Strong Outside, Barren Inside, Adorned with Wealth? The Relationship Between Heterogeneous High Self-Esteem and Materialism in Self-Threat Contexts

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Abstract

Through three studies, we investigated the relationship between heterogeneous high self-esteem and materialism, and whether this relationship would change under self-threat conditions. Study 1 employed a questionnaire method to examine the correlational relationship between heterogeneous high self-esteem and materialism, finding that individuals with secure high self-esteem exhibited significantly lower materialism than those with fragile high self-esteem; Study 2 manipulated self-threat by having individuals with different types of high self-esteem compare themselves with same-sex targets of high or low attractiveness, then measured explicit materialism, revealing that under attractiveness threat conditions, secure high self-esteem individuals' explicit materialism was significantly lower than that of fragile high self-esteem individuals; Study 3 manipulated self-threat through fictitious intelligence test ranking feedback, then measured implicit materialism. The results indicated that under intelligence threat conditions, secure high self-esteem individuals' implicit materialism was significantly lower than that of fragile high self-esteem individuals. Based on these findings, it can be concluded that heterogeneous high self-esteem serves not only as an entry point for unraveling the paradoxical relationship between high self-esteem and materialism, but also as a breakthrough for dismantling the positive relationship between self-threat and materialism.

Full Text

Outwardly Strong but Inwardly Weak? The Relationship Between Heterogeneous High Self-Esteem and Materialism in Self-Threat Situations

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Abstract

This study investigated the relationship between heterogeneous high self-esteem and materialism through three separate studies, examining whether this relationship changes under conditions of self-threat. Study 1 employed a questionnaire method to explore the correlation between heterogeneous high self-esteem and materialism, revealing that individuals with secure high self-esteem exhibited significantly lower materialism than those with fragile high self-esteem. Study 2 manipulated self-threat by requiring participants with different types of high self-esteem to compare themselves with same-sex individuals of high versus low attractiveness, then measured explicit materialism. The results showed that under attractiveness threat, explicit materialism was significantly lower among secure high self-esteem individuals compared to their fragile high self-esteem counterparts. Study 3 manipulated self-threat through fabricated feedback on an intelligence test ranking, then measured implicit materialism. The findings demonstrated that under intelligence threat, implicit materialism was significantly lower among secure high self-esteem individuals than among fragile high self-esteem individuals. These results suggest that heterogeneous high self-esteem not only provides a key to resolving the contradictory relationship between high self-esteem and materialism but also represents a breakthrough point for dismantling the positive association between self-threat and materialism.

Keywords: heterogeneous high self-esteem; materialism; self-threat

Introduction

During the 2010 broadcast of the popular TV show *If You Are the One*, a female contestant' s statement— "I' d rather cry in a BMW than laugh on a bicycle" —instantly captured national attention. This real-life phenomenon of "money worship" exemplifies materialism, a value system in which individuals view material wealth possession as central to life, a source of happiness, and a standard for success (Richins & Dawson, 1992). As a core individual variable, self-esteem has received widespread attention regarding its relationship with materialism. Most research indicates that individuals with low self-esteem are more susceptible to materialism, while those with high self-esteem can resist it

(Noguti & Bokeyar, 2014; Lee & Shrum, 2012; Li et al., 2018). However, the relationship between self-esteem and materialism may be more complex than existing research suggests.

From a theoretical perspective, the heterogeneity of high self-esteem hypothesis posits that high self-esteem is not homogeneous but can be divided into secure high self-esteem and fragile high self-esteem. Although both types maintain positive self-evaluations, fragile high self-esteem is characterized by fragile, unstable, and defensive positive self-views that are highly sensitive to negative evaluative information that may threaten self-esteem. In contrast, secure high self-esteem is well-structured and less susceptible to external information (Tian & Zhang, 2006). Therefore, simply examining the relationship between self-esteem and materialism from a high-low perspective is inappropriate. Empirically, a few studies have found that high self-esteem individuals exhibit higher materialism levels, contradicting most existing research (Chan, 2013; Park & John, 2011; Jiang et al., 2015). In comparison, findings showing that low self-esteem individuals have high materialism levels are more consistent. Consequently, the relationship between high self-esteem and materialism warrants further investigation.

Moreover, the impact of high self-esteem on materialism is closely related to whether individuals are in self-threat situations. According to symbolic self-completion theory, individuals in self-threat situations can use material symbols with specific functions to compensate for self-deficiencies. Under high self-threat, people are more likely to exhibit high materialism levels (Sivanathan & Pettit, 2010; Maria, 2018). However, most existing research treats high self-esteem individuals as a homogeneous group, ignoring individual differences. Yet different types of heterogeneous high self-esteem individuals have varying sensitivities to self-threat, and their materialism differences may become more pronounced under self-threat situations. In light of this, this study aims to explore the relationship between heterogeneous high self-esteem and materialism and examine whether this relationship changes under self-threat conditions.

2.1 Secure and Fragile High Self-Esteem

Many researchers consider self-esteem central to psychological health. However, some studies indicate that high self-esteem does not always yield as many benefits as assumed. For example, some high self-esteem individuals exhibit poor self-regulation, stronger status consumption tendencies, and even violent behavior when facing self-threat (Baumeister et al., 1996), suggesting that some high self-esteem individuals, like their low self-esteem counterparts, have stronger self-protection and self-enhancement tendencies. Why are high self-esteem individuals' behaviors inconsistent? As research has progressed, many researchers have realized that simply categorizing self-esteem as high or low is overly simplistic because high self-esteem is internally heterogeneous, leading to behavioral complexity.

Based on the heterogeneity perspective of high self-esteem, researchers have classified and described it from different angles. According to whether public expression and internal concealment of self-esteem are consistent, Schneider and Turkat (1975) distinguished between defensive high self-esteem and genuine high self-esteem. Based on whether self-esteem fluctuates over time and across situations, Kernis et al. (1993) divided high self-esteem into stable and unstable categories. Depending on whether self-esteem depends on specific outcomes, Deci and Ryan (1995) differentiated between contingent and true high self-esteem. Kernis (2003) collectively termed unstable, contingent, and defensive high self-esteem as fragile high self-esteem, with the corresponding categories termed secure high self-esteem. Although both categories of heterogeneous high self-esteem involve positive self-feelings, the former' s positive self-view is fragile, easily challenged, and difficult to defend against self-threat, leading to various protective and self-enhancing behaviors to maintain high self-esteem. In contrast, the latter' s positive self-view is based on self-acceptance and does not require extensive external validation.

Currently, researchers typically distinguish heterogeneous high self-esteem in two ways: first, by using the Rosenberg Self-Esteem Scale and the Marlowe-Crowne Social Desirability Scale, where high scores on both indicate defensive high self-esteem (fragile high self-esteem), and high self-esteem scores with low social desirability scores indicate genuine high self-esteem (secure high self-esteem) (Kernis, 2003; Zhang et al., 2005); second, by combining explicit and implicit self-esteem, where high explicit self-esteem with low implicit self-esteem indicates defensive high self-esteem (fragile high self-esteem), and high scores on both indicate secure high self-esteem (Jordan et al., 2003; Jordan et al., 2005). Existing research indicates that both methods effectively distinguish heterogeneous high self-esteem (Lambird & Mann, 2006).

2.2 Materialism

Richins and Dawson (1992) defined materialism as a value system emphasizing the importance of material possessions to individuals. In an era where basic needs are largely met, people' s love for material wealth stems not only from its practical function in satisfying life necessities but also from its symbolic function in demonstrating self-worth. Consequently, Shrum et al. (2013) redefined materialism from a psychological function perspective as the extent to which individuals attempt to construct and maintain the self through acquiring and using products, services, experiences, or relationships with idealized symbolic value. Based on this, they proposed the functional theory of materialism, suggesting that materialism serves the function of constructing and maintaining self-identity.

Chang and Arkin (2002) found that uncertainty about one' s abilities and sense of worth leads to materialism. Sivanathan and Pettit (2010) showed that participants who received failure feedback on an intelligence test were willing to pay higher prices for status-symbol products, indicating that material goods

have compensatory and enhancing functions after self-threat. Similarly, Li et al. (2018) primed subjective social class and found that lower-class individuals had higher materialism levels, with self-esteem mediating this relationship, suggesting that materialism compensates for low self-esteem among lower-class individuals. In summary, the primary cause of materialism appears to be individuals' uncertainty about their self-worth, leading them to use materialism to enhance self-worth and reduce self-uncertainty.

2.3 The Relationship Between Heterogeneous High Self-Esteem and Materialism

Many children experience declining self-esteem during adolescence, prompting them to focus on material products as a self-enhancement tool. When they receive positive feedback from peers, their self-esteem levels increase and materialism scores decrease, indicating that high self-esteem is a key factor in reducing materialism (Chaplin & John, 2007). Jiang and Zhang et al. (2015) reached similar conclusions from the implicit self-esteem perspective, finding that increasing participants' implicit self-esteem through subliminal implicit experiments significantly reduced their materialism levels. Conversely, another perspective suggests that high self-esteem is a primary driver of high materialism because high self-esteem individuals highly identify with their abilities and worth, believing they deserve more material wealth (Chan, 2013). When facing threats, high self-esteem individuals have stronger self-enhancement motivation and compensatory behavior, thus pursuing high materialism to demonstrate the self (Jiang et al., 2015).

However, the positive and negative relationships between high self-esteem and materialism may coexist based on different categories within high self-esteem. Self-determination theory states that secure high self-esteem forms from satisfaction of three basic psychological needs—autonomy, competence, and relatedness —which provide fertile ground for secure high self-esteem growth. However, when satisfaction of these basic needs is frustrated, individuals pursue high self-esteem as a substitute need (Kernis, 2000; Heppner & Kernis, 2011). In other words, when basic needs cannot be met, individuals compensate by striving to prove self-worth, resulting in fragile high self-esteem. Similarly, unlike traditional perspectives that view materialism as a personal trait, value, or extrinsic goal, the functional perspective of materialism theory also emphasizes the self-needs and motives behind goals, values, and behaviors, treating materialism as an expressive tool for psychological needs and a means to construct and maintain self-identity (Shrum et al., 2013; Zheng et al., 2017). Self-esteem, as one of the identity motives, drives individuals to pursue material wealth to construct and maintain identity (Vignoles et al., 2006). For fragile high self-esteem individuals, this self-construction need is particularly strong, leading to higher materialism pursuit.

In summary, from a needs and motives perspective, this study proposes that for secure high self-esteem individuals, the basic resources of autonomy, compe-

tence, and relatedness they possess are sufficient to build psychological capital, their inner world is relatively rich, and they do not need external material goods to compensate for psychological scarcity. For fragile high self-esteem individuals, whose basic needs are unmet, they can only achieve high self-esteem status through various advantageous means. Material products and services with symbolic value meet these needs and help prove their worth and gain others' recognition. Based on this, we propose:

H1: Heterogeneous high self-esteem is significantly correlated with materialism, with fragile high self-esteem individuals showing higher materialism than secure high self-esteem individuals.

2.4 The Moderating Role of Self-Threat in the Relationship Between Heterogeneous High Self-Esteem and Materialism

Self-threat is an important reason for the emergence of materialism. According to the Compensatory Consumer Behavior Model, discrepancies between the ideal and actual self caused by threat situations motivate individuals to reduce these discrepancies, triggering a series of consumption behaviors (Mandel et al., 2017). For example, under self-threat, people prefer to purchase products related to the threatened aspect of self (Cutright et al., 2011). Even when facing social exclusion threats, individuals prefer to buy products symbolizing relationships and belonging rather than relatively practical products (Mead et al., 2010). More direct evidence shows that when self is threatened, people exhibit strong materialistic tendencies (Chang & Arkin, 2002).

However, not everyone shows high materialism when facing threats. Research indicates that because materialism powerfully functions to protect and enhance self-esteem, low self-esteem individuals often use materialism as a tool to compensate for low self-esteem and construct the self, showing strong materialistic tendencies when facing self-threat (Sivanathan & Pettit, 2010). In contrast, secure and fragile high self-esteem have fundamentally different connotations and extensions, and these two types of high self-esteem individuals respond differently to self-threat. Smallets et al. (2016) found that defensive high self-esteem individuals view others' success as a threat to positive self-views, while genuine high self-esteem individuals see others' success as a model for self-improvement. Fragile high self-esteem individuals are more sensitive to negative evaluative information that may threaten self-esteem (Borton et al., 2016) and have stronger social identity needs, more defensive tendencies, and more self-enhancement behaviors under self-threat (Roberts et al., 2014; Vrabel et al., 2018). In short, when facing self-threat, the two types of high self-esteem individuals have different threat sensitivities, varying motivations to construct and repair self-identity, and consequently different strategies for coping with self-threat. Secure high self-esteem individuals have relatively stable self-identity that is not easily challenged, tend to seek self-improvement, and can better resist materialism influence. Fragile high self-esteem individuals have unmet basic needs and fragile self-identity, showing more defensive tendencies and self-enhancement behaviors

(Shrum et al., 2013). According to the functional perspective of materialism theory, materialism is one specific reaction to threats to self-identity. Maria (2018) found that participants who engaged in self-improvement under self-threat had lower materialism levels, while those who did not engage in self-improvement had higher materialism because materialism can also be used for self-enhancement. Thus, when facing self-threat, fragile high self-esteem individuals exhibit more materialism than secure high self-esteem individuals. In non-threat situations, since both have relatively positive self-feelings, fragile high self-esteem individuals lack the motivation for identity construction or repair, and materialism does not become their response for maintaining self-identity, so the materialism difference between them is not significant. In summary, we propose that self-threat moderates the relationship between heterogeneous high self-esteem and materialism:

H2: Under self-threat, fragile high self-esteem individuals show significantly higher materialism than secure high self-esteem individuals; under no self-threat, the materialism difference between fragile and secure high self-esteem individuals is not significant.

To test these hypotheses, Study 1 used questionnaires to explore the relationship between heterogeneous high self-esteem and materialism, focusing on materialism level differences between fragile and secure high self-esteem individuals. Study 2 measured explicit materialism using the Material Values Scale and activated attractiveness threat to examine whether attractiveness threat in self-threat moderates the effect of heterogeneous high self-esteem on materialism. Study 3 used the Implicit Association Test to measure implicit materialism and activated intelligence threat—a more prominent threat in self-threat—to further examine the relationship between heterogeneous high self-esteem, self-threat, and materialism.

Study 1: The Relationship Between Heterogeneous High Self-Esteem and Materialism

3.1.1 Participants

Four hundred twenty college students from four universities in Lanzhou participated, with 405 valid questionnaires returned (96% valid response rate). The sample included 175 males (43%) and 230 females (57%), with a mean age of 21.69 years (SD = 1.80). Post-hoc statistical power analysis using G*Power 3.1 (Faul et al., 2009) indicated that the current sample (N = 405, f = 0.25, α = 0.05) achieved a statistical power of 0.996. According to previous research, power > 0.80 is acceptable (Maxwell, 2004), indicating that the sample size was adequate.

3.1.2 Measures

(1) Self-Esteem Scale. The Rosenberg Self-Esteem Scale (SES; Rosenberg, 1965) measured individuals' positive or negative self-evaluations. The 10-item scale used a 4-point rating (1 = strongly disagree, 4 = strongly agree), with higher scores indicating higher self-esteem. Cronbach' s α was 0.84 in this study.

(2) Social Desirability Scale. The Marlowe-Crowne Social Desirability Scale (MCSD; Wang et al., 1993) measured individuals' tendency to respond according to social expectations. The 33-item scale required true/false responses scored as 0 and 1. One item inconsistent with Chinese context was removed, leaving 32 items (Zhang et al., 2005). Higher scores indicated greater social desirability. Cronbach' s α was 0.71.

(3) Materialism. The Chinese revised version of the Material Values Scale (MVS; Li & Guo, 2009) measured the importance individuals attach to material wealth, including three dimensions: centrality, happiness, and success. The 13-item scale used a 5-point rating (1 = strongly disagree, 5 = strongly agree), with higher scores indicating higher materialism. Cronbach' s α was 0.77.

3.2 Common Method Bias Control

This study used questionnaires to collect data. To reduce potential common method bias, several control methods were employed: (1) using scales with high reliability to reduce systematic error from measurement itself; (2) anonymous questionnaire completion; (3) including reverse-scored items; and (4) recruiting participants from different universities to increase spatial diversity. Harman' s single-factor test was conducted for common method bias analysis. Results showed 17 factors with eigenvalues greater than 1 in the unrotated solution, with the first factor explaining 10.57% of variance, below the 40% critical standard. Thus, no significant common method bias existed.

3.3 Results

3.3.1 Classification of Heterogeneous High Self-Esteem First, based on Rosenberg Self-Esteem Scale scores, participants scoring below 30 were classified as low self-esteem (n = 181), and those scoring 30 or above as high self-esteem (n = 224) (Yang & Zhang, 2011). Then, among high self-esteem participants, those scoring above the mean on the Social Desirability Scale were classified as fragile high self-esteem (n = 109), and those below the mean as secure high self-esteem (n = 115) (Zhang et al., 2005).

3.3.2 Correlation Analysis of Social Desirability, Global Self-Esteem, and Materialism Correlation analysis revealed a significant negative correlation between global self-esteem and materialism ($r = -0.14$, $p < 0.01$), indicating that higher self-esteem was associated with lower materialism. Among high self-esteem participants, social desirability scores showed a significant positive

correlation with materialism ($r = 0.27$, $p < 0.01$), indicating that higher social desirability (i.e., fragile high self-esteem) was associated with higher materialism.

3.3.3 Materialism Differences Among Low Self-Esteem, Secure High Self-Esteem, and Fragile High Self-Esteem ANOVA comparing materialism scores among low self-esteem, secure high self-esteem, and fragile high self-esteem individuals revealed significant differences, $F(2, 402) = 8.42$, $p < 0.001$, $^2p = 0.04$, 90% CI [0.013, 0.073]. Post-hoc comparisons showed that fragile high self-esteem individuals' materialism ($M = 38.02$, $SD = 7.44$) did not significantly differ from low self-esteem individuals ($M = 37.46$, $SD = 6.77$), $MD = 0.55$, $p = 0.818$. However, fragile high self-esteem individuals' materialism was significantly higher than secure high self-esteem individuals ($M = 34.45$, $SD = 7.65$), $MD = 3.57$, $p = 0.001$. Low self-esteem individuals also scored significantly higher than secure high self-esteem individuals, $MD = 3.01$, $p = 0.002$.

3.4 Discussion

This study found a negative correlation between global self-esteem and materialism, consistent with most previous research (Chang & Arkin, 2002; Noguti & Bokeyar, 2014; Jiang et al., 2015; Lee & Shrum, 2012; Chaplin & John, 2007; Liang et al., 2016; Li et al., 2018). However, the significant positive correlation between social desirability scores and materialism indicates that higher fragile high self-esteem is associated with higher materialism, contradicting the negative correlation between global self-esteem and materialism. This demonstrates the necessity of more detailed classification of high self-esteem. Data analysis showed that both fragile high self-esteem and low self-esteem individuals had higher materialism than secure high self-esteem individuals, supporting H1. This not only explains why some studies found opposite results (i.e., high self-esteem associated with high materialism; Chan, 2013; Park & John, 2011; Jiang et al., 2015) but also provides evidence that fragile high self-esteem is essentially low self-esteem (Tian & Zhang, 2006).

Although correlation analysis indicated that higher fragile high self-esteem is associated with higher materialism, considering this was a survey study, Study 2 employed experimental methods to further examine the causal relationship between heterogeneous high self-esteem and materialism. Additionally, while previous research found that people are more likely to exhibit high materialism to restore self-worth under self-threat (Sivanathan & Pettit, 2010; Maria, 2018), it remains unknown whether this result changes across different types of high self-esteem. Therefore, Study 2 introduced the self-threat variable to examine materialism differences between heterogeneous high self-esteem individuals under self-threat conditions.

Study 2: The Moderating Role of Attractiveness Threat in the Relationship Between Heterogeneous High Self-Esteem and Explicit Materialism

4.1.1 Participants

Questionnaires were distributed to 344 college students from two universities in Lanzhou. Two hundred ten students scoring 30 or above on the Self-Esteem Scale were selected as high self-esteem participants for subsequent experiments (Yang & Zhang, 2011). Data were excluded for participants who either guessed the experimental purpose or left large sections blank or showed repetitive responses. The final valid sample comprised 188 participants (89 males, 47%; 99 females, 53%) with a mean age of 22.44 years (SD = 1.87). Post-hoc power analysis using G*Power 3.1 (Faul et al., 2009) indicated that the current sample (N = 188, f = 0.4, $\alpha = 0.05$) achieved a statistical power of 0.998, which exceeds the acceptable threshold of 0.80 (Maxwell, 2004), confirming adequate sample size.

4.1.2 Experimental Design

The experiment used a 2 (heterogeneous high self-esteem: secure vs. fragile) × 2 (attractiveness threat: threat activation vs. no threat) between-subjects design. The dependent variable was participants' scores on the materialism scale.

4.1.3 Measures

(1) Self-Esteem Scale and Social Desirability Scale. Same as Study 1. Cronbach' s α was 0.75 for the Rosenberg Self-Esteem Scale and 0.72 for the Social Desirability Scale.

(2) Attractiveness Threat Priming. Following existing procedures (Qiu, 2010), attractiveness threat was activated through two self-selected images. Experimental group images were pretested as most attractive, with threat perception enhanced by evaluating the images and comparing them to oneself. Control group images were pretested as least attractive, generating no threat.

(3) Explicit Materialism. Same as Study 1. Cronbach' s α was 0.80.

(4) Emotion Scale. The revised Positive and Negative Affect Scale (PANAS; Huang et al., 2003) was used. The 20-item scale includes positive and negative emotion dimensions. Since self-threat typically elicits emotional changes (Zhang & Tian, 2005), emotion was included as a manipulation check and control variable. Both dimensions contain 10 items rated on a 5-point scale (1 = very slightly, 5 = extremely). Cronbach' s α was 0.86 for positive emotion and 0.89 for negative emotion.

4.1.4 Procedure

(1) Pretest. The pretest aimed to select experimental materials for manipulating participants' attractiveness threat. Thirty female (Mage = 24.03, SD = 2.17) and 32 male (Mage = 24.13, SD = 3.40) participants evaluated 17 female and 17 male images of similar age found online. Female and male participants rated same-sex images on 9-point attractiveness scales (1 = not at all attractive, 5 = moderately attractive, 9 = very attractive). Afterward, participants viewed the same images again and compared each person' s attractiveness to their own using a 7-point scale (1 = far below my attractiveness, 4 = same as my attractiveness, 7 = far above my attractiveness). The highest-rated female and male images were selected for the attractiveness threat group, and the lowest-rated images for the control group.

Analysis confirmed that female experimental images (M = 8.23, SD = 0.97) were significantly more attractive than control images (M = 2.10, SD = 1.03), t(58) = 23.74, p < 0.001, Cohen' s d = 6.13, 95% CI [4.902, 7.346]. Female experimental comparisons (M = 6.43, SD = 1.22) were significantly higher than control comparisons (M = 2.03, SD = 0.89), t(58) = 15.94, p < 0.001, Cohen' s d = 4.12, 95% CI [4.115, 5.012]. Male experimental images (M = 5.97, SD = 2.18) were significantly more attractive than control images (M = 2.47, SD = 1.87), t(62) = 6.90, p < 0.001, Cohen' s d = 1.72, 95% CI [1.144, 2.296]. Male experimental comparisons (M = 5.66, SD = 1.54) were significantly higher than control comparisons (M = 2.09, SD = 0.89), t(50) = 11.34, p < 0.001, Cohen' s d = 2.84, 95% CI [2.131, 3.528]. These results confirmed that selected experimental and control images differed in attractiveness.

(2) Formal Experiment. Participants first completed the Self-Esteem Scale and Social Desirability Scale to screen for heterogeneous high self-esteem participants. They were then randomly assigned to the attractiveness threat or control group. The threat group viewed the highest-rated same-sex image, while the control group viewed the lowest-rated same-sex image, rating attractiveness on a 7-point scale (1 = not at all attractive, 7 = very attractive). Participants then compared their attractiveness to the image person (1 = far below my attractiveness, 7 = far above my attractiveness). To check manipulation effectiveness, participants completed one self-rating item (rating their current attractiveness) and five items from the Body Self-Esteem Scale: (1) "Compared to most people, I have an attractive figure and appearance" ; (2) "I find it difficult to maintain an attractive body and appearance"; (3) "Others always envy me because I have outstanding body and appearance" ; (4) "Compared to most people, my figure and appearance are not the best"; and (5) "I feel very confident about my figure and appearance." Items 2 and 4 were reverse-scored. The scale used a 5-point Likert format (1 = completely disagree, 5 = completely agree). Finally, participants completed the Emotion Scale and Explicit Materialism Scale. Afterward, the experimenter explained the true purpose to eliminate any psychological or behavioral effects of the manipulation and provided gifts as appreciation.

4.2 Results

4.2.1 Classification of Heterogeneous High Self-Esteem Based on Rosenberg Self-Esteem Scale scores, participants scoring 30 or above were classified as high self-esteem (Yang & Zhang, 2011). Among these, those scoring above the mean on the Social Desirability Scale were classified as fragile high self-esteem (n = 111), and those below the mean as secure high self-esteem (n = 77).

4.2.2 Manipulation Check Manipulation effectiveness was tested. Independent samples t-tests showed that attractiveness ratings for experimental group images (M = 5.16, SD = 1.63) were significantly higher than control group ratings (M = 2.89, SD = 1.58), t(186) = 9.69, p < 0.001, Cohen' s d = 1.41, 95% CI [1.092, 1.732]. Experimental group comparison scores (M = 5.43, SD = 1.21) were significantly higher than control group scores (M = 2.80, SD = 1.39), t(186) = 13.83, p < 0.001, Cohen' s d = 2.02, 95% CI [1.664, 2.367], confirming that selected images differed in attractiveness. Additionally, experimental group self-attractiveness ratings (M = 18.34, SD = 3.70) were significantly lower than control group ratings (M = 19.44, SD = 2.96), t(176) = -2.24, p = 0.027, Cohen' s d = 0.33, 95% CI [0.038, 0.614], indicating successful attractiveness threat priming.

4.2.3 Relationships Among Heterogeneous High Self-Esteem, Attractiveness Threat, and Emotions A between-subjects ANOVA with positive emotion as the dependent variable and heterogeneous high self-esteem and attractiveness threat as independent variables revealed a significant main effect of heterogeneous high self-esteem, with secure high self-esteem individuals showing higher positive emotion (M = 34.45, SE = 0.53) than fragile high self-esteem individuals (M = 32.42, SE = 0.64), F(1, 184) = 5.95, p = 0.016, ^{2}p = 0.031, 90% CI [0.003, 0.083]. The main effect of attractiveness threat was not significant, F(1, 184) = 0.68, p = 0.412, nor was the interaction, F(1, 184) = 0.57, p = 0.452.

A similar ANOVA with negative emotion as the dependent variable showed a significant main effect of heterogeneous high self-esteem, with fragile high self-esteem individuals showing higher negative emotion (M = 23.49, SE = 0.74) than secure high self-esteem individuals (M = 20.71, SE = 0.62), F(1, 184) = 8.31, p = 0.004, ^{2}p = 0.043, 90% CI [0.008, 0.100]. The main effect of attractiveness threat was not significant, F(1, 184) = 0.16, p = 0.693, nor was the interaction, F(1, 184) = 0.05, p = 0.824. These results indicate that secure high self-esteem individuals had significantly higher positive emotion and lower negative emotion than fragile high self-esteem individuals across both threat and no-threat conditions, so emotion was controlled as a covariate in subsequent analyses.

4.2.4 Moderating Effect of Attractiveness Threat on the Relationship Between Heterogeneous High Self-Esteem and Explicit Materialism
A between-subjects ANCOVA with explicit materialism as the dependent variable, heterogeneous high self-esteem and attractiveness threat as independent variables, and emotion as a covariate showed (see Figure 1 [Figure 1: see original paper]) a significant main effect of heterogeneous high self-esteem, $F(1, 182) = 8.94$, $p = 0.003$, $^{2}p = 0.047$, 90% CI [0.009, 0.105]. Secure high self-esteem individuals' materialism ($M = 36.88$, $SE = 0.67$) was significantly lower than fragile high self-esteem individuals' ($M = 40.08$, $SE = 0.81$). The main effect of attractiveness threat was not significant, $F(1, 182) = 1.15$, $p = 0.29$. The interaction between heterogeneous high self-esteem and attractiveness threat was significant, $F(1, 182) = 4.29$, $p = 0.040$, $^{2} = 0.023$, 90% CI [0.001, 0.070]. Simple effects analysis revealed that under attractiveness threat ($F(1, 182) = 13.06$, $p < 0.001$, $^{2}p = 0.067$, 90% CI [0.020, 0.132]), fragile high self-esteem individuals' materialism ($M = 40.59$, $SE = 1.12$) was significantly higher than secure high self-esteem individuals' ($M = 35.27$, $SE = 0.95$). Under no attractiveness threat ($F(1, 182) = 0.52$, $p = 0.473$), fragile high self-esteem individuals' materialism ($M = 39.56$, $SE = 1.14$) did not significantly differ from secure high self-esteem individuals' ($M = 38.49$, $SE = 0.93$).

Figure 1. The moderating effect of attractiveness threat on the relationship between heterogeneous high self-esteem and explicit materialism (error bars represent 95% confidence intervals, ***$p < 0.001$)

4.3 Discussion

Both Study 2 and Study 1 found that fragile high self-esteem individuals held more materialistic values than secure high self-esteem individuals, supporting H1. This explains why previous research showed inconsistent relationships between high self-esteem and materialism: when high self-esteem samples contained more secure high self-esteem individuals, the relationship was positive; conversely, when samples contained more fragile high self-esteem individuals, the relationship became negative. Thus, using only the Rosenberg Self-Esteem Scale to distinguish high and low self-esteem is inadequate; distinguishing high self-esteem types requires additional measures like the Social Desirability Scale or Implicit Self-Esteem Association Test.

Additionally, data showed that when attractiveness threat was activated, fragile high self-esteem individuals' explicit materialism was significantly higher than secure high self-esteem individuals' ; under no attractiveness threat, the difference was not significant, supporting H2. Notably, this study examined only explicit materialism. Given the stigma associated with materialism, self-reported materialism scores may be biased by social desirability. Therefore, Study 3 used implicit measurement of materialism to further explore these relationships. Moreover, while Studies 1 and 2 distinguished heterogeneous high self-esteem using self-esteem and social desirability scales, Study 3 would employ the more commonly used method of combining explicit and implicit self-esteem to en-

hance methodological diversity. Finally, Study 3 would use the more potent intelligence threat to strengthen self-threat activation (Tian & Zhang, 2005) and verify Study 2' s results.

Study 3: The Moderating Role of Intelligence Threat in the Relationship Between Heterogeneous High Self-Esteem and Implicit Materialism

5.1.1 Participants

Questionnaires were distributed to 358 college students from two universities in Lanzhou. High self-esteem participants scoring 30 or above on the Self-Esteem Scale were selected, though some were lost to follow-up, leaving 121 high self-esteem participants for the subsequent experiment. Data were excluded for participants who: (1) guessed the experimental purpose; (2) left large sections blank or showed repetitive responses; or (3) had error rates exceeding 20% on either the Implicit Self-Esteem Association Test or Implicit Materialism Association Test. The final valid sample comprised 109 participants (51 males, 47%; 58 females, 53%) with a mean age of 22.50 years (SD = 3.28). Post-hoc power analysis using G*Power 3.1 (Faul et al., 2009) indicated that the current sample (N = 121, f = 0.40, $\alpha = 0.05$) achieved a statistical power of 0.965, exceeding the acceptable threshold of 0.80 (Maxwell, 2004), confirming adequate sample size.

5.1.2 Experimental Design

The experiment used a 2 (heterogeneous high self-esteem: secure vs. fragile) × 2 (intelligence threat: threat activation vs. no threat) between-subjects design. The dependent variable was participants' implicit materialism scores.

5.1.3 Measures

(1) Self-Esteem Scale. Same as Study 1. Cronbach' s α was 0.71.

(2) Implicit Self-Esteem. The Implicit Association Test (IAT; Cai, 2003; Greenwald et al., 2003) measured implicit self-esteem. The IAT uses response latency to measure automatic associations between concept words (self-words: me, my, myself; other-words: he, his, others) and attribute words (positive: honest, proud; negative: guilty, despicable). The procedure included seven blocks: Block 1 (20 trials) classified concept words; Block 2 (20 trials) classified attribute words; Block 3 (20 trials) and Block 4 (40 trials) were compatible combined tasks (self + positive); Block 5 (20 trials) reversed concept word classification; and Block 6 (20 trials) and Block 7 (40 trials) were incompatible combined tasks (self + negative). To counterbalance order effects, half the participants completed compatible tasks first, then incompatible tasks.

(3) Intelligence Threat Priming. Following existing procedures (Zhang &

Tian, 2005), 13 difficult and 13 easy items from the Raven's Standard Progressive Matrices (Chinese Urban Version) served as experimental and control materials.

(4) Emotion Scale. Same as Study 2. Cronbach' s α was 0.88 for positive emotion and 0.90 for negative emotion.

(5) Implicit Materialism. The Single Category Implicit Association Test (SC-IAT) measured implicit materialism (Wang et al., 2016). Target words were materialism-related: money, luxury, luxury car, nouveau riche, brand name, wealth. Attribute words were positive (realistic, happy, hardworking, happy, generous, comfortable) and negative (money-worshipping, wasteful, greedy, vain, luxurious, profit-driven). The experiment included four blocks: Blocks 1 and 3 (24 trials each) were practice; Blocks 2 and 4 (72 trials each) were formal tests, with Block 2 as the compatible task (materialism + positive) and Block 4 as the incompatible task (materialism + negative). To prevent response bias, target:positive:negative word frequencies were 1:1:2 in the compatible task and 1:2:1 in the incompatible task. Immediate feedback ($\surd$ or $\times$) was provided for 200 ms (Ai & Zuo, 2011). The D-score served as the implicit materialism index, with positive values indicating positive attitudes toward materialism (Karpinski & Steinman, 2006).

5.1.4 Procedure

Phase 1: Participants completed the Rosenberg Self-Esteem Scale. Those scoring 30 or above were selected as high self-esteem participants and contacted for subsequent IAT testing. Participants with high explicit but low implicit self-esteem were classified as fragile high self-esteem, while those with high explicit and high implicit self-esteem were classified as secure high self-esteem (Jordan et al., 2003).

Phase 2: Participants were randomly assigned to intelligence threat or control groups. The threat group completed 13 difficult Raven' s items (E12, C10, E11, E10, D10, D9, E7, D11, E8, C12, D12, B12, E9), with 23 seconds per item (total 299 seconds, approximately 5 minutes). To enhance failure priming, threat group participants were told: "This test is a valid assessment of college students' intelligence and ability, predictive of future achievement and happiness. Each correct answer scores 1 point; more correct answers indicate higher intelligence and ability, leading to greater future achievement and happiness." Computer-controlled presentation and timing provided feedback on each item' s correctness (two correct, others incorrect), with final feedback: "You completed 13 items, with 2 correct, scoring 2 points. Unfortunately, you did not pass this test." The control group completed 13 easy items (A1, C3, A2, A3, B3, B4, A6, B2, A5, C1, B1, D1, A4) with all-correct feedback: "You completed 13 items, all correct, scoring 13 points. Congratulations, you passed this test."

Phase 3: To check manipulation effectiveness, participants completed the Emotion Scale after the intelligence test, followed by the implicit materialism association test. After completion, the experimenter explained the true purpose

to eliminate any psychological or behavioral effects of the manipulation and provided gifts and appreciation.

5.1.5 Data Processing

For the implicit self-esteem IAT, data with error rates exceeding 20% or response times exceeding 10,000 ms were excluded. Mean response times for compatible and incompatible trials were calculated for each participant. The D-score was computed as the difference between compatible and incompatible means divided by the pooled standard deviation of all response times (Greenwald et al., 2003). For the implicit materialism SC-IAT, data with error rates exceeding 20% or response times below 350 ms or above 10,000 ms were excluded. Error response times were corrected by replacing them with the mean correct response time for that block plus 400 ms. The D-score was calculated as the difference between compatible and incompatible task means divided by the standard deviation of all correct response times (Karpinski & Steinman, 2006).

5.2 Results

5.2.1 Classification of Heterogeneous High Self-Esteem Based on explicit self-esteem scores, participants scoring 30 or above were selected as high self-esteem participants for the implicit self-esteem IAT. They were then divided into two groups based on implicit self-esteem scores: those at or above the mean were secure high self-esteem (high explicit, high implicit), and those below the mean were fragile high self-esteem (high explicit, low implicit). Response times for compatible and incompatible categorization tasks are shown in Table 1 .

Table 1 Response Times for Compatible and Incompatible Categorization Tasks (N = 109)

As Table 1 shows, when self-words and positive words were categorized together (compatible task), response times were shorter and faster. Conversely, when self-words and negative words were categorized together (incompatible task), response times were longer and slower. A paired samples t-test revealed a significant implicit self-esteem effect, t(108) = -2.46, p = 0.016, Cohen' s d = 0.33, 95% CI [0.066, 0.600], indicating that participants tended to associate self with positive words, evaluating themselves more positively. Based on D-scores, participants with mean D-scores of -0.09 or above were classified as secure high self-esteem (n = 57), and those below -0.09 as fragile high self-esteem (n = 52).

5.2.2 Manipulation Check Intelligence threat manipulation effectiveness was tested. Independent samples t-tests showed that the experimental group' s positive emotion (M = 29.18, SE = 7.17) was significantly lower than the control group' s (M = 35.83, SE = 4.85), t(84) = -5.57, p < 0.001, Cohen' s d = 1.09, 95% CI [0.665, 1.472]. The experimental group' s negative emotion (M = 23.46, SE = 7.10) was significantly higher than the control group' s (M = 17.61, SE = 5.59), t(107) = 4.81, p < 0.001, Cohen' s d = 0.92, 95% CI [0.526, 1.319],

indicating successful intelligence threat priming. Emotion was controlled as a covariate in subsequent analyses.

5.2.3 Moderating Effect of Intelligence Threat on the Relationship Between Heterogeneous High Self-Esteem and Implicit Materialism A between-subjects ANCOVA with implicit materialism as the dependent variable, heterogeneous high self-esteem and intelligence threat as independent variables, and emotion as a covariate showed (see Figure 2 [Figure 2: see original paper]) no significant main effect of heterogeneous high self-esteem, $F(1, 103) = 2.68$, $p = 0.105$, nor of intelligence threat, $F(1, 103) = 0.04$, $p = 0.852$. However, the interaction between heterogeneous high self-esteem and intelligence threat was significant, $F(1, 103) = 5.40$, $p = 0.022$, $^2p = 0.05$, 90% CI [0.004, 0.131]. Simple effects analysis revealed that under intelligence threat ($F(1, 103) = 7.39$, $p = 0.008$, $^2p = 0.067$, 90% CI [0.010, 0.155]), fragile high self-esteem individuals' implicit materialism ($M = -0.16$, $SE = 0.06$) was significantly higher than secure high self-esteem individuals' ($M = -0.37$, $SE = 0.05$). Under no intelligence threat ($F(1, 103) = 0.26$, $p = 0.612$), fragile high self-esteem individuals' implicit materialism ($M = -0.27$, $SE = 0.05$) did not significantly differ from secure high self-esteem individuals' ($M = -0.23$, $SE = 0.05$).

Figure 2. The moderating effect of intelligence threat on the relationship between heterogeneous high self-esteem and implicit materialism (error bars represent 95% confidence intervals, $^{**}p < 0.01$)

5.3 Discussion

Data analysis showed that after controlling for positive and negative emotions elicited by self-threat, the interaction between heterogeneous high self-esteem and self-threat remained significant, consistent with Study 2. This indicates that whether measuring explicit materialism via scale (Study 2) or implicit materialism via association test (Study 3), self-threat moderates the relationship between heterogeneous high self-esteem and materialism. Both studies showed that only under self-threat did secure and fragile high self-esteem individuals differ in materialism. The difference between studies was that heterogeneous high self-esteem had a significant main effect in Study 2 but not in Study 3, suggesting that although fragile high self-esteem individuals scored significantly higher on explicit materialism than secure high self-esteem individuals, their implicit materialism did not significantly differ. From this perspective, while fragile high self-esteem individuals appear to pursue materialism on the surface, they may not genuinely favor this value internally; rather, they likely use materialism as a strategy to gain others' recognition and praise.

General Discussion

6.1 Summary of Results

Using the Rosenberg Self-Esteem Scale and Social Desirability Scale to distinguish secure and fragile high self-esteem, Study 1 found a positive relationship between fragile high self-esteem and materialism and differences in materialism value orientation between the two types, consistent with the heterogeneity of high self-esteem hypothesis. The study also found that fragile high self-esteem individuals' materialism did not significantly differ from low self-esteem individuals' , indicating that focusing solely on high-low self-esteem levels and materialism is inappropriate because differences exist within high self-esteem, with both fragile high self-esteem and low self-esteem promoting materialism development. This aligns with Park and John' s (2011) finding that individuals with large explicit-implicit self-esteem discrepancies had higher materialism scores than those with small discrepancies. Nagpaul and Pang (2017) also found that values based on self-development, autonomy, and authentic living conflict with materialism pursuit because materialistic values are incompatible with self-actualization tendencies, whereas values based on money (wealth), public image, and social approval align with materialism pursuit. The former resembles secure high self-esteem in this study, while the latter resembles fragile high self-esteem.

Notably, the no-self-threat groups in this study were implemented through downward comparison (Study 2) and positive feedback (Study 3). The findings showed that compared to Study 1' s baseline, materialism differences between fragile and secure high self-esteem individuals decreased in Studies 2 and 3, suggesting that downward comparison and positive feedback help reduce fragile high self-esteem individuals' materialism levels. This finding parallels previous research showing that providing positive feedback to low self-esteem individuals to increase their self-esteem reduces materialism (Chaplin & John, 2007; Liang et al., 2016; Jiang et al., 2015). This raises the question: Do fragile high self-esteem individuals, who already have high self-esteem, need external positive feedback to increase self-esteem? The reality is that although these individuals appear extremely confident, they are essentially outwardly strong but inwardly weak. Schubert and Bowker (2019) found that compared to stable high self-esteem individuals, those with low and unstable high self-esteem are prone to the "Impostor Phenomenon" when facing personal achievements, attributing success to factors other than ability (e.g., pure luck) and feeling they have deceived others into thinking they are smarter or more capable than they actually are, fearing eventual exposure. Fragile high self-esteem individuals share this tendency: despite being mired in self-doubt, they harbor desires to "appear smart and be the best among peers," exhibiting typical impostor characteristics of chronic self-doubt and fear of failure. Therefore, like low self-esteem individuals, fragile high self-esteem individuals are essentially not self-confident and require continuous external validation to increase self-worth, fundamentally differing from secure high self-esteem individuals.

Studies 2 and 3 examined the moderating role of self-threat in the relationship between heterogeneous high self-esteem and explicit (implicit) materialism. Results showed that after experiencing self-threat, the two high self-esteem types differed in both explicit and implicit materialism; under no self-threat, their differences in both materialism types were not significant. This partially validates previous findings that self-threat is an important cause of materialistic tendencies (Chang & Arkin, 2002) and that fragile high self-esteem leads to high materialism while secure high self-esteem resists materialism development (Nagpaul & Pang, 2017). Simultaneously, this study provides necessary supplementation and expansion to previous research. The results suggest that the two high self-esteem types have different needs and strategies for repairing self-identity when facing self-threat. Fragile high self-esteem individuals have stronger needs to repair self-identity and are more likely to use materialism as a means to maintain self-identity, while secure high self-esteem individuals can better resist materialism and may even reduce materialism through self-improvement. Both explicit and implicit materialism showed these patterns. According to Value Systems theory, values are organized in a circular or complex system where each value is consistent with some values and conflicts with others (Schwartz, 1992). Burroughs and Rindfleisch (2002) found that materialistic values belong to the self-enhancement domain, adjacent to extrinsic values like achievement, power, and stimulation, and conflict with intrinsic values like collectivism, benevolence, and religious belief. Maio et al. (2009) further noted that when a specific value in the value system is activated at a given moment, two predictable effects occur: bleed-over effect and seesaw effect. The bleed-over effect refers to activation of one value increasing other values consistent with it, while the seesaw effect refers to activation of one value suppressing other values that conflict with it. According to self-determination theory, secure high self-esteem individuals hold intrinsic values; when threatened, they turn inward to seek help from internal resources to enhance their abilities. Following the bleed-over effect, this is accompanied by increases in other intrinsic values, and following the seesaw effect, the opposing extrinsic materialistic values naturally decrease. In contrast, threatened fragile high self-esteem individuals still seek various enhancement strategies that, like materialism, belong to the extrinsic values domain, thus materialism shows an upward trend.

6.2 Theoretical Contributions

First, existing research conclusions are inconsistent regarding whether high self-esteem can reduce materialism, with two opposing views: high self-esteem leads to low materialism versus high self-esteem leads to high materialism. This study, from the heterogeneous high self-esteem perspective, separately examined the relationships between secure high self-esteem and fragile high self-esteem with materialism. Results showed that secure high self-esteem individuals had low materialism, while fragile high self-esteem individuals had high materialism. Therefore, both conclusions in previous research are reasonable: from the secure high self-esteem perspective, high self-esteem indeed resists materialism

development; from the fragile high self-esteem perspective, high self-esteem can also foster materialism formation. This resolves the puzzle of the contradictory relationship between high self-esteem and materialism. Thus, this study' s first contribution is providing an explanatory basis for the contradictory relationship between high self-esteem and materialism.

Second, previous research suggested that higher self-threat leads individuals to seek materialism to construct and maintain self-identity, but this view treats participants as a homogeneous group, ignoring individual differences. This study distinguished high self-esteem individuals into secure and fragile types, exploring whether both groups increase materialism when facing self-threat. Results showed that only fragile high self-esteem individuals increased materialism under threat, while secure high self-esteem individuals' materialism actually decreased. Combining this with Value Systems theory, we propose that secure high self-esteem individuals respond to self-threat by improving the self internally, leading to decreased opposing extrinsic materialistic values, indicating they do not use external material goods for self-development like fragile high self-esteem individuals. Therefore, this study helps understand the relationship between self-threat and materialism more deeply from an individual differences perspective.

Finally, previous materialism research primarily explained the phenomenon from relatively stable individual traits and values, neglecting the self-needs and motives behind materialism manifestations (Zheng et al., 2017). Symbolic self-completion theory, self-determination theory, and the functional perspective of materialism theory served as this study' s main theoretical frameworks, all emphasizing self-construction and psychological motives and treating materialism as a specific reaction to threats to self-identity, with self-esteem being one motive for self-identity (Heppner & Kernis, 2011; Shrum et al., 2013). Therefore, this study argued from a psychological needs perspective that the relationship between heterogeneous high self-esteem and materialism is closely related to satisfaction of basic psychological needs, with materialism as an expressive tool for psychological needs becoming the pursuit goal for fragile high self-esteem individuals facing self-threat. Additionally, we argued that psychological motives for constructing and maintaining the self play an important role in fragile high self-esteem individuals' materialism formation. In short, this study provides a needs- and motives-based perspective for research on heterogeneous high self-esteem, materialism, and their relationship.

6.3 Practical Implications

In values education guiding people to view material goods, material enjoyment, and material benefits with correct value standards, educators should consider individuals' self-esteem types and the threatening situations that trigger fragile high self-esteem individuals' materialism. Specifically, multiple types of high self-esteem exist and should be treated differently. Secure high self-esteem individuals generally show low materialism, while fragile high self-esteem and low

self-esteem individuals are both populations with high materialism. We should understand the psychological needs behind fragile high self-esteem individuals' high materialism: their love for money goes beyond satisfying basic survival and safety needs, as the symbolic meaning behind money satisfies deeper psychological needs—the need for self-esteem. This requires helping them establish correct awareness: only by improving autonomy, enhancing competence, and developing good social relationships can psychological needs be truly satisfied. Additionally, educators should guide fragile high self-esteem individuals to view threatening situations correctly, focus on their internal strengths and core values, treat threatening situations as opportunities for self-growth, and liberate themselves from materialism' s influence by accepting themselves inwardly and establishing a good positive self-view.

6.4 Limitations and Future Directions

This study has several limitations for future research to address. First, although Studies 2 and 3 included no-self-threat control groups, these were implemented through downward comparison and positive feedback, which are not strictly neutral control conditions. Future research could add a truly neutral control condition to examine the relationship between heterogeneous high self-esteem and materialism under three conditions. Second, while Study 1 involved comparisons of materialism differences among low self-esteem, fragile high self-esteem, and secure high self-esteem individuals, Studies 2 and 3 did not include low self-esteem participants due to constraints. Future research could further examine low self-esteem individuals' materialism differences from the two heterogeneous high self-esteem types when facing self-threat. Third, although this study manipulated self-threat using different methods in experimental designs, it did not manipulate secure/fragile high self-esteem, so strictly speaking, causality between heterogeneous high self-esteem and materialism cannot be determined, awaiting more rigorous experimental designs in future research. Additionally, although this study adopted needs and motives as a perspective for constructing and analyzing the relationship between heterogeneous high self-esteem and materialism based on self-determination theory and functional materialism theory, it did not measure or manipulate basic needs and motives, leaving the process mechanism between heterogeneous high self-esteem and materialism unexamined in detail. Finally, the heterogeneous high self-esteem perspective can not only clarify the relationship between high self-esteem and materialism but also explain many positive and negative effects of high self-esteem. Future research could more finely explore relationships between high self-esteem and other variables from the secure and fragile high self-esteem perspective.

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Attractiveness Threat Materials in Study 2

Male experimental group material | Male control group material
Female experimental group material | Female control group material

Note: Figure translations are in progress. See original paper for figures.