribute was randomly selected from the eligible set of attributes. Although data were collected on 71 participants total, only individuals who rated at least 1 attribute as *not me* were selected to participate in this study, resulting in the 67 participants reported above.

Participants completed the self-rating task a second time after viewing the potential friend's profile information, which included the idiographic *not me* attribute. We were primarily interested in the change in participants' ratings of this attribute from the beginning of the study to after viewing the friend's profile information, as a function of the experience they had imagined.

Procedure

Participants first completed a self-rating task, described above, at a pre-testing session that took place at the beginning of the academic semester, a minimum of two weeks prior to all laboratory sessions. As described above, a single *not me* attribute was idiographically selected for each participant from the self-rating task. Participants were selected to participate in this study only if an idiographic *not me* attribute could be selected.

Upon arriving at the laboratory for their session, participants were randomly assigned to either experience a social exclusion or social acceptance manipulation. Specifically, all participants engaged in a computer simulated ball-toss game, Cyberball (Williams, Cheung, & Choi, 2000). We presented Cyberball as a mental visualization task, as is relatively standard in psychology research (e.g. Williams, 2001). Participants were told the following about the task:

"The first task you will be working on is a computerized ball tossing game. You will be sent to an online chat room environment in which you will be playing a game of catch with two other participants who are in other rooms in Tolentine Hall. You can choose which participant you want to throw the ball to by clicking on their computerized

character, and they can do the same. You will not be able to talk to the other participants."

In reality, participants were not playing with any other individuals and the computer simulated the game action. In the social acceptance condition, participants received the ball a fair one third of the time. In the social exclusion condition, participants received the ball twice, and then the two other "people" in the game excluded the participant from the ball game by tossing the ball only to each other.[2]

After completing the Cyberball task, participants viewed a personality profile that they were told was of another student at the university who was interested in making new friends. Specifically, they were told that the university was piloting a new program to help underclassmen form friendships and that this target individual was a student who wanted to use this new program. After receiving these instructions, participants viewed the profile of the potential friend for 60 s. A male photo was presented to male participants, and a female photo was presented to female participants. Both photos were pre-tested to be equivalently and moderately physically attractive. In addition, the profile included four personality traits that the potential friend had ostensibly self-described as possessing and four corresponding hobbies that s/he ostensibly enjoyed engaging in. Of the four traits/hobbies, one was the idiographic *not me* attribute that participants had generated earlier in the study. The other three traits/hobbies were chosen to be attributes from the beginning of the study that the participants had rated as at least moderately characteristic of them (i.e., rating of 4–7). After viewing the potential friend's profile information, participants complete the self-rating task a second time.

Results and discussion

We tested our central hypothesis that experiencing exclusion, compared to acceptance, would cause people to include attributes of a potential friend's self-concept into their own self-concept on the self-rating task. Thus, we first conducted a 2 Cyberball Condition (accepted vs. excluded) ANCOVA examining participants' explicit ratings of the idiosyncratic *not me* attribute after viewing the target individual's profile, controlling for their pre-testing rating of the attribute.[3,4,5] As predicted, a significant effect of condition emerged, $F(1, 64) = 12.88$, $p < .001$, $\eta_p^2 = .17$, such that participants who experienced exclusion rated the idiosyncratic *not me* attribute as more characteristic of themselves ($M = 2.81$, $SD = 1.20$) than participants who experienced acceptance ($M = 1.86$, $SD = 0.73$). See Table 1 for the results from the full model.

The results of Study 1 demonstrated that, after experiencing social exclusion but not social acceptance, individuals alter their self-views to be more similar to a novel target who was presented as a potential friend. These effects supported our hypothesis that individuals would

---

[2] A manipulation check was conducted on participants following their completion of the Cyberball task. Participants who were rejected in Cyberball felt that the game was significantly less enjoyable and were in a significantly worse mood after playing compared to participants who were accepted in Cyberball.

[3] In all of the studies reported in this manuscript, we conducted parallel analyses examining participants' explicit ratings (Studies 1–4b) to the non-target attributes as a function of the relevant independent variables and all interactions. No significant effects emerged.

[4] In all of the studies reported in this manuscript, we also conducted a series of auxiliary analyses examining whether our key effects would be moderated by participant gender or age. None of our key analyses were moderated by these demographic factors, and neither gender nor age contributed main effects to our models; thus, gender and age are not discussed further.

[5] In all of the studies reported in this manuscript, we also examined whether participants' pre-test/beginning of study ratings of the target attributes would vary by the relevant independent variables and their interactions. In no case were pre-test/beginning of study ratings predicted by these assigned conditions, with the exception of Studies 4a and 4b. In these studies, the riskiness/financial riskiness of the target individual participants viewed was associated with their beginning of study ratings of riskiness/financial riskiness. This association was due to the fact that we purposefully used these ratings to assign participants to see a target individual who was different from them and was an inherent aspect of the studies' designs.

Table 1
Full Model Results for All Studies.

Study	Parameter	Df	F	p-value	η_p^2
1	Intercept	1, 64	9.21	<.001	.18
	Exclusion condition	1, 64	8.58	<.001	.17
	Pre-Testing Attribute Rating	1, 64	20.54	<.001	.33
2	Intercept	1, 147	3.87	.05	.03
	Exclusion condition (RC)	2, 147	21.23	<.001	.23
	Friendship Context (FC)	1, 147	13.87	<.001	.08
	FC × RC	2, 147	10.60	<.001	.13
	Beginning of Study Attribute Rating	1, 147	39.09	<.001	.22
3	Intercept	1, 206	12.95	<.001	.36
	Exclusion condition	2, 206	26.96	<.001	.21
	Friendship Context	2, 206	5.56	.01	.04
	FC × RC	4, 206	6.02	<.001	.11
	Beginning of Study Attribute Rating	1, 206	18.14	<.001	.08
4a	Intercept	2, 239	23.83	<.001	.09
	Riskiness of Target (Risk)	1, 239	5.60	.02	.02
	Friendship Context	1, 239	0.29	.59	.001
	Exclusion condition	2, 239	1.30	.27	.01
	Risk × RC	2, 239	14.20	<.001	.11
	Risk × FC	1, 239	12.17	<.001	.05
	FC × RC	2, 239	2.56	.08	.02
	Risk × FC × RC	2, 239	16.27	<.001	.12
	Beginning of Study Riskiness	1, 239	56.47	<.001	.40
4b	Intercept	2, 133	7.16	.008	.05
	$ Riskiness of Target ($Risk)	1, 133	0.67	.42	.01
	Friendship Context	1, 133	2.09	.15	.02
	Exclusion condition	2, 133	0.62	.54	.01
	$Risk × RC	2, 133	6.07	.003	.08
	$Risk × FC	1, 133	5.19	.02	.04
	FC × RC	2, 133	1.15	.32	.02
	$Risk × FC × RC	2, 133	6.06	.003	.08
	Beginning of Study $ Riskiness	1, 133	9.72	<.001	.42

alter their self-concepts to become more similar to a potential friend when motivated to enhance their feelings of social connection.

Study 2

Study 2 sought to replicate and extend the Study 1 findings by including minor methodological adjustments to directly examine whether the previous results were driven by the desire for affiliation. In Study 1, the target person was always portrayed as someone who could potentially befriend the participants. This did not allow us to determine whether the effects found in Study 1 were limited to novel targets that participants believed could strengthen their feelings of social connection because they were looking to form new friendships. Study 2 directly addressed this issue by experimentally varying whether the novel target was portrayed as someone who might be a potential friend to the participants or as someone who was looking for a new job and did not express any interest in forming new friendships. Thus, Study 2 expanded upon the findings of Study 1 to allow us to examine whether the inclusion of a novel target's attributes into people's self-concepts was due to people's motivation to strengthen their feelings of social connection (e.g., Maner et al., 2007; Slotter & Gardner, 2009; Slotter & Gardner, 2012).

Method

Participants

One hundred and sixty-four people (103 women) participated in the current study using Mechanical Turk. Mechanical Turk is a website where over 100,000 users ("workers") from all over the world complete tens of thousands of tasks daily (Pontin, 2007). Workers browse the tasks, choose which to complete, and are paid after successfully completing them. MTurk samples are slightly more representative of the U.S. population than standard American samples and significantly more diverse than typical American college samples (Buhrmester, Kwang, & Gosling, 2011). Mechanical Turk offers a large, stable, diverse pool of people who

are willing to participate in psychology experiments quickly and for relatively low pay (Mason & Suri, 2012). On average, participants in this study were 36.34 years of age ($SD = 12.87$). Participants were paid $0.50 for their time. Two hundred participants were initially recruited into Study 2, 36 of them were discarded from the study prior to any analyses due to failure to consent, or exiting the study without generating usable data. Additionally, 15 of the 164 participants reported above failed an attention check measure that was included at the end of the study, resulting in 149 participants whose data were included in the Study 2 analyses reported below.[6]

Measures

Self-rating task

Participants completed a self-rating task that was identical to the explicit self-rating task described in Study 1 at the beginning of the study and after viewing the target person's profile information. As in Study 1, an idiosyncratic *not me* attribute was selected for each participant from his or her self-ratings at the beginning of the study. In this study, all participants who began data collection generated a usable *not me* attribute, resulting in the 164 participants reported above.

Procedure

The procedure implemented in Study 2 was identical to the procedure implemented in Study 1, with two exceptions. First, the participants were randomly assigned to view the profile of the target person in one of two different contexts. In the *friendship context*, the research and development cover story was identical to the cover story used in Study 1: the target person was portrayed as someone who was looking to find new friends through the service the researchers were ostensibly developing. In the *non-friendship context*, however, the research and development cover story was altered. Specifically, in the non-friendship context, participants were told that the researchers were developing a new job-searching web-based service similar to Monster.com. The novel target who they viewed was construed as someone looking for a job rather than someone looking for new friends. The profiles themselves were otherwise identical across the two contexts.

Thus, participants completed the self-rating task described above before writing about an exclusion experience, pain experience, or control experience (their most recent trip to the grocery store) for as long as they wanted ($M = 275.80$ s, $SD = 194.52$).[7] They then viewed the profile of a target person, portrayed as a potential friend or not, that contained the idiosyncratic *not me* attribute they generated on the first self-rating task ($M = 37.78$ s, $SD = 15.56$). Finally, they completed the self-rating task a second time.

Results and discussion

We tested our central hypothesis that recalling an exclusion experience, compared to a pain experience or control experience, would cause people to include attributes of a novel target's self-concept into their own self-concept if the novel target was construed as a potential friend. Participants should not include the attributes of a novel target into their own self-concept if the target person is not someone who they might form a friendship with in the future (e.g., Maner et al., 2007; Slotter & Gardner, 2009) We conducted a 3 Exclusion Condition (exclusion, pain, or control) × 2 Friendship Context (non-friendship context vs.

friendship context) ANCOVA examining participants' ratings of the idiosyncratic *not me* attribute after viewing the target individual's profile, controlling for their rating of the attribute at the beginning of the study.

As predicted, we observed a two-way interaction between exclusion condition and friendship context (Fig. 1), $F(2, 147) = 10.60$, $p < .001$, $\eta_p^2 = .13$. See Table 1 for results from the full model. Tests of simple effects revealed a significant effect of exclusion condition among participants who viewed the target individual as a potential friend, $F(2, 147) = 19.70$, $p < .001$, but not among participants who viewed the target individual as someone looking for a job, $F(2, 147) = 2.15$, $p = .09$. Planned contrasts demonstrated that participants in the friendship context condition rated the idiosyncratic *not me* attribute as more characteristic of them after recalling an exclusion ($M = 3.27$, $SD = 1.71$) compared to a physical pain ($M = 1.77$, $SD = 0.69$), $t(147) = 3.85$, $p < .001$, or a control scenario ($M = 1.71$, $SD = 0.69$), $t(147) = 4.17$, $p < .001$. The physical pain and control scenarios did not differ, $t(147) = 0.31$, $p = .75$.

Study 2 offered additional evidence that excluded people expand their self-concepts to gain social acceptance. After recalling a social exclusion experience, compared to recalling a physical pain or recent grocery shopping experience, people's self-concepts became more malleable. This enhanced malleability took the form of people expanding their self-concepts to consider an attribute that had been presented as part of a novel target's self-concept to be more characteristic of them than they had before viewing the target person's profile information. However, this effect only emerged when the target person was portrayed as someone who was looking to form new friendships. Thus, excluded people included novel information into their self-concepts ostensibly in the hopes of restoring their social connection with a new friend.

Study 3

Study 3 expanded upon the findings of the previous studies to further examine the nature of self-concept malleability following social exclusion. Specifically, Studies 1 and 2 did not examine whether or not participants were endorsing new attributes that made them more similar to a potential friend simply due to self-presentation concerns. If participants in these studies believed that a potential, artistically inclined friend might actually find out whether or not they were artistic, for example, participants might be more likely to endorse this attribute as characteristic of them, rather than truly expand their self-concepts to take on artistic as part of their self. Study 3 sought to directly test whether individuals engage in motivated self-expansion due to self-presentation concerns. Specifically, it examined whether individuals
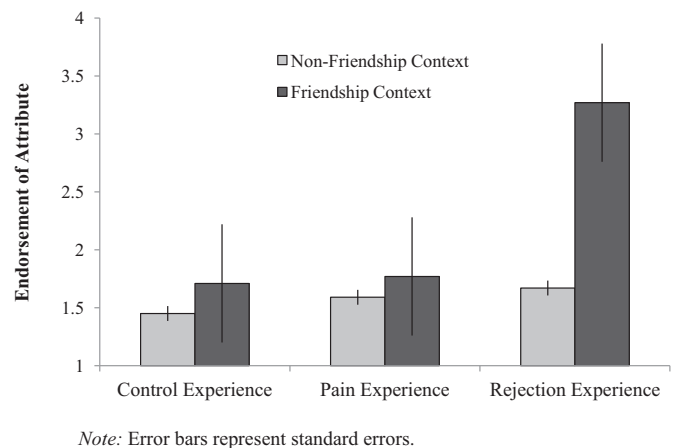

Note: Error bars represent standard errors.

Fig. 1. Study 2: Participants' ratings of the idiosyncratic not me attribute as a function of recalled experience and the context in which the target individual was presented. *Note*: Error bars represent standard errors.

---

[6] Specifically, participants were asked to read a passage asking them to simply type "I read the instructions." into one of three blank fields that followed the instruction passage. However, the fields were all labeled with a question ("What is your favorite season/color/food?"). If the participant answered the question rather than typing in, "I read the instructions," they were considered to have failed the attention check. Due to experimenter error, 67 participants did not complete an attention check, but are still included in the data.

[7] Participants' writing times did not vary across conditions in any of the relevant studies reported in this manuscript.

would self-expand to take on the attributes of a potential friend in private contexts—where they believe no one will view their responses—as well as in public contexts—where they believe others, including the potential friend, may view their responses. If individuals only engage in self-expansion in the public condition, then the effects are driven by self-presentation. If individuals still engage in self-expansion in the private as well as public condition, however, it implies that exclusion spurs socially tuned self-expansion. Specifically, if self-expansion occurs even in the private condition it implies that the self-concepts of excluded individuals are being tuned in ways that prepare them to socially connect with a potential friend, even when no actual interaction is currently taking place.

Method

Participants

Two hundred and twenty six (129 women) participated in the current study using Mechanical Turk. On average, participants were 35.83 years of age ($SD = 13.27$). Participants were paid $0.50 for their time. Three hundred participants were initially recruited to participate in the current study; 74 of them were discarded prior to any analyses due to failure to consent to participate in the study, participation in a previous study in the current manuscript, or exiting the study before generating any usable data. Additionally, 10 of the 226 participants reported above failed the same attention check measure using in Study 2 that was included at the end of the study, resulting in 216 participants whose data were included in the Study 3 analyses reported below.[8]

Measures

Self-rating task

Participants completed a self-rating task that was identical to the explicit self-rating task described in Studies 1 and 2 at the beginning of the study and after viewing the target person's profile information. As in Studies 1 and 2, an idiosyncratic *not me* attribute was selected for each participant from his or her self-ratings at the beginning of the study. Three hundred individuals were initially screened for eligibility in the current study by reporting on the self-rating task at the beginning of the study; however, 74 of them either declined to participate in the study or did not generate a usable idiosyncratic *not me* attribute. These individuals were discarded from the study and no additional data were collected from them. Discarding these participants along with the 10 who failed the manipulation check resulted in the 216 participants reported above.

Procedure

The procedure implemented in Study 3 was identical to the procedure implemented in Study 2, with one exception. Specifically, although the instructions in the *non-friendship context* remained identical to Study 2, we varied the instructions for the *friendship context*. We created two variants of this context. The *public friendship context* variant emphasized that participants' responses would be viewed by the target individual, portrayed as a potential friend, as part of the system's "profile sharing network," thus making their responses public. The *private friendship context* variant emphasized that participants' responses were entirely private and would not be viewed by the target individual, portrayed as a potential friend. By varying the *friendship context* in this way, we hoped to determine whether participants would self-expand to take on characteristics of a potential friend in both public contexts—where the potential friend might see evidence of their self-expansion, which could promote liking via greater
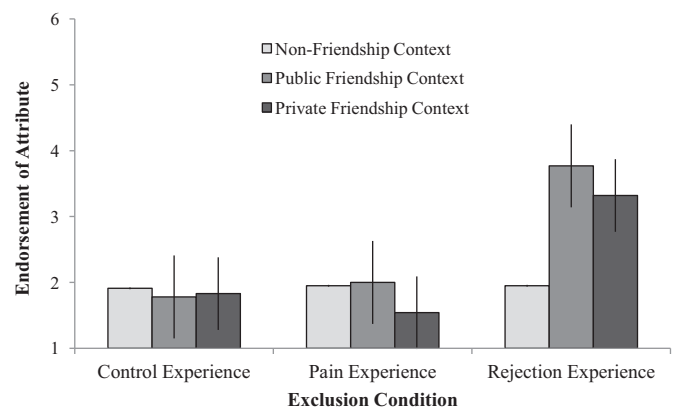
similarity—and in private ones—where the potential friend could not see evidence of participants' self-expansion and thus any self-expansion evidenced could not be attributed to self-presentational efforts.

Results and discussion

We tested our central hypothesis that recalling an exclusion experience, compared to a pain experience or control experience, would cause people to include attributes of a novel target's self-concept into their own self-concept if the novel target was construed as a potential friend. Novel to Study 3, we predicted that participants would include an attribute of someone construed as a potential friend in both public and private contexts. Participants should not include the attributes of a novel target into their own self-concept if the target person is not someone with whom who they might form a future friendship (e.g., Maner et al., 2007; Slotter & Gardner, 2009). We conducted a 3 Exclusion Condition (exclusion, pain, or control) × 3 Friendship Context (non-friendship, public friendship, or private friendship) ANCOVA examining participants' ratings of the idiosyncratic *not me* attribute after viewing the target individual's profile, controlling for their ratings on the attribute at the beginning of the study.

As predicted, we observed a two-way interaction between exclusion condition and friendship context (Fig. 2), $F(4, 206) = 6.02$, $p < .001$, $\eta_p^2 = .11$. See Table 1 for results from the full model. Also as predicted, the simple effect of exclusion condition was significant in the public friendship context, $F(2, 206) = 16.53$, $p < .001$, and in the private friendship context, $F(9, 206) = 20.43$, $p < .001$. However, the effect of exclusion condition was not significant in the non-friendship context, $F(2, 206) = 0.37$, $p = .69$. In other words, the pattern of results fit an exclusion-induced self-expansion hypothesis, in which excluded participants included novel attributes of a potential friend into the self in both the public and private context, rather than merely a self-presentational explanation in which participants would have been expected to present themselves as similar in a public context, but not in a private context.

Planned contrasts revealed that participants in the public friendship context rated the idiosyncratic *not me* attribute as more characteristic of them after recalling an exclusion ($M = 3.77$, $SD = 1.91$) compared to physical pain ($M = 2.00$, $SD = 0.94$), $t(206) = 3.75$, $p < .001$, or a control scenario ($M = 1.78$, $SD = 0.94$), $t(206) = 4.60$, $p < .001$. The physical pain and control scenarios did not differ, $t(206) = 0.76$, $p = .45$. Similarly, participants in the private friendship context also context rated the idiosyncratic *not me* attribute as more characteristic of them after recalling an exclusion ($M = 3.32$, $SD = 1.60$) compared to a physical pain ($M = 1.54$, $SD = 0.58$), $t(206) = 5.52$, $p < .001$, or a control

Note: Error bars represent standard errors.

Fig. 2. Study 3: Participants' explicit ratings of the idiosyncratic not me attribute as a function of recalled experience and private vs. public context. *Note:* Error bars represent standard errors.

As in Study 2, some participants in Study 3 did not complete the attention check due to experimenter error ($n = 104$), but are still included in analyses.

scenario ($M = 1.83$, $SD = 0.87$), $t(206) = 4.02$, $p < .001$. The physical pain and control scenarios did not differ, $t(206) = 0.16$, $p = .87$.

The finding that exclusion-induced self-expansion occurred in both public and private friendship contexts argues against a purely self-presentation explanation. To examine whether the effect of recalling an exclusion experience differed across the public vs. private friendship contexts, we conducted an additional series of planned contrasts examining participants' ratings of the idiosyncratic *not me* attribute after viewing the target individual's profile as a function of friendship context (non-friendship context, public friendship context or private friendship context) among participants who had recalled an exclusion experience. Participants in both the public, $t(206) = 4.06$, $p < .001$, and private friendship contexts, $t(206) = 3.45$, $p < .001$, rated the attribute as more characteristic of themselves than participants in the non-friendship context. However, despite the fact that the overall mean rating for the idiosyncratic attribute was slightly higher in the public vs. private friendship condition, participants in the public friendship context did not rate the attribute as significantly more characteristic of them than participants in the private friendship context did, $t(206) = 0.95$, $p = .35$. This suggests that self-expansion occurred in both the public and private friendship contexts.

These findings extend previous research (e.g. Bernstein et al., 2013; Mead et al., 2011) that shows that exclusion enhances self-presentation in the service of securing affiliation. Not only did participants rate the attribute more highly in the public condition, but also in the private condition. This suggests that cognitive change—exclusion-induced self-malleability—is occurring, something that previous research focusing on behavioral changes does not investigate. These changes likely occur earlier on in the social-cognitive stream than the behavioral changes.

Taken together, the results of Study 3 again replicate our key effect that individuals are willing to alter their self-concepts after experiencing social exclusion in the hopes of regaining social inclusion and acceptance. Specifically, after exclusion, individuals self-expanded to incorporate attributes of a potential friend, but not someone who was not looking for friendship, into their own self-concepts. Importantly, this self-expansion does not appear to be solely attributable to self-presentational efforts. Individuals self-expanded both when they believed their self-ratings would be viewed by the potential friend and when they believed their self-ratings would be kept completely confidential.

Study 4a

Study 4a expanded upon the findings of the previous studies to further examine the extent of self-concept malleability following social exclusion. Studies 1 and 2 examined whether the motivation for social connection predicted people expanding their self-concepts to include new attributes as a function of whether a potential friend possessed the attribute. Study 3 demonstrated that participants self-expanded in both private and public, clarifying that the self-concept expansion was not entirely driven by a self-presentation motive. The central goal of Study 4 was to begin examining whether excluded people would modify their *existing* self-perceptions to be more similar to a potential friend.

Although adding a new attribute into the self vs. changing an existing attribute may seem a subtle distinction—the self-literature is quite clear that motivations to expand vs. modify are very different. Specifically, while people are often eager to *add* new information to the self, and self-expansion and growth serve as a generally positive experience (Aron et al., 2001), people are relatively unwilling to *change* existing information in the self, as it may lead to self-confusion. A wealth of research has demonstrated that, when faced with information that is inconsistent with the way they view themselves, individuals are often highly reticent to change their self concept (e.g., Alicke & Sedikides, 2009; Swann, 1983; see also Tesser, 2000). Self-modification, then, is far less motivationally positive.

The self-change demonstrated in our first three studies was clearly self-expansion, as participants came to adopt self-attributes they did not possess before meeting the potential friend.

In Studies 4a and 4b, we wished to examine whether social exclusion was sufficient to encourage changes to the self-concept, or in other words, self-modification. Thus, in Study 4a, we examined people's perceptions of themselves as risky vs. cautious people. For people who viewed themselves as relatively risky, we showed them a target individual who was cautious, and vice versa, before examining people's risky vs. cautious self-views a second time. These later perceptions were examined as a function of whether participants had viewed a cautious or risky target individual, recalled an exclusion experience, a negative non-social experience, or a control experience, and whether they viewed the novel target individual as a potential friend or not.

Method

Participants

Two hundred and fifty two (137 women) people participated in the current study using Mechanical Turk. On average, participants were 35.07 years of age ($SD = 12.36$). Participants were paid $0.50 for their time. Participants were recruited in two samples of 150. Of the 300 total participants, 48 of them were discarded prior to any analyses due to failure to consent to participate in the study, participation in a previous study in the current manuscript, or exiting the study before generating any usable data.

Measures

Self-rating task

Participants completed a self-rating task, similar to the task described in Studies 1 and 2, at the beginning of the study and after viewing the target person's profile information. Differing from the previous studies, participants were asked to describe themselves with regard to several different personality characteristics. Specifically, participants self-identified on a series of scale items as to how emotionally labile vs. stable they were ($1 = $ *very emotionally labile*, $7 = $ *very emotionally stable*), whether they were an introvert vs. an extravert ($1 = $ *very introverted*, $7 = $ *very extraverted*), whether they took a relaxed, laid back approach to work or a more conscientious approach ($1 = $ *very laid back*, $7 = $ *very conscientious*), and whether they were cautious people or enjoyed taking risks ($1 = $ *very cautious*, $7 = $ *very risky*).

For the current study, how much participants enjoyed risk-taking served as our target attribute for all participants, rather than selecting an idiosyncratic attribute for each. Thus, participants who self-identified that risk-taking was not characteristic of them (a rating of 1–3) on the initial self-rating task at the beginning of the study viewed a risky target individual later in the study. Participants who self-identified that risk-taking was characteristic of them (a rating of 4–7) on the initial self-rating task at the beginning of the study viewed a cautious target individual later in the study. Our assignment to target viewing condition was asymmetric as few participants described themselves as a 7 on riskiness ($n = 5$). This assignment of participants to view particular targets based on their ratings of themselves as relatively more or less risky was employed in order to ensure that participants saw a target individual who was different from them on the dimension of risk-taking, thus giving them the opportunity to alter their self-views to be more similar to the target. In this study, 31 participants did not contribute usable data (i.e., left the measures blank), while 17 participants failed to consent to participate in this study or participated in another study in this manuscript, resulting in the 252 participants reported above.

Procedure

The procedure implemented in Study 4a was identical to the procedure implemented in Study 2 with the exception of the target attribute being used. As in previous studies, participants completed the self-rating task described above. They then wrote about a past exclusion experience, a pain experience, or a control experience (their most recent trip to the grocery store) for as long as they wanted ($M = 247.78$ s, $SD = 232.99$) before viewing the profile of a target person. Participants who viewed a risky target saw the profile of a target person, portrayed as either a potential friend or not in an identical manner to Study 2, who stated that he or she enjoyed taking risks and engaging in adventurous behaviors. Participants who viewed a cautious target saw an identical profile of a target person, again portrayed as either a potential friend or not in an identical manner to Study 2, who stated that he or she was a generally cautious person who liked to "look before leaping." Thus, participants viewed the profile of a target person who was different from them with regard to a preference for risk-taking behaviors for as long as they wanted ($M = 47.17$ s, $SD = 49.16$). Participants then completed the self-rating task a second time.

Results

We tested our central hypothesis that recalling an exclusion experience, compared to a pain experience or control experience, would modify participants' existing perceptions of themselves as risky vs. cautious, but only when the novel target was construed as a potential friend. Such self-concept malleability should not occur when the target person is not someone who they might form a friendship with in the future (e.g., Slotter & Gardner, 2009). We conducted a 2 Riskiness of Target (risky target vs. cautious target) × 3 Exclusion Condition (exclusion, pain, or control) × 2 Friendship Context (non-friendship vs. friendship) between-subjects ANCOVA.
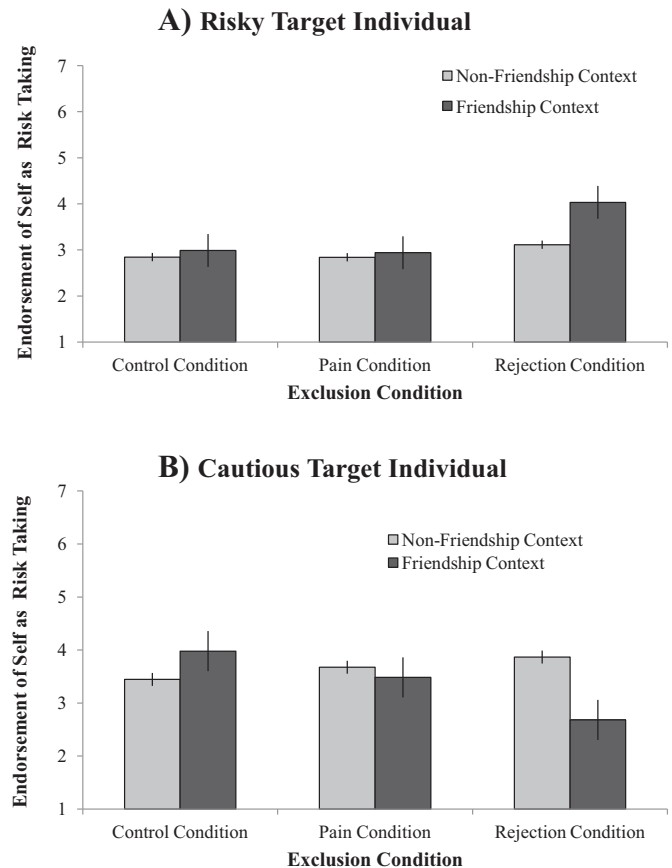
As predicted, the three-way interaction among riskiness of target, exclusion condition, and friendship context emerged (Fig. 3), $F(2, 239) = 16.28$, $p < .001$, $\eta_p^2 = .12$. See Table 1 for results from the full model. To interpret this interaction, we first examined the two-way interactions between exclusion condition and friendship context among participants who viewed a risky vs. cautious target individual. Recall that participants who rated themselves as relatively cautious at the beginning of the study viewed risky targets and participants who rated themselves as relatively risky at the beginning of the study viewed cautious targets.

Participants who viewed a risky target individual

For participants who viewed a risky target individual, the two-way interaction between the type of experience they recalled in the vivid imagery task, and whether the target person was portrayed as a potential friend or not emerged as significant (Fig. 3, Panel A), $F(2, 239) = 10.70$, $p < .001$. Replicating the effects of the previous studies, the simple effect of exclusion condition was significant in the friendship context, $F(2, 239) = 19.52$, $p = .001$, but not in the non-friendship context, $F(2, 239) = 0.94$, $p = .39$. Planned contrasts revealed participants who viewed a risky target as a potential friend rated themselves as more risk-taking after recalling an exclusion ($M = 4.02$, $SD = 1.52$) compared to a physical pain ($M = 2.93$, $SD = 0.92$), $t(239) = 5.72$, $p < .001$, or a control scenario ($M = 2.99$, $SD = 0.56$), $t(239) = 5.57$, $p < .01$. The physical pain and control scenarios did not differ, $t(239) = 0.26$, $p = .80$.

Participants who viewed a cautious target individual

For participants who viewed a cautious target individual, the two-way interaction between the type of experience they recalled in the vivid imagery task, and whether the target person was portrayed as a

A) Risky Target Individual

B) Cautious Target Individual

Note: Error bars represent standard errors.

Fig. 3. Study 4a: Participants' ratings of themselves as risk-taking as a function of target individual's riskiness, recalled experience, and the context in which the target individual was presented. *Note*: Error bars represent standard errors.

potential friend or not emerged as significant (Fig. 3, Panel B), $F(2, 239) = 6.74$, $p < .001$. Replicating the effects of the previous studies, the simple effect of exclusion condition was significant in the friendship context, $F(2, 239) = 13.77$, $p < .001$, but not in the non-friendship context, $F(2, 230) = 1.79$, $p = .17$. Planned contrasts revealed participants who viewed a cautious target as a potential friend rated themselves as less risk-taking after recalling an exclusion ($M = 2.68$, $SD = 1.52$) compared to a physical pain ($M = 3.28$, $SD = 0.56$), $t(239) = -2.92$, $p < .01$, or a control scenario ($M = 3.97$, $SD = 0.56$), $t(239) = -4.91$, $p < .001$. The physical pain and control scenarios did not differ significantly, $t(239) = 1.98$, $p = .07$.

Study 4b

Study 4b replicated and extended the results of Study 4a. First, Study 4b examined participants' self-perceptions of themselves as risk-takers in the financial sphere (financially risky vs. financially cautious), rather than more generally. We altered this aspect of the study because people's perceptions of themselves with regard to financial risk-taking may be more salient to people than their general preferences for risk taking. Second, we included a laboratory-based behavioral measure of financial impulsiveness, which is often related to risk-taking (Xu, Korczykowski, Zhu, & Rao, 2013), in order to assess whether alterations in people's perceptions of themselves as financially risky vs. financially cautious would translate into more or less financially impulsive, and thus potentially risky, behavior.

Method

Participants

One hundred and forty-six people (92 women) participated in the current study using Mechanical Turk. On average, participants were 36.29 years of age ($SD = 14.43$). Participants were paid $0.50 for their time. Two hundred participants were initially recruited to participate in the current study; 52 of them were discarded prior to any analyses due to failure to consent to participate in the study, participation in a previous study in the current manuscript, or exiting the study before generating any usable data.

Measures

Self-rating task

Participants completed a self-rating task, identical to the task described in Study 4, at the beginning of the study and after viewing the target person's profile information. All of the personality characteristics assessed in Study 4a were assessed identically in Study 4b, with the exception of the risk-taking characteristic. Differing from Study 4a, participants were asked to describe themselves with regard to financial impulsiveness and risk-taking rather than general risk-taking ($1 = very$ *financially cautious*, $7 = very$ *financially risky*).

Similar to Study 4a, no participants described themselves as a 7 on financial riskiness ($n = 0$.) Thus, participants were divided into groups based on whether they initially indicated that financial risk taking was not characteristic of them (i.e., financially cautious; a rating of 1–3) or that financial risk taking was characteristic of them (i.e., financially risky; a rating of 4–7). Participants who rated themselves as relatively financially cautious viewed a financially risky target later in the study, whereas participants who rated themselves as relatively financially risky viewed a financially cautious target. In this study, 4 participants did not generate usable data (i.e., left the measures blank), while 48 participants failed to consent to participate in this study or participated in a previous study in this manuscript, resulting in the 146 participants reported above.

Monetary Choice Questionnaire

At the very end of the study, participants completed the Monetary Choice Questionnaire (MCQ; Kirby & Maraković, 1996), in which they made 27 choices between receiving a small reward immediately (e.g., $50 today) or a larger reward in the future (e.g., $100 six months from now). Participants believe that their choices involved real financial outcomes. They were told that, upon completion of the study, all participants would be entered in a drawing. If they won, they would win one of the 27 choices they selected when they completed the MCQ. From these data, we estimated participants' hyperbolic discount rates, or k (Mazur, 1987). Discounting of future rewards is approximated as $f(t) = 1/(1 + kt)$, where $k =$ the hyperbolic discount parameter, and $t =$ time until reward delivery (Mazur, 1987). We averaged participants' k scores across the 27 items. Participants average k scores were highly skewed ($M = 0.03$, $SD = 0.05$, skewness = 2.36), thus we log transformed them ($M = -1.96$, $SD = 0.72$, skewness = $-.03$). Higher log-transformed k values indicated greater financial impulsiveness, or riskiness, on the MCQ. The MCQ was chosen because participants' decisions on the MCQ map onto real-world decisions that people must make regarding how much risk to take with their finances and whether to spend their money immediately or save it for a later gain. Thus, the MCQ serves as a behavioral analog that begins to investigate the implications that self-concept malleability might have for behavior.

Procedure

The self-rating procedure implemented in Study 4b was identical to the procedure implemented in Study 4a with the exception of the target

attribute being used. As in our previous studies, participants completed the self-rating task described above. They then wrote about a past exclusion experience, pain experience, or control experience (their most recent trip to the grocery store) for as long as they wanted ($M = 307.91$ s, $SD = 176.26$) before viewing the profile of a target person. Participants who viewed a financially risky target saw the profile of a target person, portrayed as either a potential friend or not in an identical manner as in Studies 2 and 4a, who stated that he or she enjoyed taking financial risks. Participants who viewed a financially cautious target saw an identical profile of a target person, again portrayed as either a potential friend or not in an identical manner to previous studies, who stated that he or she was a generally financially cautious person. Thus, participants viewed the profile of a target person who was different from them with regard to a preference for financial risk-taking ($M = 25.22$ s, $SD = 15.78$). Participants then completed the self-rating task a second time, followed by the MCQ.

Results and discussion

We first tested our central hypothesis that recalling an exclusion experience, compared to a pain experience or control experience, would cause people to view themselves as more or less financially risky (based on their self-ratings), but only if the novel target was construed as a potential friend. Excluded participants should not change their perceptions of themselves as financially cautious vs. risky if the target person is not someone who they might form a friendship with in the future (e.g., Slotter & Gardner, 2009). Thus, we conducted a 2 Financial Riskiness of Target (risky target vs. cautious target) × 3 Exclusion Condition (exclusion, pain, or control) × 2 Friendship Context (non-friendship vs. friendship) ANCOVA examining participants' ratings of themselves as financial risk-takers at the end of the study, controlling for their ratings at the beginning of the study.

As predicted, the three-way interaction among financial riskiness of target, exclusion condition, and friendship context emerged (Fig. 4), $F(2, 133) = 6.06$, $p < .01$, $\eta_p^2 = .08$. See Table 1 for results from the full model. To interpret this interaction, we first examined the two-way interactions between exclusion condition and friendship context among participants who viewed a financially risky vs. cautious target individual. Recall that participants who rated themselves as relatively financially cautious at the beginning of the study viewed risky targets and participants who rated themselves as relatively financially risky at the beginning of the study viewed cautious targets.

Participants who viewed a financially risky target individual

For participants who viewed a financially risky target individual, the two-way interaction between the type of experience they recalled in the vivid imagery task, and whether the target person was portrayed as a potential friend or not emerged as significant (Fig. 4, Panel A), $F(2, 133) = 3.87$, $p < .01$. Replicating the effects of the previous studies, the simple effect of exclusion condition was significant in the friendship context, $F(2, 133) = 4.58$, $p = .01$, but not in the non-friendship context, $F(2, 133) = 0.10$, $p = .90$. Planned contrasts revealed participants who viewed a financially risky target as a potential friend rated themselves as more financially risk-taking after recalling an exclusion ($M = 3.72$, $SD = 0.94$) compared to a physical pain ($M = 3.04$, $SD = 1.14$), $t(133) = 2.53$, $p < .01$, or a control scenario ($M = 3.05$, $SD = 1.14$), $t(133) = 2.33$, $p = .02$. The physical pain and control scenarios did not differ, $t(133) = 0.04$, $p = .97$.

Participants who viewed a financially cautious target individual

For participants who viewed a financially cautious target individual, the two-way interaction between the type of experience they recalled in the vivid imagery task, and whether the target person was portrayed as a potential friend or not emerged as significant (Fig. 4, Panel B), $F(2,$
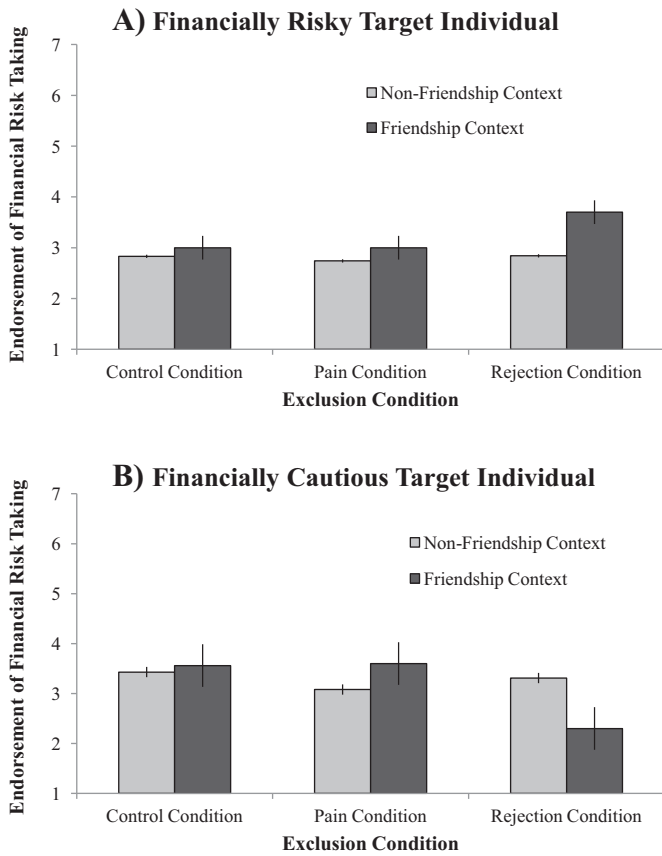
A) Financially Risky Target Individual

B) Financially Cautious Target Individual

Fig. 4. Study 4b: Participants' ratings of themselves as financially risky as a function of target individual's financial riskiness, recalled experience, and the context in which the target individual was presented. *Note*: Error bars represent standard errors.

$133) = 4.12, p = .001$. Replicating the effects of the previous studies, the simple effect of exclusion condition was significant in the friendship context, $F(2, 133) = 9.36, p < .001$, but not in the non-friendship context, $F(2, 133) = 0.65, p = .52$. Planned contrasts revealed participants viewed a financially cautious target as a potential friend rated themselves as less financially risk-taking after recalling an exclusion ($M = 2.33, SD = 0.97$) compared to a physical pain ($M = 3.63$, $SD = 0.89$), $t(133) = -4.69, p < .001$, or a control scenario ($M = 3.56$, $SD = 0.64$), $t(133) = -4.44, p < .001$. The physical pain and control scenarios did not differ, $t(133) = 0.27, p = .79$.

Monetary Choice Questionnaire (MCQ)

We next examined whether participants' ratings of themselves as financially risky would predict their financial risk-taking choices on the MCQ. In this analysis, we conducted a regression predicting participants' log-transformed average k scores, as an index of financial impulsivity, from their self-ratings of themselves as financially risk-taking (e.g., being relatively financially risky vs. cautious) after viewing the target person. As predicted, participants' perceptions of themselves as financially risk-taking after viewing the target person significantly predicted their k score, such that perceiving themselves as more financially risky predicted participants making more financially impulsive choices on the MCQ, $B = .18, t(145) = 2.17, p < .05$.

This effect remained marginally significant when controlling for participants initial perceptions of themselves as financial risk-takers, $B = .22, t(145) = 1.78, p = .07$. These initial perceptions did not significantly predict participants' log-transformed k scores, $B = -.03, t(145) = -0.26, p = .79$, suggesting that participants' altered views of themselves as greater or lesser financial risk-takers after viewing the novel targets was the key factor in predicting their more or less financially impulsive

choices. We conducted an additional analysis predicting log-transformed k scores from our full-model ANOVA including target riskiness, exclusion condition, and friendship context. The three-way interaction between target riskiness, exclusion condition, and friendship context was not significant, $F(2, 134) = .13, p = .87, \eta_p^2 = .002$. No other significant effects emerged (See Table 2), suggesting that individuals' perceptions of themselves were driving their financial decision making, rather than the conditions they were assigned to experience.

Taken together, Studies 4a and 4b provide additional evidence that social exclusion increases self-concept malleability as a means of gaining acceptance. After recalling a time that they felt socially excluded, compared to recalling a time where they felt physical pain or their last trip to the grocery store, people's perceptions of themselves changed to be more generally (Study 4a) or financially (Study 4b) risky or cautious based on whether being risky or cautious had been presented as part of a novel target's self-concept. However, this effect only emerged when the target person was portrayed as someone who was looking to form new friendships, not when the target person was portrayed as someone who was looking for a new job. Thus, people changed their existing perceptions of their self-concepts ostensibly in the hopes of restoring their social connection with a new friend after recalling an exclusion experience.

Additionally, Study 4b provided evidence suggesting that motivated self-concept malleability after an exclusion experience may have implications for behavior. Regardless of how they initially perceived themselves with regard to financial risk-taking, people' perceptions of themselves as financially cautious vs. risky predicted their behavioral choices on an index of actual financial impulsivity. These results should be interpreted with caution, however, as only individuals' perceptions of themselves after experiencing the rejection and profile conditions predicted their risk-taking behavior and not the conditions themselves. Future research would benefit from examining behavior change, in addition to the focus of the current paper, which is self-change.

Meta-analysis of the self-rating task

We performed a meta-analysis to assess the overall significance and effect size of the interaction between exclusion and friend condition on self-reported self-other overlap in Studies 2 through 4b. We did not include Study 1 in the meta-analysis as it did not have a friend vs. non-friend condition and its exclusion manipulation included one instead of two control conditions. First, we converted the p values for the interactions in each study to z scores. The z-standardized significance levels and df for the studies are as follows. Study 2: $z = 3.89$ ($df = 147$); Study 3: $z = 3.65$ ($df = 206$); Study 4a: $z = 1.41$ ($df = 239$); Study 4b: $z = 0.47$ ($df = 133$). The formula for calculating the overall significance of the effect by weighting by each study's df was $((z_{\text{study2}} \times df_{\text{study2}}) + (z_{\text{study3}} \times df_{\text{study3}}) + (z_{\text{study4a}} \times df_{\text{study4a}}) + (z_{\text{study4b}} \times df_{\text{study4b}})) /$ square root $((df_{\text{study2}})^2 + (df_{\text{study3}})^2 + (df_{\text{study4a}})^2 + (df_{\text{study4b}})^2)$ (Rosenthal & Rosnow, 1991). The effect was significant across the four studies ($z = 4.62, p < .0001$). The effect sizes were $\eta_p^2 = .13$ (Study 2), $\eta_p^2 = .11$ (Study 3), $\eta_p^2 = .02$ (Study 4a), $\eta_p^2 = .02$ (Study 4b). Weighting each study by its df, the five studies yielded an overall effect size of $\eta_p^2 = .07$ (a small to medium effect.)

Table 2
The Effects of Financial Riskiness of Target, Exclusion Condition, and Friendship Context on Log-transformed k Scores.

Parameter	Df	F	p-value	η_p^2
Intercept	1, 134	887.3	<.001	.87
Profile Condition	1, 134	3.30	.07	.02
Risk Condition	1, 134	2.31	.13	.02
Essay Condition	2, 134	.18	.84	.003
Profile × Risk	1, 134	.09	.77	.001
Profile × Essay	2, 134	.78	.46	.01
Risk × Essay	2, 134	.15	.86	.002
Profile × Risk × Essay	2, 134	.13	.88	.002

General discussion

People are fundamentally social creatures who long to be accepted by and connected to others. Our desire for social connection is particularly strong following social exclusion. People who have recently been excluded engage in both conscious (e.g. Bernstein et al., 2013; Maner et al., 2007; Mead et al., 2011) and unconscious (e.g. Bernstein et al., 2008; DeWall et al., 2009; Gardner et al., 2000) strategies that might gain them social acceptance (e.g. Maner et al., 2007; Mead et al., 2011). The current research tested whether this desire for renewed affiliation would increase self-concept malleability, an unconscious strategy that leads excluded people to change their self-concepts to adhere to the identity of a potential friend.

Five studies, using multiple measures and methods, consistently supported the self-concept malleability hypothesis. Study 1 showed that social exclusion increases self-concept malleability such that people incorporated novel traits into their self-concept if a potential friend used the traits in a self-description. Study 2 replicated these results and showed that the effect is constrained to potential sources of social reconnection. Excluded people only expanded their views of their self-concepts to be more similar to a potential friend; they did not change their self-concepts to match a person looking for a job.

Studies 3 and 4 tested the limits of self-concept malleability after social exclusion. Study 3 demonstrated that the self-concept expansion was not limited to public contexts. Excluded individuals would self-expand to take on the attributes of a potential friend, regardless of whether or not the friend would be able to see their responses. In Studies 4a and 4b, excluded participants changed their existing self-views as risky or cautious people to be more similar to the self-views of a potential friend. These findings speak to the motivational power of social exclusion. The need to belong is a powerful motivating factor in people's behavior (e.g. Baumeister & Leary, 1995). Our research shows that one implication of the motivational power of the need to belong is that people's self-concepts become more malleable following social exclusion. People who experience exclusion are more likely to incorporate information about a potential friend into their self-concepts in order to be more similar to this new, potential source of social connection. Despite any actual change in their abilities, people who experienced exclusion believed themselves to be more artistic, athletic, or musical simply because a potential friend was particularly artistic, athletic, or musical. Importantly, these changes occurred in both public and private contexts. People's self-concepts changed even if the potential friend would not directly see these changes.

People who experienced exclusion also changed their existing self-views to increase similarity to a potential friend. They believed that they were more financially risky or cautious than they initially claimed to be. Although the participants had no new experiences related to financial risk-taking, they re-interpreted their existing self-views in order to think about themselves in a way that was more beneficial to regaining social acceptance.

Our package of studies shows that the self-malleability that follows social exclusion is part of a larger set of processes that occur when belonging needs are evoked. Thanks to the social monitoring system tuning people's cognitions and behaviors toward signs of potential acceptance, especially following social exclusion, these processes occur even in the absence of a potential friend. Participants modified and expanded their self-concepts after experiencing exclusion when they saw the fake social networking profiles, because that situation activates reconnection processes. Just as seeing food on a television increases a person's hunger, even if they are not able to reach out and grab the food, a social networking website increases an excluded person's desire for reconnection, even though they did not have the opportunity to reconnect with the person in the profile they viewed. The social monitoring system thus detects the potential for social connection and the person engages in explicit and implicit strategies designed to regain this connection. Similarly, just as watching a commercial unrelated to food does not increase a person's hunger, seeing the profiles of others looking for a job did not activate reconnection processes in excluded participants because a person looking for a job has little potential to fulfill the need for reconnection.

Given the adaptive nature of the social monitoring system, we hypothesize that our effects occurred with little deliberation. Indeed, a large body of evidence shows that socially excluded people's attunements to signs of social connection occur early in the social-cognitive stream. Compared to non-excluded people, socially excluded people display attentional and memory biases related to signs of social connection (Bernstein et al., 2008, 2010; DeWall et al., 2009; Gardner et al., 2000, 2005), non-conscious mimicry toward a potential affiliate (Lakin et al., 2008), and greater empathic accuracy (Pickett et al., 2004). Neuro-imaging evidence also shows that following social exclusion, people show greater activation in a brain region associated with mentalizing (i.e., dorsomedial prefrontal cortex) when viewing positive social stimuli compared to negative social stimuli (Powers, Wagner, Norris, & Heatherton, 2013). We also observed highly specific shifts in self-modification—they only occurred on traits that would win socially excluded people social reconnection. The content of the trait did not matter; we observed motivationally relevant self-modification regardless of whether the relevant trait was "artistic" or "cautious." Thus, social exclusion triggers an automatic response to regain social connection, which causes people to modify their identity only when doing so will increase their opportunity for renewed affiliation.

The current studies may add an important caveat to the impression that individuals are both unwilling and unlikely to change their self-views in the absence of irrefutable evidence that change is necessary (Epstein, 1973; vanDellen et al., 2011). Various literatures suggests that the self is constructed in part to maintain consistency. People use cognitive acrobatics used to fight self-inconsistent feedback (Greve & Wentura, 2003). They craft self-verifying environments (Swann, 1990, 2012). And they demonstrate blatant displays of self-congruent symbols (Wicklund & Gollwitzer, 1982). These strategies serve the function of stabilizing or defending the self from change. Given the natural psychological strength of defenses against self-concept change, the ease and speed with which our excluded participants embraced not merely new aspects of the self, but also changed pre-existing self-aspects, is striking. The desire for social connection, in this case, superseded even the formidable pull of self-consistency.

Limitations and future directions

Although the current findings consistently supported our hypotheses, there are several limitations that may serve as avenues for further research. For example, although we predicted that the interaction between target riskiness, exclusion condition, and friendship context in 4b would be significant, this was not the case. Individuals' perceptions of themselves, rather than the conditions they experienced, predicted their financial decision-making. We think this could have occurred for several reasons. First, it could be that the type of behavior (i.e. financial risk-taking) measured is extremely difficult to affect with such manipulations. Second, it could be an order effect; that is, the measurement of behavior occurred after they had affirmed their risk-taking preferences. Finally, it could be because people are unaware of the pattern of responding on our behavioral measure would have been more risky or cautious and thus most likely to increase their potential of being accepted by a potential friend. Future research could examine this possibility, focusing on whether self-concept malleability can lead to behavioral changes and, if so, what kinds.

Next, although these studies demonstrated that excluded people were willing to modify their self-concept to gain acceptance, we do not know how long these effects last. We would predict that, in the current experimental paradigms, the effects would last in the realm of minutes or hours and may disappear entirely after discovering that the potential friend did not exist. However, if people were able to

actually form a friendship with the novel target, the self-concept malleability experienced by our participants might become more permanent. Further research may examine the time-course and decay of self-concept malleability that accompanies exclusion.

If self-concept malleability occurs as a function of the desire to regain social connection, personality traits that are related to the desire for social acceptance or fear of social exclusion, such as rejection sensitivity, self-monitoring, and social anxiety, should moderate this effect. Specifically, we would expect that excluded people high in rejection sensitivity, those who anxiously expect, readily perceive, and overreact to social rejection (Downey & Feldman, 1996) would modify their self-concepts even more to try and regain social acceptance. We might expect people who are high in social anxiety however, those who generally approach social interactions with fear and pessimism (Leary, 1983), to do so less often. These results would correspond with prior work showing that, following exclusion, people who are rejection sensitive engage in more affiliation-seeking behavior (e.g. Romero-Canyas et al., 2010) whereas people who are socially anxious engage in less (e.g. Heimberg, Lebowitz, Hope, & Schneier, 1995; Mallott et al., 2009; Maner et al., 2007). Alternatively, self-malleability, because it focuses on changing the self, may present a relatively prevention focused, risk-free strategy to pursue connection, in which case socially anxious individuals may pursue it more easily than other, potentially riskier affiliative approaches (e.g., Lucas, Knowles, Gardner, Molden, & Jefferis, 2010). Finally, although there is no research as of yet examining the effects of self-monitoring on responses to exclusion, high self-monitors are known to change their behavior because of a strong desire to gain acceptance (e.g. Rose & DeJesus, 2007). We would thus predict that people high in self-monitoring to perform similarly to those high in rejection sensitivity—modifying their self-concepts even more to try and regain social acceptance.

The alterations in self-views following social exclusion could have significant implications for understanding when self-concept malleability benefits vs. harms people. In most existing research, self-concept malleability (typically through the lens of self-expansion) is considered to be beneficial for people. Perceiving greater similarity between the self and a romantic partner via self-change is associated with myriad positive outcomes including increased relationship commitment, satisfaction, and feelings of love (e.g., Aron, 2003; Aron et al., 1995, 2001; Murray, Holmes, Bellavia, Griffin, & Dolderman, 2002).

In the current set of studies, self-concept malleability could be similarly beneficial for people. Becoming more athletic could predict better health outcomes, for example. Similarly, becoming more risky could allow people to experience new and exciting things. Even self-concept malleability in our study predicting financial behavior could be beneficial. Becoming more financially risky if one is typically very financially cautious could allow one to enjoy activities and opportunities that typically would have been passed over due to costs. Similarly, becoming more financially cautious if one is typically financially risky could allow one to be better prepared for future costs and retirement. Indeed, in this study, excluded participants who were financially risky and cautious altered their self-views to be slightly more similar to their potential friend's financial styles, but still rated themselves as primarily financially risky or cautious. Thus, this type of social self-concept malleability appears to create small changes to people's self-concepts, which may be frequently beneficial to them.

But extreme changes to their self-concepts, after exclusion or in other contexts, might not benefit people. For example, being on one extreme end of financial risk-taking—extremely impulsive or extremely frugal with one's spending—could be detrimental to one's overall financial well-being. Being too frugal could lead to a host of missed opportunities and enjoyments and being too impulsive or risky could lead to financial ruin. Across a variety of domains and characteristics, self-concept malleability that alters people's self-views in extreme ways could predict a host of detrimental emotional, cognitive, and behavioral outcomes. Thus, taken to the extreme, self-concept malleability could be harmful. Additionally, the domain in which the person changes could be

harmful as well, even if it is only a moderate change. For example, changing to be more hostile or abusive may be harmful to others. Changing to be more unhealthy may be harmful to the self. Even moderate self-concept change could be harmful for people. Future research would benefit from investigating the extent to which self-concept malleability can be beneficial for people, and when it might become detrimental.

This potentially harmful, extreme self-concept malleability may also be more likely for specific people. For example, in a romantic context, people high in attachment anxiety both express greater desire for closeness with a romantic partner and display elevated levels of self-expansion to be similar to a romantic partner (Slotter & Gardner, 2012). Self-concept malleability for people high in attachment anxiety may carry negative consequences, such as a loss of self-concept clarity if the relationship ends (Slotter & Gardner, 2012; Slotter, Gardner, & Finkel, 2010). In the more general social context, lonely people or others who experience a chronic need to belong may be more vulnerable to extreme self-concept malleability. Given their increased social sensitivity and desire for acceptance (e.g. DeWall et al., 2009; Gardner et al., 2005; Pickett et al., 2004), coupled with their reduced tendencies to engage in direct and outward pursuits of affiliation (e.g., Lucas et al., 2010), lonely people may turn inward, changing the self in order to have a better chance of gaining the acceptance they so crave.

There may also be particular life-stages that make one more vulnerable to self-concept malleability. Young adolescence is often characterized as both a time in which peer relations and acceptance take on extreme importance and a time in which self-perceptions and behaviors are in flux (e.g., Berndt, 1979; Collins & Steinberg, 2006). The heightened peer conformity seen during this time (see Steinberg & Monahan, 2007) is strongly correlated with the desire for peer acceptance (e.g., Santor, Messervey, & Kusumakar, 2000). It may also reflect a period of affiliation-driven self-malleability. Regardless of the antecedents of more extreme forms of self-malleability, such behavior can be potentially detrimental for the person experiencing the excessive self-change or for others around them.

Presumably, in the conflict between self-consistency and social connection, there are numerous moderators that will increase or decrease self-concept malleability. The current studies did not attempt to alter central self-beliefs, for example, and it is likely that in the case of self-schema or central self-views, the desire to verify and stabilize the self would overwhelm any exclusion-induced self-concept malleability. Indeed, in classic studies by Gollwitzer and Wicklund (1985), individuals whose central self-views had been shaken proved willing to risk social disapproval to restore the self. For example, students committed to a specific career focused self-view (e.g. journalist), when told their personality profiles did not match those of successful individuals in their career path later disregarded an attractive interaction partner's wish for a self-deprecating partner, instead risking her dislike to re-affirm about the threatened skills and attributes. Individuals whose self-views were not threatened, in contrast, easily adjusted to the partner's disclosed preferences. Similarly, the robust literature comparing self-enhancement to self-verification has repeatedly demonstrated that the social rewards from interacting with an enhancing but inaccurate partner are sacrificed in the service of self-coherence. When participants have time and cognitive resources, they reluctantly but consistently choose to interact with an unfavorable but verifying partner (Swann, 2012; Swann, Hixon, Stein-Seroussi, & Gilbert, 1990). A recent meta-analysis notes one intriguing constraint on self-verification strivings—when the risk of exclusion in a relationship is higher (e.g., within a dating relationship vs. marriage), self-enhancement strivings appear more powerful than verification. This is certainly consistent with the current findings; when seeking reconnection after exclusion, our participants were willing to sacrifice a bit of self-coherence by changing aspects of themselves, not in the service of self-enhancement per se, but rather in the service of social connection. Clearly, the tension between self-consistency and social connection

will not always favor connection. Future research should explore the conditions under which self-threat leads to the pursuit of self-stability vs. those in which social motives lead to malleability.

In addition to personality and situational differences, cultural differences may represent a fruitful avenue of exploration. For example, given that members of collectivist (vs. individualist) cultures place a larger premium on social harmony (Triandis, 1989), and members of tight (vs. loose) cultures more frequently alter their behavior and self-presentations to follow social norms (Gelfand, 2012), we would clearly expect that members of collectivist/tight cultures (e.g., Japan) would be more likely to show self-malleability in the service of social connection than members of individualist/loose cultures (e.g., New Zealand), but whether members of collectivist/loose (e.g., Brazil) or individualist/tight (e.g., Austria) cultures would fall in the middle or show distinct patterns is an open question.

At a more general level, knowing that a desire for social connection encourages self-malleability may further our understanding of differences in self-stability and consistency across cultures. For example, compared to their North American counterparts, members of East Asian cultures generally score lower on measures of self-coherence (Campbell et al., 1996), show less consistency in self-descriptions across situations (Choi & Choi, 2002; Kanagawa, Cross, & Markus, 2001), and are less likely to engage in self-verification in the face of inconsistent self-feedback (Spencer-Rogers, Boucher, Peng, & Wang, 2009). This greater flexibility in the self has been explored as a potential consequence of dialecticism and thus a general comfort with contradiction (Spencer-Rodgers, Boucher, Mori, Wang, & Peng, 2009). In addition to dialecticism, however, members of East Asian cultures are more relationally interdependent and motivated toward social harmony (e.g., Kanagawa et al., 2001; Markus & Kitayama, 1991). It is possible that the lower coherence and consistency in the East Asian self-concept reflects this increased motivation for connection; by allowing self-definition to be flexible, they can more easily tune the self to others. This would parallel research in other domains showing lower self-consistency for individuals who are higher in relational self-construal (Cross, Gore, & Morris, 2003), communal orientation (Smeesters, Wheeler, & Kay, 2010), and attachment anxiety (Slotter & Gardner, 2012). In short, the cultural differences in self-coherence may reflect an openness for partner induced self-malleability, in the service of maintaining connection and harmony.

Finally, these unconscious, reconnection-driven processes that social exclusion elicits, may be the mechanism behind more downstream processes that occur following exclusion. For example, Mead and colleagues (2011) show that people who are excluded are more willing to make purchases symbolic to group membership, spend money similarly to an interaction partner or peer, and try illegal drugs when doing so boosted their chances of social reconnection. Additional research demonstrates that responses to social exclusion are affected by self-presentational concerns. People who are excluded experience lowered self-esteem, but the effect is not evident when self-presentational concerns are high or when implicit measures are used (Bernstein et al., 2013). Thus, after social exclusion, people typically engage in self-presentation in order to appear more appealing to potential sources of social reconnection. Self-malleability is a reconnection process that occurs much earlier in the social-cognitive stream and may even be the mechanism by which these effects occur. If a person changes their sense of who they are, they may be more likely to buy different products or use illegal drugs. Future research can test whether post-exclusion self-concept change may be the mechanism behind which post-exclusion behavioral change occurs.

Knowing the mechanisms behind when and why individuals alter their self-concepts can help us predict people's behavior in a variety of situations both public (like those in Mead and colleagues' (2011) and Bernstein and colleagues' (2013) papers) and private. The exclusion-induced self-concept malleability explored in the present work demonstrates that people are changing themselves not just externally, but also internally. This mechanism would also predict that people might change relatively unobservable behaviors or attitudes following social exclusion. For example, people who have been recently excluded might change their political or religious beliefs or racial attitudes to match those of a potential friend. These changes may not necessarily be extreme enough to be visible in people's behavior (e.g., becoming relatively less conservative does not mean voting for a different party in an election), but may still be significant (e.g. changing one's opinion on a particular issue or a willingness to become close with a person of an opposite political party.) Understanding the mechanisms behind exclusion-induced changes in behavior can help us to predict further aspects of individuals' lives and selves that social exclusion may influence.

Concluding remarks

Do people make friends by going "outside the self" to appreciate what is in others? Apparently they try. Excluded people open themselves to take on novel aspects of potential friends' personalities, and are willing to modify existing views of their self-concepts to be more similar to potential friends. This self-concept malleability occurs in both public and private contexts. In order to reach out, it seems, socially excluded people are open to changing what's within.

References

Alicke, M., & Sedikides, C. (2009). Self-enhancement and self-protection: What they are and what they do. *European Review of Social Psychology, 20*, 1–48.

Amodio, D.M., & Showers, C.J. (2005). Similarity breeds liking' revisited: The moderating role of commitment. *Journal of Social and Personal Relationships, 22*(6), 817–836.

Anderson, N. H. (1968). Likableness ratings of 555 personality-trait words. *Journal of Personality and Social Psychology, 9*, 272–279.

Aron, A. (2003). Self and close relationships. In M.R. Leary, & J.P. Tangney (Eds.), *Handbook of self and identity* (pp. 442–461). New York, NY: Guilford Press.

Aron, A., Aron, E.N., & Norman, C. (2001). Self-expansion model of motivation and cognition in close relationships and beyond. In G.J.O. Fletcher, & M.S. Clark (Eds.), *Blackwell handbook of social psychology: Interpersonal processes* (pp. 478–502). Maiden, MA: Blackwell Publishing.

Aron, A., Aron, E., Tudor, M., & Nelson, G. (1991). Close relationship as in including other in the self. *Journal of Personality and Social Psychology, 60*, 241–253.

Aron, A., Paris, M., & Aron, E. (1995). Falling in love: Prospective studies of self-concept change. *Journal of Personality and Social Psychology, 69*, 1102–1112.

Baumeister, R.F., DeWall, C.N., Ciarocco, N.J., & Twenge, J.M. (2005). Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology, 88*((4), 589–604.

Baumeister, R.F., & Leary, M.R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 32.

Baumeister, R.F., Twenge, J.M., & Nuss, C.K. (2002). Effects of social exclusion on cognitive processes: Anticipated aloneness reduces intelligent thought. *Journal of Personality and Social Psychology, 83*(4), 817–827.

Berndt, T. (1979). Developmental changes in conformity to peers and parents. *Developmental Psychology, 15*, 608–616.

Bernstein, M.J., Young, S.G., Brown, C.M., Sacco, D.F., & Claypool, H.M. (2008). Adaptive responses to social exclusion: Social rejection improves detection of real and fake smiles. *Psychological Science, 19*, 981–983.

Bernstein, M.J., Young, S.G., Brown, C.M., Sacco, D.F., & Claypool, H.M. (2010). A preference for genuine smiles following social exclusion. *Journal of Experimental Social Psychology, 46*(1), 196–199.

Bernstein, M. J., Claypool, H. M., Young, S. G., Tuscherer, T., Sacco, D. F., & Brown, C. M. (2013). Never let them see you cry: Self-presentation as a moderator of the relationship between exclusion and self-esteem. *Personality and Social Psychology Bulletin, 39*(10), 1293–1305.

Buhrmester, M., Kwang, T., & Gosling, S.D. (2011). Amazon's mechanical turk: A new source of inexpensive, yet high quality, data? *Perspectives on Psychological Science, 6*(1), 3–5.

Byrne, D. (1971). *The attraction paradigm.* New York: Academic Press.

Campbell, J.D., Trapnell, P.D., Heine, S.J., Katz, I.M., Lavallee, L.F., & Lehman, D.R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology, 70*(1), 141–156.

Choi, I., & Choi, Y. (2002). Culture and self-concept flexibility. *Personality and Social Psychology Bulletin, 28*, 1508–1517.

Collins, W. A. & Steinberg, L. (2006). Adolescent development in interpersonal context. In W. Damon & R. M. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed., pp. 1003–1067). New York: Wiley.

Cooley, C.H. (1902). *Human nature and the social order.* New York: Charles Scribner's Sons.

Cross, S.E., Gore, J.S., & Morris, M.L. (2003). The relational-interdependent self-construal, self-concept consistency, and well-being. *Journal of Personality and Social Psychology, 85*(5), 933–944.

DeWall, C.N., Maner, J.K., & Rouby, D.A. (2009). Social exclusion and early-stage interpersonal perception: Selective attention to signs of acceptance. *Journal of Personality and Social Psychology, 96*, 729–741.

DeWall, C.N., & Richman, S.B. (2011). Social exclusion and the desire to reconnect. *Social and Personality Psychology Compass, 5*(11), 919–932.

Downey, G., & Feldman, S. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology, 70*, 1327–1343.

Epstein, S. (1973). The self-concept revisited: Or a theory of a theory. *American Psychologist, 28*(5), 404–416.

Gardner, W.L., Pickett, C.L., & Brewer, M.B. (2000). Social exclusion and selective memory: How the need to belong influences memory for social events. *Personality and Social Psychology Bulletin, 26*, 486–496.

Gardner, W.L., Pickett, C.L., Jefferis, V., & Knowles, M. (2005). On the outside looking in: Loneliness and social monitoring. *Personality and Social Psychology Bulletin, 31*, 1549–1560.

Gelfand, M.J. (2012). Culture's constraints: International differences in the strength of social norms. *Current Directions in Psychological Science, 21*(6), 420–424.

Gollwitzer, P.M., & Wicklund, R.A. (1985). Self-symbolizing and the neglect of others' perspectives. *Journal of Personality and Social Psychology, 48*(3), 702–715.

Greve, W., & Wentura, D. (2003). Immunizing the self: Self-concept stabilitzation through reality-adaptive definitions. *Personality and Social Psychology Bulletin, 29*(1), 39–50.

Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In R. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard* (pp. 87–116). New York: Plenum Press.

Heimberg, R.G., Lebowitz, M.R., Hope, D.A., & Schneier, F.R. (1995). *Social phobia: Diagnosis, assessment, and treatment.* New York: Guilford Press.

James, W. (1890). *The principles of psychology.* Cambridge, MA: Harvard University Press (Reprinted 1983).

Kanagawa, C., Cross, S.E., & Markus, H.R. (2001). "Who am I?" The cultural psychology of the conceptual self. *Personality and Social Psychology Bulletin, 27*(1), 90–103.

Kling, K. C., Ryff, C. D., & Essex, M. J. (1997). Adaptive changes in the self-concept during life transition. *Personality and Social Psychology Bulletin, 23*, 989–998.

Kirby, K.N., & Maraković, N.N. (1996). Delay-discounting probabilistic rewards: Rates decrease as amounts increase. *Psychonomic Bulletin and Review, 3*(1), 100–104.

Lakin, J.L., Chartrand, T.L., & Arkin, R.M. (2008). I am too just like you: Nonconscious mimicry as an automatic behavioral response to social exclusion. *Psychological Science, 19*(8), 816–822.

Leary, M.R. (1983). A brief version of the Fear of Negative Evaluation Scale. *Personality and Social Psychology Bulletin, 9*, 371–376.

Leary, M.R. (2010). Affiliation, acceptance, and belonging: The pursuit of interpersonal connection. In S.T. Fiske, D.T. Gilbert, & L. Gardner (Eds.), *Handbook of social psychology, Vol. 2.* (pp. 864–897). Hoboken, NJ: John Wiley & Sons Inc.

Lucas, G.M., Knowles, M.L., Gardner, W.L., Molden, D.C., & Jefferis, V.E. (2010). Increasing social engagement among lonely individuals: The role of acceptance cues and promotion motivations. *Personality and Social Psychology Bulletin, 36*(10), 1346–1359.

Mallott, M., Maner, J.K., DeWall, C.N., & Schmidt, N.B. (2009). Compensatory deficits following rejection: The role of social anxiety in disrupting affiliative behavior. *Depression and Anxiety, 26*, 438–446.

Maner, J.K., DeWall, C.N., Baumeister, R.F., & Schaller, M. (2007). Does social exclusion motivate withdrawal or reconnection? Resolving the "porcupine problem". *Journal of Personality and Social Psychology, 92*, 42–55.

Markus, H., & Kunda, Z. (1986). Stability and malleability of the self-concept. *Journal of Personality and Social Psychology, 51*(4), 858–866.

Markus, H.R. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35*(2), 63–78.

Markus, H.R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*(2), 224–253.

Markus, H.R., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Annual Review of Psychology, 38*, 299–337.

Mason, W., & Suri, S. (2012). Conducting behavioral research on Amazon's Mechanical Turk. *Behavioral Research Methods, 44*(1), 1–23.

Mazur, J. E. (1987). An adjusting procedure for studying delayed reinforcement. In M. L. Commons, J. E. Mazur, J. A. Nevin,, & H. Rachlin (Eds.), *Quantitative Analyses of Behavior: The Effect of Delay and of Intervening Events on Reinforcement Value, 5.* (pp. 55–73). NJ: Erlbaum/Hillsdale.

Mead, G.H. (1934). *Mind, self, and society from the standpoint of a social behaviorist.* Chicago: University of Chicago Press.

Mead, N. L., Baumeister, R. F., Stillman, T. F., Rawn, C. D., & Vohs, K. D. (2011). Social exclusion causes people to spend and consume strategically in the service of affiliation. *Journal of Consumer Research, 37*, 902–919.

Mead, N. L., Baumeister, R. F., Stillman, T. F., Rawn, C. D., & Vohs, K. D. (2011). Social exclusion causes people to spend and consume strategically in the service of affiliation. *Journal of Consumer Research, 3*(5), 902–919.

Murray, S.L., Holmes, J.G., Bellavia, G., Griffin, D.W., & Dolderman, D. (2002). Kindred spirits? The benefits of egocentrism in close relationships. *Journal of Personality and Social Psychology, 82*, 563–581.

Murray, S.L., Holmes, J.G., & Griffin, D.W. (2000). Self-esteem and the quest for felt security: How perceived regard regulates attachment processes. *Journal of Personality and Social Psychology, 78*(3), 478–498.

Pickett, C., Gardner, W.L., & Knowles, M.L. (2004). Getting a cue: The need to belong influences attention to subtle social cues. *Personality and Social Psychology Bulletin, 30*, 1095–1107.

Pontin, J. (2007, March 25.) Artificial intelligence: With help from the humans. *The New York Times.* Retrieved from http://www.nytimes.com/2007/03/25/business/yourmoney/25Stream.html.

Powers, K.E., Wagner, D.D., Norris, C.J., & Heatherton, T.F. (2013). Socially excluded individuals fail to recruit medial prefrontal cortex for negative social scenes. *Social Cognitive and Affective Neuroscience, 8*, 151–157.

Romero-Canyas, R., Downey, G., Reddy, K.S., Rodriguez, S., Cavanaugh, T.J., & Pelayo, R. (2010). Paying to belong: When does rejection lead to ingratiation? *Journal of Personality and Social Psychology, 99*(5), 802–823.

Rose, P., & DeJesus, S.P. (2007). A model of motivated cognition to account for the link between self-monitoring and materialism. *Psychology & Marketing, 24*(2), 93–115.

Rosenthal, R., & Rosnow, R.L. (1991). *Essentials of behavioral research: Methods and data analysis.* New York: McGraw-Hill.

Santor, D.A., Messervey, D., & Kusumakar, V. (2000). Measuring peer pressure, popularity, and conformity in adolescent boys and girls: Predicting school performance, sexual attitudes, and substance use. *Journal of Youth and Adolescence, 29*, 163–182.

Shrauger, S.J. (1975). Responses to evaluation as a function of initial self-perceptions. *Psychological Bulletin, 82*(4), 581–596.

Slotter, E.B., & Gardner, W.L. (2009). Where do you end and I begin? Evidence for anticipatory, motivated self-other integration between relationship partners. *Journal of Personality and Social Psychology, 96*(6), 1137–1151.

Slotter, E. B., & Gardner, W. L. (2012). How needing you changes me: The influence of attachment anxiety on self-concept malleability in romantic relationships. *Self and Identity, 11*, 386–408.

Slotter, E.B., Gardner, W.L., & Finkel, E.J. (2010). Who am I without you? The influence of romantic breakup on the self-concept. *Personality and Social Psychology Bulletin, 36*(2), 147–160.

Smeesters, D., Wheeler, S.C., & Kay, A.C. (2010). Chapter 5—Indirect prime-to-behavior effects: The role of perceptions of the self, others, and situations in connecting primed constructs to social behavior. *Advances in Experimental Social Psychology, 42*, 259–317.

Spencer-Rodgers, J., Boucher, H.C., Mori, S.C., Wang, L., & Peng, K. (2009). The dialectical self-concept: Contradiction, change, and holism in East Asian cultures. *Personality and Social Psychology Bulletin, 35*(1), 29–44.

Spencer-Rogers, J., Boucher, H.C., Peng, K., & Wang, L. (2009). Cultural differences in self-verification: The role of naïve dialecticism. *Journal of Experimental Social Psychology, 45*(4), 860–866.

Steinberg, L., & Monahan, K.C. (2007). Age differences in resistance to peer influence. *Developmental Psychology, 43*, 1531–1543.

Swann, W.B., Jr. (1983). Self-verification: Bringing social reality into harmony with the self. In J. Suls, & A.G. Greenwald (Eds.), *Psychological perspectives on the self, Vol. 2.* (pp. 33–66). Hillsdale, NJ: Erlbaum.

Swann, W.B. (1990). To be adored or to be known: The interplay of self-enhancement and self-verification. In R.M. Sorrentino, & E.T. Higgins (Eds.), *Handbook of motivation and cognition, Vol. 2.* (pp. 408–448). New York: Guilford Press.

Swann, W.B., Jr. (2012). Self-verification theory. In P. Van Lang, A. Kruglanski, & E.T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 23–42). London: Sage.

Swann, W.B., Hixon, J.G., Stein-Seroussi, A., & Gilbert, D.T. (1990). The fleeting gleam of praise: Cognitive processes underlying behavioral reactions to self-relevant feedback. *Journal of Personality and Social Psychology, 59*(1), 17–26.

Tesser, A. (2000). On the confluence of self-esteem maintenance mechanisms. *Personality and Social Psychology Review, 4*, 290–299.

Triandis, H.C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review, 96*(3), 506–520.

Twenge, J.W., Cantanese, K.R., & Baumeister, R.F. (2002). Social exclusion causes self-defeating behavior. *Journal of Personality and Social Psychology, 83*(3), 606–615.

vanDellen, M.R., Campbell, W.K., Hoyle, R.H., & Bradfield, E.K. (2011). Compensating, resisting, and breaking: A meta-analytic examination of reactions to self-esteem threat. *Personality and Social Psychology Review, 15*(1), 51–74.

Wicklund, R.A., & Gollwitzer, P.M. (1982). *Symbolic self-completion.* Hillsdale, NJ: Erlbaum.

Williams, K.D., Cheung, C.K.T., & Choi, W. (2000). Cyberostracism: effects of being ignored over the Internet. *Journal of Personality and Social Psychology, 79*, 14.

Williams, K. D. (2001). *Ostracism: The power of silence.* New York: Guilford Press.

Xu, S., Korczykowski, M., Zhu, S., & Rao, H. (2013). Risk-taking and impulsive behaviors: A comparative assessment of three tasks. *Social Behavior and Personality, 41*, 477–486.

Zadro, L., Williams, K.D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology, 40*, 7.