



## Can't buy me friendship? Peer rejection and adolescent materialism: Implicit self-esteem as a mediator



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### HIGHLIGHTS

- We found that peer rejection led to adolescent materialism.
- We observed a mediating role of implicit self-esteem in the link between peer rejection and adolescent materialism.
- Priming high implicit self-esteem buffered against the effects of peer rejection and led to decreased adolescent materialism.

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### ABSTRACT

Peer rejection is closely connected to adolescent materialism, and self-esteem is a mediator of this relationship. However, most previous studies have revealed only a correlational link between peer rejection and adolescent materialism, and have emphasized explicit self-esteem but not implicit self-esteem. We conducted three studies to address this weakness. Study 1a and Study 1b verified the causal connection between peer rejection and adolescent materialism by showing that participants who recalled experiences of being rejected by peers reported higher levels of materialism than those who recalled acceptance experiences. In Study 2, participants who were rejected by peers demonstrated lower implicit self-esteem and higher materialism levels than those who were not. This study also found that implicit self-esteem mediated the relationship between peer rejection and adolescent materialism. In Study 3, after experiencing peer rejection, priming high implicit self-esteem induced a decline in the participants' materialism levels, which further validated the mediating role of implicit self-esteem. Overall, these findings suggest that peer rejection boosts adolescent materialism by lowering implicit self-esteem and that materialism is a way to compensate for impaired implicit self-esteem.

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### Introduction

If you have read the best-seller by Harriet Braiker, *Who's Pulling Your Strings?*, you may remember the story of Cara (Braiker, 2004, p. 20): After being rejected by her peer group in a new high school, Cara changed into new, fashionable clothing to keep pace with her schoolmates and threw an extravagant party to treat her "friends." In fact, there are many Caras among adolescents; they attempt to save their broken hearts from peer rejection through the acquisition of material goods such as fashionable clothes, branded sporting goods, and expensive electronic products. Based on recent theorizing on the origins of

materialism (e.g., Ahuvia & Wong, 2002; Chaplin & John, 2010; Kasser, 2002; Roberts, Manolis, & Tanner, 2008), we examine whether peer rejection contributes to adolescents' high regard for material possessions, and we suggest that implicit self-esteem is a mediator of this relationship.

### Peer rejection and adolescent materialism

As noted by Harris (1995), the role of teenagers' peer groups is even more significant than the role of their parents, because acceptance within a peer group can provide opportunities to develop social competence and a sense of belonging that is a fundamental social need for human beings (Baumeister & Leary, 1995). As the antithesis of peer acceptance, peer rejection is a phenomenon in which a child is rejected by his or her peer group. This is an interpersonal stressor for the rejected child (Dodge et al., 2003). Because being rejected signifies being deprived of chances for social interaction with peers and the concomitant benefits of peer acceptance, peer rejection early in life undermines children's

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overall development and has a long-term adverse impact that leads to multiple problems, such as emotional maladjustment (Beeri & Lev-Wiesel, 2012; Zimmer-Gembeck, Hunter, Waters, & Pronk, 2009), poor academic functioning (Schwartz, Gorman, Nakamoto, & Toblin, 2005), aggression, and antisocial behaviors (Dodge et al., 2003). In addition to emotional and behavioral disorders, some recent studies have shed light on the effect of peer rejection upon personal value systems, especially materialism-oriented values (Banerjee & Dittmar, 2008; Chaplin & John, 2010).

Materialism is defined as “the importance a person places on possessions and their acquisition as a necessary or desirable form of conduct to reach desired end states, including happiness” (Richins & Dawson, 1992, p. 307). One of the interesting factors in the origin of materialism is interpersonal insecurity. Being socially excluded increases adults' materialistic values, such as desiring money more strongly (Zhou, Vohs, & Baumeister, 2009) and buying expensive goods to enhance self-appeal (Baumeister, DeWall, Mead, & Vohs, 2008; Mead, Baumeister, Stillman, Rawn, & Vohs, 2011). Sheldon and Kasser (2008, Study 3) reported increased extrinsic aspiration, a materialistic sign, when college students were asked to think of a contingently-accepting person, who would reject certain features of their behaviors and personalities. Correspondingly, priming interpersonal security can directly attenuate adults' materialistic values (Clark et al., 2011). For juveniles, prior studies show that social environments that are not supportive of growth and self-expression, such as high-risk neighborhoods, poor family socioeconomic circumstances, and divorced parents, cause children to value financial success more than affiliation and self-acceptance (Burns, Homel, & Goodnow, 1984; Kasser, Ryan, Zax, & Sameroff, 1995). A positive correlation between peer rejection and adolescents' higher materialism has also been demonstrated in questionnaire-based or interview research (Banerjee & Dittmar, 2008; Isaksen & Roper, 2012; Wooten, 2006).

Peer rejection and adolescent materialism could be linked because material possessions might play a role, in the short-term, in helping youths to avoid or cope with the potential damage resulting from peer rejection. First, adolescents are inclined to judge their peers on the number and quality of their possessions, which has been mentioned in prior literature (Cleveland, Laroche, & Papadopoulos, 2009; Wooten, 2006). Thus, as a result of peer pressure, owning material possessions may be an effective way to temporarily gain peer acceptance and close friendships (Isaksen & Roper, 2012). Mead et al. (2011) provided support for this inclusion motive by demonstrating the greater tendency to buy a product symbolic of group membership after rejection. This partly explains why adolescents are particularly prone to focus on material goods when forming peer groups (Isaksen & Roper, 2012). Second, material possessions provide ephemeral economic safety (Christopher, Drummond, Jones, Marek, & Therriault, 2006; Clark et al., 2011) and self-identity (Chang & Arkin, 2002; Wattanasuwan, 2005) that can restore the psychological security undermined by peer rejection. Third, attachments to material possessions may instantly substitute for personal relationships when individuals are socially rejected (Kleine & Baker, 2004), especially for those with an anxious attachment style (Norris, Lambert, Nathan DeWall, & Fincham, 2012). Finally, material possessions' contribution to short-term mood repair also cannot be ignored (Müller et al., 2012).

Although the impact of peer rejection on adolescent materialism is implied, most previous studies related to this issue have been conducted through questionnaires or other self-report methods. As such, prior research has revealed only a correlation between the variables, rather than demonstrating causality. For example, Banerjee and Dittmar (2008) used a scale to measure youths' materialism levels and sociometric nominations to indicate their peer rejection conditions. The results showed a positive correlation between peer rejection and materialism. Another study interviewed adolescents and found that they considered brand possessions helpful in establishing and maintaining peer groups (Isaksen & Roper, 2012). Indirect interviews have also

revealed that material possessions helped adolescents to avoid ridicules and jokes that were used to ostracize peers (Wooten, 2006). However, empirical research is still needed that examines whether peer rejection is actually a causal factor in increased adolescent materialism. The current study experimentally manipulates the experience of peer rejection under laboratory conditions, by asking participants to recall former experiences or to play a game that can induce feelings of being rejected, and examines subsequent effects on adolescent materialism.

**(H1).** We hypothesize that *peer rejection results in increased adolescent materialism.*

### The role of implicit self-esteem

In addition to the four temporary potential benefits of material possessions mentioned above—facilitation of affiliation, restoration of security, substitution for interpersonal relationships, and mood repair—we argue that materialism might also improve self-esteem. Peer rejection has been found to decrease self-esteem (Damon, Lerner, & Eisenberg, 2006). Once they are rejected by peers, adolescents who are greatly concerned with self-presentation (Banerjee, 2002; Ruble, Boggiano, Feldman, & Loebel, 1980) and peer acceptance (Parker & Gottman, 1989) feel that their self-evaluation is threatened and experience self-doubt. Furthermore, rejected children are more fearful of negative evaluation than those who are not rejected (La Greca & Stone, 1993), and are likely to spend more money to compensate for their impaired self-esteem.

Prior literature has shown that materialism is associated with people's needs or negative self-evaluation. For example, it is positively correlated with belonging motivation (Rose & DeJesus, 2007), self-doubt and uncertainty (Chang & Arkin, 2002), public self-consciousness and social anxiety (Schroeder & Dugal, 1995), interpersonal and personal insecurity (Christopher et al., 2006; Clark et al., 2011), and desires for self-enhancement (Kilbourne & LaForge, 2010). All of these findings imply the possible association between materialism and low self-esteem. Kasser et al. (2014) revealed a relational change between the two over time under a materialistic intervention condition, and more direct evidence has demonstrated their close connection (Chaplin & John, 2005; Isaksen & Roper, 2012; Yurchisin & Johnson, 2004). These results suggest that materialistic values might buffer threatened self-esteem, though this kind of function is likely only a temporary way to cope with suffering and might actually reduce people's well-being in the long term (Burroughs & Rindfleisch, 2002; Kasser et al., 2014, Study 3).

Regarding the role of self-esteem in relation to peer rejection and adolescent materialism, the existing research has made some exploration on its effect. These studies either mainly focused on explicit self-esteem (Chang & Arkin, 2002; Chaplin & John, 2007, 2010; Hanley & Wilhelm, 1992) or took explicit and implicit self-esteem together (Park & John, 2011). However, based on the frequently-claimed disassociation between the two constructs, as well as the possible contamination when measure them sequentially, we argue for the need to first investigate the potential effect of implicit self-esteem. Implicit self-esteem is shown to be disassociated with explicit self-esteem, although debates exist. On one hand, some researchers insist that implicit self-esteem is a form of self-evaluation and self-attitude that occurs when conscious self-reflection is absent (Greenwald & Banaji, 1995; Koole, Dijksterhuis, & Knippenberg, 2001). It differs from explicit self-esteem in its formation, prediction of outcomes, structure, and measurement (Greenwald & Banaji, 1995). On the other hand, some researchers argue that implicit self-esteem only differs from explicit self-esteem by nature of its measurement, pointing to different process, and that this does not imply a separate construct (Fazio & Olson, 2003; Fazio & Towles-Schwen, 1999). Regardless of this debate, many studies have shown that implicit self-esteem is distinct from, and only modestly correlated with, explicit

self-esteem (Bosson, Swann, & Pennebaker, 2000; Dijksterhuis, 2004; Greenwald, Poehlman, Uhlmann, & Banaji, 2009), indicating certain differences between the two constructs. Meanwhile, difficulties related to effects of measurement order were found when including them both in one study (Bosson et al., 2000). Specifically, implicit self-esteem showed higher correlations with explicit self-esteem and also criterion variables when implicit self-esteem was measured after explicit self-esteem, compared to the reversed measurement order. This implies a potential contamination issue related to the effects of both forms of self-esteem when including them in the same study. Even if implicit self-esteem is measured first, we cannot rule out potential influences upon the explicit self-esteem measure. Both the distinctiveness of these two self-esteem constructs and the potential contamination risks call for a special exploration on implicit self-esteem, which this study addresses.

We argue that low implicit self-esteem is associated with, and even drives, materialism. Kasser (2002) suggested that unconscious forces might incubate materialistic values. By analyzing the dreams of people with high materialistic values, Kasser and Kasser (2001) found that these people's "most meaningful or impactful" dreams were concerned with insecurity and self-value. Recently, Park and John (2011) researched implicit self-esteem and suggested that a larger discrepancy between implicit self-esteem and explicit self-esteem was a predictor of high materialism.

The current study focuses on the role of implicit self-esteem, in order to establish a research precedent for its importance in linking peer rejection and materialism. According to previous research, peer rejection leads to low self-evaluation (Abrams, Rutland, & Cameron, 2003; Damon et al., 2006), and materialism can be a temporary means of self-enhancement even though it might have the opposite effect in the long-term (Kasser, 2002; Kilbourne & LaForge, 2010). We suggest that peer rejection leads to low implicit self-esteem, and that low implicit self-esteem leads to high adolescent materialism.

**(H2).** Thus, Hypothesis 2 suggests that *implicit self-esteem plays a mediating role between peer rejection and materialism.*

Furthermore, if the proposition of H2 is valid, it suggests that adolescents become more materialistic partly because of threatened implicit self-esteem after peer rejection. In this case, materialism should be reduced if adolescents' undermined implicit self-esteem is restored. Similar empirical patterns are evident in prior literature. Clark et al. (2011) demonstrated the effect of interpersonal insecurity on people's value of possessions, by showing people's reduced value of possessions after increasing their sense of security. They argued that the negative association between security and valuing of possessions accounted for these results. In this study, we attempt to prime high implicit self-esteem after peer rejection, to test its buffering effect on materialism.

**(H3).** It will more directly support the causal link between implicit self-esteem and adolescent materialism if *priming high implicit self-esteem after peer rejection decreases materialism levels.*

## The current studies

We conducted three studies to establish the propositions that peer rejection results in adolescent materialism, and that implicit self-esteem plays a mediating role between peer rejection and adolescent materialism. We first demonstrated the causal link between peer rejection and adolescent materialism by inducing peer rejection and then measuring materialism levels with a questionnaire (Study 1a) and a collage task (Study 1b). In Study 2, we measured the participants' implicit self-esteem with the Implicit Association Test (IAT), and tested whether implicit self-esteem was a mediator between peer rejection and adolescent materialism. Finally, in Study 3, we sought further

support for the findings of Study 2 by testing whether priming high implicit self-esteem after peer rejection diminished materialism.

## Study 1a

### Method

#### Participants

The participants included 91 adolescents (46 males, 45 females) from a junior high school in China.<sup>3</sup> They were 12 to 16 years old ( $M = 13.59$ ,  $SD = 0.70$ ).

#### Procedure and measures

All the measures and methods originally developed in other languages in this study were translated into Chinese using back-translation procedures, and were checked for validity and reliability.

Prior research has demonstrated the validity of using interpersonal methods for creating rejection (see Maner, DeWall, Baumeister, & Schaller, 2007; Sheldon & Kasser, 2008). In this study, we employed the manipulation of recalling a rejection experience, which has been widely used previously and shown to be effective (Claypool & Bernstein, 2014; Maner et al., 2007; Uskul & Over, 2014). The participants were randomly divided into three groups: the peer rejection group, the peer acceptance group, and the control group. The rejection group wrote about a previously experienced instance of peer rejection, the acceptance group wrote about a past experience in which they felt accepted by their peers, and the control group wrote about a neutral event they experienced during the previous weekend. The participants were instructed that the text should be more than 200 words and should include details and their feelings.

Participants then completed the Material Values Scale for children (6-item version) developed by Oprea and colleagues (Oprea, Buijzen, van Reijmersdal, & Valkenburg, 2011), which includes items such as "Does buying expensive things make you happy?" and "Would you be happier if you owned more clothes that are expensive?" All the items were answered on a four-point scale (1 = no, not at all, 2 = no, not really, 3 = yes, a little, 4 = yes, very much). The Cronbach's  $\alpha$  of the scale was .85 for the present sample. The participants next answered some demographic questions (age, gender, pocket money, and parents' education levels). There was no significant difference in the demographic variables of the three groups.<sup>4</sup> Finally, the participants were thanked with stationery gifts and debriefed.

### Results and discussion

An ANOVA analysis showed a significant difference in the means of materialistic values among the various groups,  $F(2, 88) = 3.72$ ,  $p = .03$ ,  $\eta_p^2 = .08$ , with  $M_{\text{rejection}} = 12.43$  ( $SD = 2.81$ ,  $n = 30$ ),  $M_{\text{acceptance}} = 10.31$  ( $SD = 2.44$ ,  $n = 29$ ), and  $M_{\text{control}} = 11.24$  ( $SD = 3.58$ ,  $n = 32$ ). Importantly, a post hoc test showed that the difference between the rejection condition and the acceptance condition was significant ( $p = .008$ ). However, no significant difference was found between the rejection condition and the control condition ( $p = .12$ ), nor between the control condition and the acceptance condition ( $p = .23$ ). The reason for the former nonsignificant difference might be that rejected adolescents became more sensitive to social judgments, and thus under-reported their materialistic attitudes. To further test the effect of rejection, Study 1b changed the measure of materialism to a collage technique. The technique was regarded as a less provocative method in previous adolescent materialism research (Chaplin & John, 2007; Park & John, 2011), because it avoids

<sup>3</sup> The participants in different studies of this paper came from different schools.

<sup>4</sup> We make sure that there was no significant difference between groups on potential factors that may interfere with the results, including age, gender, pocket money, and parents' education levels.

using direct questions that can elevate social desirability bias (Mick, 1996), and because it includes material goods within a context of other activities, accomplishments, and personal relationships that can promote happiness, which might reduce their attention to social desirability.

### Study 1b

#### Method

##### Participants

The participants included 149 adolescents (78 males, 70 females, and 1 unspecified gender) from China. They were 13 to 15 years old ( $M = 13.89$ ,  $SD = 0.65$ ).

##### Procedure

The participants were divided into three groups randomly as in Study 1a: the peer rejection group, the peer acceptance group, and the control group. There was no significant difference in the demographic variables (age, gender, pocket money, and parents' education levels). The participants wrote about their experiences as in Study 1a, and then they completed a collage task in which they were asked to choose material goods that could make them happy. They were thanked with stationery gifts and debriefed at the end of the task.

##### Measure of materialism

The participants were asked to construct a collage to answer the question "What makes me happy?" (e.g., Chaplin & John, 2007; Park & John, 2011). There were 20 labels on each of the five theme boards. The themes and examples of the labels included hobbies (e.g., "reading," "painting"), people (e.g., "mom," "friends"), material things (e.g., "new clothes," "money"), sports (e.g., "football," "swimming"), and achievements (e.g., "being good at math," "getting good grades"). In the first round, the participants were instructed to select all the items that could make them happy in each theme; in the second round, they were asked to remove one half of the selected items and only retain the more important half. For each respondent, we counted the ratio of "material things" included on the collage in the second round as the measure of materialism, based on the idea that more material goods indicated higher levels of materialism.

#### Results and discussion

Significant differences in materialism among groups were found through the ANOVA analyses,  $F(2, 146) = 3.78$ ,  $p = .03$ ,  $\eta_p^2 = .05$ . A post hoc test showed that the materialism scores in the peer rejection group ( $M = .20$ ,  $SD = .08$ ,  $n = 45$ ) were significantly higher than those of both the peer acceptance group ( $M = .16$ ,  $SD = .08$ ,  $n = 53$ ),  $p = .01$ , and the control group ( $M = .16$ ,  $SD = .08$ ,  $n = 51$ ),  $p = .03$ , but there was no significant difference between the peer acceptance group and the control group ( $p = .79$ ). The results were similar to those of Sheldon and Kasser (2008, Study 3). They measured participants' relative extrinsic versus intrinsic value orientation under different conditions, and found that a non-contingent acceptance group scored significantly higher than both a contingent acceptance group and neutral control group, while the two latter did not differ from each other.

The results supported Hypothesis 1, indicating that peer rejection leads to adolescent materialism, which was consistent with the suggestions of previous studies (Banerjee & Dittmar, 2008; Isaksen & Roper, 2012). In Study 2, we tested Hypothesis 2, which suggested that implicit self-esteem plays a mediating role between peer rejection and adolescent materialism.

### Study 2

#### Method

##### Participants

The participants included 71 adolescents (38 males and 33 females) from junior high schools in China. They were 13 to 16 years old ( $M = 13.73$ ,  $SD = 0.86$ ).

##### Procedure

The participants first completed questions about their personal information (age, gender, pocket money, and parents' education levels) and were randomly divided into two groups: the peer rejection group and the peer acceptance group. Analyses showed no significant difference in the demographic variables between the two groups. The participants completed all of the following tasks on a computer. First, they played a cyberball game (Williams, Cheung, & Choi, 2000), which induced feelings of being rejected (or accepted) by peers. Then, they completed the IAT as an implicit self-esteem measure and the collage task used in Study 1b as a materialism measure. The participants were thanked with stationery gifts and debriefed at the end.

##### Measures

**Peer rejection.** The cyberball game paradigm was employed to induce feelings of being rejected (Williams et al., 2000). It is a predominant paradigm for manipulating unambiguous interpersonal exclusion (Boyes & French, 2009; Critcher & Zayas, 2014; Masten et al., 2009; Sebastian et al., 2011). The participants were told that there would be two other players playing the ball-tossing game with them, and they could see all the throwing and catching processes on the screen. In fact, the other two "players" were generated by the computer. At the beginning of the game, the computer gave the ball to one of the players randomly, and the one who received the ball could throw it to any of the others by clicking the mark that represented that player (the marks were assigned randomly by the computer, and the participants did not know who the other two players were). The participants in the peer rejection group received the ball at the beginning but did not receive it during the rest of the game. The participants in the peer acceptance group had the same opportunity as the other two players to catch the ball. The participants could choose to "quit" at any time and move on to the next part of the study. This quit option was presented after the sixth throw to ensure that the ostracism manipulation was perceived (no one quit in the study).

**Implicit self-esteem.** We used the IAT (Greenwald & Farnham, 2000; Greenwald, McGhee, & Schwartz, 1998) to measure implicit self-esteem because of its superior predictive validity and test-retest reliability (Bosson et al., 2000). It is widely used, and has been shown to be effective in measuring implicit self-esteem, as well as some other fields constructs, such as attitudes, stereotypes, and self-concept (Amodio & Devine, 2006; Asendorpf, Banse, & Mücke, 2002; Greenwald et al., 2002; Nosek, 2005; Rudman, Greenwald, & McGhee, 2001; Schnabel & Asendorpf, 2010; Zeigler-Hill & Jordan, 2010; for a different perspective, see Buhrmester, Blanton, & Swann, 2011). The IAT involves seven blocks in which two keys (E or I) are used to categorize the words on the computer screen as quickly as possible. In blocks 1 and 2, the participants categorized words in terms of self versus other categories, or pleasant versus unpleasant categories. The task of block 5 was similar to that of block 1, but the response keys were exchanged. In blocks 3 and 4, the participants responded to a combined task of blocks 1 and 2; they needed to determine whether a word belonged to "the self or pleasant categories" or "the other or unpleasant categories." In blocks 6 and 7, the combining rule changed, and the participants judged a word as "the self or unpleasant categories" or "the other or pleasant categories." The words were randomly presented

within each block. The IAT hypothesizes that people with higher implicit self-esteem will associate the self with positive words more frequently and will respond more quickly when the two categories are paired. The IAT scores were calculated by a D measure, which in previous research (Greenwald, Nosek, & Banaji, 2003) was shown to be superior to the conventional IAT algorithm and other transformations of calculation (mean, median, log, and reciprocal) when considering advantages on high criterion of implicit–explicit correlation, low correlation with average latency, and other factors. According to Greenwald et al. (2003), the D measure is calculated by dividing the difference between test block means by the standard deviation of all the latencies in the two test blocks. Response times over 10,000 ms were deleted as outliers according to previous research (Greenwald et al., 2003).

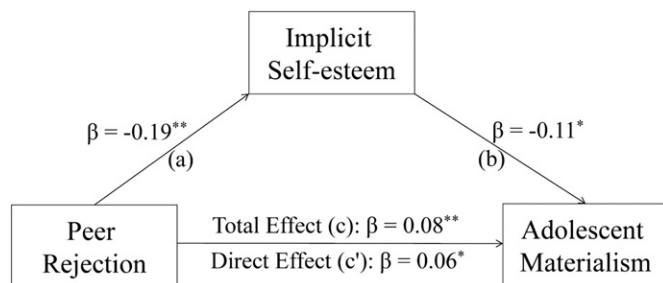
**Materialism.** We measured materialism through the same collage task used in Study 1b.

### Results and discussion

As expected, the mean of implicit self-esteem of the rejection group ( $M = .31, SD = .35, n = 34$ ) was significantly lower than that of the acceptance group ( $M = .70, SD = .49, n = 37$ ),  $t(69) = -3.80, p = .001, d = .71$ , and the materialism level of the peer rejection group ( $M = .25, SD = .24$ ) was higher than that of the peer acceptance group ( $M = .09, SD = .12$ ),  $t(69) = 3.65, p = .001, d = .62$ .

We then coded the peer rejection group as +1 and the peer acceptance group as -1 and further explored the mediating effect of implicit self-esteem through bootstrapping procedures (Preacher & Hayes, 2004). The analyses showed that peer rejection significantly predicted adolescent materialism ( $\beta = 0.08, SE = .02, t = 3.75, p = .0004$ ). The variations in implicit self-esteem predicted by peer rejection (a) ( $\beta = -0.19, SE = .05, t = -3.80, p = .0003$ ) and the variations in adolescent materialism predicted by implicit self-esteem (b) ( $\beta = -0.11, SE = .05, t = -2.07, p = .04$ ) were both significant. After controlling for the effect of implicit self-esteem, the direct effect of peer rejection on adolescent materialism was reduced, but still significant ( $\beta = 0.06, t = 2.63, SE = .02, p = .01$ ). The bootstrapped estimate of the indirect effect was between 0.0046 and 0.0549 with 95% confidence. Because zero was not in the 95% confidence interval, we concluded that the indirect effect was significantly different from zero at  $p < .05$  and that implicit self-esteem partly mediated the effect of peer rejection on adolescent materialism (see Fig. 1).

The results showed that peer rejection increased the adolescents' materialistic tendencies and that this effect was partly mediated by implicit self-esteem, which supported Hypothesis 2. For further exploration, we wanted to directly examine the causal effect of implicit self-esteem on adolescent materialism and verify the mediating effect with more solid evidence. In Study 3, we primed high implicit self-esteem after peer rejection to check whether compensation for implicit self-esteem could buffer the impact of peer rejection on adolescent materialism, as compared to a control condition.



**Fig. 1.** Mediation of the effect of peer rejection on adolescent materialism by implicit self-esteem (Study 2). Note: The direct effect coefficient represents the effect of the independent variable after controlling for the effect of the proposed mediator. \* $p < .05$ ; \*\* $p < .01$ .

### Study 3

#### Method

#### Participants

The participants included 67 adolescents from junior high schools in China (32 males and 35 females). They were 13 to 16 years old ( $M = 13.78, SD = 0.90$ ).

#### Procedure

The participants were randomly divided into two groups: a high implicit self-esteem priming group and a control group. Before the experiment, the participants reported some personal information (age, gender, pocket money, and parents' education levels). First in experiment, the participants played a cyberball game as in Study 2 to induce the feelings of being rejected by peers. Then, the participants all moved to a primed lexical decision task, which has been shown to be effective and valid in enhancing implicit self-esteem (Dijksterhuis, 2004; Park & John, 2011; Riketta & Dauenheimer, 2003). The words in the task varied between the two groups to ensure that high implicit self-esteem was induced only in the experimental group. Finally, both groups completed the collage task used in Study 1b as a measure of materialism. The participants were thanked with stationery gifts and debriefed at the end.

#### Measures

**Peer rejection.** All the participants experienced feelings of being rejected by peers during the same cyberball game used in Study 2.

**High implicit self-esteem priming.** We modified the primed lexical decision task used by Dijksterhuis (2004) to prime high implicit self-esteem. There were 30 trials presented randomly in the task. Each trial started with a fixation row of the Chinese word for "people" presented in the center of the computer screen for 500 ms, and a single word was presented following this fixation row. The participants were asked to decide as quickly as possible whether this subsequent word was a real word (by pressing the "E" key) or not (by pressing the "I" key). There were 15 trials of fake words and 15 trials of real words in total. The real words referred to a positive trait. Before the presentation of the target real words, the pronoun "I" subliminally appeared for 17 ms. After a key was pressed for judging the target words, the next trial began. The only difference between the high self-esteem priming group and the control group was that the subliminal pronoun "I" was replaced by the word "people" in the control group. All the target words were the same between the two groups.

**Materialism.** We measured materialism through the same collage task used in Study 1b.

### Results and discussion

In accordance with Hypothesis 3, the materialism levels of the high implicit self-esteem primed group ( $M = .10, SD = .10, n = 33$ ) were significantly lower than those of the control group ( $M = .23, SD = .20, n = 34$ ),  $t(65) = -3.50, p = .001, d = .61$ , which indicated that priming high implicit self-esteem showed less materialism than the control group after peer rejection.

Just as high explicit self-esteem was shown to be effective in decreasing expressions of materialism (Chaplin & John, 2007), high implicit self-esteem performed the same function in this study. By directly manipulating implicit self-esteem, Study 3 provided further evidence for the mediating role of implicit self-esteem between peer rejection and adolescent materialism.

## General discussion

The present research drew on four independent samples to support our hypotheses. After recalling peer rejection experiences, the participants scored higher on the Material Values Scale (Opree et al., 2011) (Study 1a) or chose more material goods (Study 1b), which revealed materialism as an adverse outcome of peer rejection. With the IAT, we detected the negative effect of peer rejection on implicit self-esteem and the mediating effect of implicit self-esteem between peer rejection and adolescent materialism (Study 2). Moreover, priming high self-esteem reduced the impact of peer rejection on materialism (Study 3), which implies that material possessions might serve as a coping mechanism to manage the pain of debased self-esteem incurred by peer rejection.

These results are supported by several former theories. Leary, Tambor, Terdal, and Downs (1995) proposed the sociometer theory (see also Pickett & Gardner, 2005), arguing that the self-esteem system is an important motivator in helping people to monitor for social exclusion. Upon being rejected, self-esteem decreases and individual tries to enhance inclusion possibilities. Although we didn't provide a context of gaining inclusion through materialism, owning material possessions is a way to improve one's attractiveness. Meanwhile, Williams' (2009) temporal-need threat model also claimed that people's thoughts and behaviors elevate self-esteem along with fortifying belonging after rejection. Thus, it is possible that materialism can serve the functions of both increasing inclusion possibilities and elevating self-esteem, which offers a viable explanation for the results in this study.

Despite a significant difference between the rejection and acceptance groups in Study 1a, we didn't find that between the peer rejection group and the control group. Such a difference was found in Study 1b, however, when we changed the measure of materialism from a written scale measure to the collage technique. It is possible that the divergence of the results stems from the characteristics of the measures. The scale measure is simple and more direct in its expression, exposing the construct of materialism more fully. As adolescents who were rejected by peers become more sensitive to social judgment, they could be influenced by social desirability and under-report their actual materialism. In contrast, the collage technique is a more subtle measure, and situates materialism preferences within a context of many other kinds of options and activities. As such, it might be a more effective method for reflecting the participants' true materialism levels. We employed different measures of adolescent materialism in order to provide solid evidence for the causal relationship between peer rejection and adolescent materialism, and took the collage technique in Study 2 and Study 3 based on its potential for reduced social desirability effects. However, we suggest that further study is needed, in which the two materialism measures should be directly compared.

Regarding the nonsignificant differences between the control group and the acceptance group in both Study 1a and Study 1b, similar results were reported by Sheldon and Kasser (2008, Study 3). In this prior research, a contingent acceptance group did not differ from a control group in extrinsic goal orientation (materialism). It is possible that social acceptance shows no observable effect in reducing materialism when an individual has no motivation for purchasing possessions, especially in a short-term experimental context. However, we argue that peer acceptance brings benefits to adolescents in the long-term, and longitudinal studies should be considered in the future.

In fact, peer rejection has been shown to be harmful and to produce negative behavioral and affective outcomes, such as increased aggression (Dodge et al., 2003), loneliness, and depressed mood (Boivin, Hymel, & Bukowski, 1995). This study indicates the impact of peer rejection on adolescents' personal value systems (fostering materialism-oriented values), which are as salient as other psychological reactions but might be more long-lasting than others. According to John's model of consumer socialization (1999), teenagers are able to fully understand

the value of possessions for social meaning and significance at the reflective stage (approximately 11–16 years old). If they put too much value on material possessions at this stage, then they may form biased personal value systems that create difficulties throughout their lives. This finding is consistent with the conclusion that difficult interpersonal environments contribute to adolescents' valuing of financial success (Burns et al., 1984; Kasser et al., 1995). Likewise, an over-emphasis on materialistic goals might augment negative emotions and depressive symptomatology (Kashdan & Breen, 2007; Kasser & Ryan, 1993), inhibit positive emotion and positive social relations, hinder socialization, inflict losses on subjective well-being, and undermine life satisfaction (Christopher, Lasane, Troisi, & Park, 2007).

This study identifies a causal relationship between peer rejection and adolescent materialism and addresses the limitations of prior correlational research (Banerjee & Dittmar, 2008; Isaksen & Roper, 2012). In addition, we identified the effect of implicit self-esteem as a mechanism between peer rejection and adolescent materialism. Combined with the mechanism of explicit self-esteem (Chaplin & John, 2010), these findings on implicit self-esteem show that rejection or acceptance by peer groups influences not only adolescents' superficial self-evaluations but also their deeper attitudes toward themselves. The mediating role of implicit self-esteem partly explains why adolescents endorse materialistic values after being rejected by peers. It has been shown that material possessions are related to goals of maintaining self-concept (Belk, 1985) and are believed to be instruments for coping with or compensating for doubts about self-worth or competence (Chang & Arkin, 2002; Kasser, 2002). Thus, when a need for self-esteem is spurred by peer rejection, the pursuit of material pleasures can temporarily produce feelings of self-value for adolescents, which can also be inferred from the results of Study 3. However, considering the potential long-term harms of materialism, the loss likely outweighs the gain.

Implicit self-esteem functioned as a partial mediator in this study, which implies the existence of other pathways. Considering the various consequences of peer rejection and the multiple psychological functions of material possessions, including the facilitation of affiliation (Isaksen & Roper, 2012; Mead et al., 2011), the restoration of security (Christopher et al., 2006), and substitutions for interpersonal relationships (Kleine & Baker, 2004), it is reasonable that material possessions might not only increase self-esteem, but also buffer the harm of peer rejection through other paths. These processes might include meeting the need for security, facilitating peer popularity, and improving mood. The process from peer rejection to adolescent materialism can be very complex and requires further exploration.

Another point that deserves particular attention involves the independent effect of implicit self-esteem on materialism in our research. Despite abundant evidence of the negative relationship between explicit self-esteem and materialism, Park and John (2011) argued that neither explicit self-esteem nor implicit self-esteem alone could predict materialism. Rather, larger discrepancies between explicit self-esteem and implicit self-esteem gave rise to higher materialism levels. However, in our research, implicit self-esteem appeared to play a role on its own. From the dual attitudes perspective, implicit self-esteem and explicit self-esteem are two independent constructs. Thus, it is reasonable that they might show separate impacts in this process. From other perspectives that regard implicit self-esteem only as different in terms of measurement (e.g., Fazio & Towles-Schwen, 1999), the differences in how the two forms of self-esteem are assessed should be explored further. After comparing several kinds of implicit and explicit measures of self-esteem, Bosson et al. (2000) suggested that implicit measures of self-esteem were more likely to be predictive of criterion variables if they were assessed after explicit self-esteem, as this order of presentation also increased their correlation. The order effect may imply an overlap between implicit and explicit self-esteem, and the overlapping aspect of the constructs might be more easily activated if the explicit measures are administered first. Despite this ongoing debate, it is an important direction for future study to clarify the mechanism by

including both forms of self-esteem in a single model on the premise of avoiding possible contamination when including them both. Focusing on implicit self-esteem only helps to establish evidence for its importance, but also misses the opportunity to compare effect sizes and potential clues on how intervention aimed at reducing materialism should target specific aspects of self-esteem. Meanwhile, potential order effects when measuring the two types of self-esteem and the compatibility concern with the target variables should be taken in to account. In spite of this, the current research is helpful because it suggests, for the first time, that implicit self-esteem on its own might exert effects on materialism after peer rejection. Further, considering the nuances in materialism results between Study 1a and Study 1b in our research, various methods for assessing materialism should be compared in order to reach a solid conclusion.

Our studies make both theoretical and methodical contributions. Theoretically, we have included implicit self-esteem in materialism research and identified its mediating role between peer rejection and materialism. After peer rejection, improving implicit self-esteem decreases adolescents' materialism levels, which implies that materialism may temporarily provide self-enhancement. Another theoretical contribution of this research is that it extends past work on peer rejection and materialism that was conducted primarily in individualistic cultural contexts (e.g., US and UK) to a collectivistic society (China), a culture background that is typically characterized by less materialistic (Clarke & Micken, 2002; Schaefer, Hermans, & Parker, 2004). On the methodological level, the causal relationship between peer rejection and adolescent materialism was clarified through manipulating the rejection experience. Multiple methods increased the strength and reliability of this conclusion.

The study implies several important directions for future research. First, longitudinal work would be valuable. Based on the present research, longitudinal studies could demonstrate the long-term influence of peer rejection on materialistic values and consumer behaviors. Second, an educational intervention with high ecological validity should be performed to target adolescent materialism. Because children easily prioritize material goods when faced with difficulties in peer relationships, educational interventions may enable children to properly resolve the emotional and behavioral consequences of peer rejection and avoid immersing themselves in material possessions. This might help them build a positive and healthy value system. Kasser et al. (2014) have conducted related research in this area and found promising results. Specifically, their longitudinal research found that an intervention group declined in materialism when compared to a control group, and this effect was even maintained for months after the intervention. Furthermore, work is needed to explore the validity and difference of various measures on materialism, especially regarding differences between direct and indirect assessments. Such research could examine whether they reflect the same structure of materialism, and why they sometimes show slight divergence in results (as in this study). To this end, the current study offers a valuable foundation for future work.

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