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# Thinking about those who value you based on how smart you are: Effects on effort and test anxiety

Lucie Vosicka

University of Nevada, Las Vegas, vosicka@unlv.nevada.edu

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THINKING ABOUT THOSE WHO VALUE YOU BASED ON HOW SMART YOU ARE:  
EFFECTS ON EFFORT AND TEST ANXIETY

By

Lucie Vosicka

Bachelor of Arts – Psychology  
University of California, Berkeley  
2013

A thesis submitted in partial fulfillment  
of the requirements for the

Master of Science – Educational Psychology

Department of Educational Psychology and Higher Education  
College of Education  
The Graduate College

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## **Thesis Approval**

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Lucie Vosicka

entitled

Thinking about those who value you based on how smart you are: Effects on effort and test anxiety

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Department of Educational Psychology and Higher Education

Matthew Bernacki, Ph.D.  
*Examination Committee Chair*

Kathryn Hausbeck Korgan, Ph.D.  
*Graduate College Interim Dean*

Gwen Marchand, Ph.D.  
*Examination Committee Member*

CarolAnne Kardash, Ph.D.  
*Examination Committee Member*

Rachael Robnett, Ph.D.  
*Graduate College Faculty Representative*

## **Abstract**

The work examined whether activating a domain of a close other's contingency of acceptance leads to more anxiety in anticipation of an evaluative performance in that domain (Study 1), and greater effort toward improving oneself in that domain (Study 2). In a between-group experimental design, contingencies of acceptance were manipulated by a guided visualization of a close other whose acceptance was perceived either as non-contingent (intrinsic), contingent on a task-irrelevant domain (physical appearance), or contingent on a task-relevant domain (competence). The effects of the acceptance contingency condition on anxiety and effort were not statistically significant. However, in Study 1, six risk factors for being vulnerable to the influence of contingencies of acceptance were identified. There was an indication of an interaction between the presence of risk factors and acceptance contingency condition. Specifically, individuals classified as at high risk of susceptibility to acceptance contingencies (but not those at low risk) reported considerably more anxiety in competence acceptance contingency condition compared to intrinsic acceptance contingency condition ( $d = 0.77$ ). These results suggest that perceived potential for failure in the domain of competence may constitute a threat to one's level of social acceptance, and that shifting an activated acceptance contingency to a domain irrelevant to the pursuit of competence may reduce anxiety about a performance evaluative of one's competence for people vulnerable to the influence of acceptance contingencies. However, caution has to be exercised in interpreting the results due to violation of assumptions of conducted statistical significance tests.

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## Chapter 1: Introduction

People have a need to feel valuable to those they care about (Baumeister & Leary, 1995). To reduce or prevent suffering that ensues when this fundamental need is unmet, people tend to engage in behaviors that restore or increase their *relational value* (“the degree to which other people regard their relationships with the individual to be valuable, important, or close”; Leary & Baumeister, 2000, p. 9). It may take different things to be valued and accepted by different people in one’s life. Let’s consider a fictitious person, Joanna. Joanna holds different beliefs about what it takes to be valued and accepted by different people in her life. For example, Joanna believes that her coworker mainly cares about her job performance. If Joanna performed poorly at her job, the coworker would value her less. In contrast, Joanna believes that her grandmother mainly cares about how kind she is to those around her. If Joanna was mean to her friends, her value as a person in the grandmother’s eyes would decline. When one is reminded of one’s close others, the contingencies of one’s relational value shift toward the domains on which one believes that the close others’ acceptance depends (Horberg & Chen, 2010). Accordingly, if Joanna was reminded of her coworker, her relational value in that moment would become more contingent on the coworker’s perceived contingencies of acceptance (in this case, work performance).

By changing what one’s relational value is contingent on, reminders of one’s close others may change how one’s need for relational value manifests. These changes may include changes in what constitutes a threat to one’s relational value as well as changes in potential avenues through which one may increase one’s relational value. For example, poor work performance might be much more threatening to Joanna after having been reminded of her coworker rather than her grandmother because poor work performance may decrease Joanna’s relational value

with respect to the coworker to a much greater extent. If the coworker rather than the grandmother is on Joanna's mind, Joanna may also be more inclined to try to improve her job performance because it holds a greater incentive for her in the form of relational value.

This research examined how situational changes in acceptance contingencies may influence manifestation of the need for relational value in the context of pursuit of intellectual competence. Study 1 focused on emotional consequences of the shifts in what constitutes a threat to relational value that may result from shifts in acceptance contingencies. Specifically, it examined whether people experience less anxiety in anticipation of a test evaluative of their intellectual competence after having been reminded of close others whose acceptance does *not* depend on intellectual competence (compared to after having been reminded of those whose acceptance does). Because shifts of acceptance contingencies away from intellectual competence may reduce potential of poor performance on the test to reduce one's relational value (and thus decrease social threat posed by the test), it was predicted that priming close others whose acceptance does not depend on competence would reduce self-reported anxiety. Study 2 focused on motivational changes that may accompany shifts in acceptance contingencies. Specifically, it examined whether people exert greater effort toward improving their intellectual competence (as operationalized by reading times on articles about intelligence training and how intensive package for training intelligence participants chose) after having been reminded of a close other whose acceptance is contingent on competence (or not). Because of potential for greater incentive in terms of relational value, it was hypothesized that activation of competence acceptance contingency would enhance effort toward improvement of intellectual competence.

Being reminded of close others may be a commonplace occurrence in people's mental lives that may potentially exert large cumulative effects. Because of that, any improvement in

understanding of how such occurrences may affect satisfaction and pursuit of arguably the most fundamental human psychological need—the need for relational value—is of considerable importance. This is especially so as satisfaction of the need for relational value is strongly associated with well-being (e.g., León & Núñez, 2012), and one's level of success in the domain of activated acceptance contingency influences satisfaction of this need by influencing perceived relational value (Horberg & Chen, 2010). In addition to better understanding mechanisms through which one's social environment may affect one's well-being, the study of acceptance contingencies also bears implications for the study of human pursuits in all domains which may potentially become domains of acceptance contingency, or which may be affected if *other* domains become domains of acceptance contingency—be it because of changes in the individuals' emotions or motivation. Greater understanding of mechanisms of acceptance contingencies may also be leveraged in future intervention work that targets bases of relational value or teaches individuals to change them on their own, so as to improve their psychological well-being. By further elucidating effects of contingencies of acceptance via their situational manipulation, the present work aimed to contribute toward building knowledge necessary for these endeavors.

## Chapter 2: Literature Review

The research tested responsiveness of people's anxiety (Study 1) and exertion of effort (Study 2)—two processes relevant to pursuit of intellectual competence—to domains of activated relationship-specific acceptance contingencies. The rationale for the work was built on the following assumptions: (1) individuals have a need for relational value and motivation to enhance it; (2) relational value and its bases are responsive to changes in activation of cognitive representations of specific individuals; and (3) the bases of relational value can be affected by the activations of close others at sufficiently fine-grained level (at least at the level of domain-specificity). The purpose of this literature review is to briefly overview support for these assumptions and discuss how together they may provide insights into how people's perceptions of others and themselves in relation to others influence anxiety and effort during pursuit of intellectual competence (particularly as it pertains to learning in academic context).

### Need and Motivation for Relational Value

The first assumption for the present work concerns the human need and motivation for relational value and is primarily based on theorizing and findings in the tradition of sociometer theory.

**Sociometer theory.** According to sociometer theory, the need and motivation for relational value is intimately tied with the concept of self-esteem (Leary, Tambor, Terdal, & Downs, 1995). Specifically, sociometer theory posits that self-esteem is an affective index of relational value, and that this affective index assists with monitoring of one's past, present, and future relational evaluation (Leary & Baumeister, 2000; Leary et al., 1995). Because of its affective nature, self-esteem may motivate restoration, maintenance, and augmentation of relational value. *State self-esteem* is assumed to reflect current perception of one's worth to

others and *trait self-esteem* one's perception of worth to others as reflected over a long period of time (Leary et al., 1995). Sociometer theorists maintain that self-esteem as an index of relational value developed because it was favored by evolutionary pressures: it alerted people to changes in their value to others and motivated them to restore relational value if it were to decline, which facilitated mating, securing resources from others, and avoidance of interpersonal conflict (Leary et al., 1995).

It should be noted that relational value reflected by people's self-esteem depends on people's *perceptions* of their relational value (rather than actual relational value) and that relational value is theorized to be affected not only by perceptions of its current level but also perceptions of potential for its future changes (Leary & Baumeister, 2000). The reliance of relational value on perceptions allows for considerable malleability of relational value even in the absence of any new information from other individuals.

The proposition of sociometer theory that self-esteem is interpersonally determined is supported by substantial evidence. Indirectly, sociometer theory is supported by prior research on what on the surface appears as pursuit of self-esteem but in fact could be interpreted as pursuit of relational value (for a review, see Leary, 2005). This research has documented a multitude of ways through which people self-enhance (Leary, 2007; Sedikides & Gregg, 2008), such as through dismissal of ability diagnosticity of a task in response to negative feedback and augmentation of ability diagnosticity of a task in response to positive feedback (Leitner, Jones, & Hehman, 2013), making excuses for one's failure or even withdrawing effort to render potential failure undiagnostic of one's ability (McCrea & Hirt, 2001), and befriending those who are worse than oneself in domains reported to be important to the self (Tesser, Campbell, & Smith, 1984). These processes are consistent with sociometer theory because they all steer people



toward acting in ways that they internally can interpret as leading to being more valuable per others' standards (Leary, 2005). There are also many examples of more direct support for interpersonal determinants of self-esteem, including responsiveness of state self-esteem to instances of social acceptance and rejection (Leary et al., 1995), overlap in importance of dimensions on which people's self-esteem and perceived approval by others depend (MacDonald, Saltzman, & Leary, 2003), enhanced decreases in self-esteem following failure after increased salience of a close other who cares about what the failure might implicate (Horberg & Chen, 2010), or increases in self-esteem following classical conditioning procedure that taught individuals to associate themselves with accepting faces (Baccus, Baldwin, & Packer, 2004).

While some people claim, counter to the sociometer theory, that their self-esteem is not affected by how others evaluate them, it is likely that these claims are a result of self-presentation concerns or a lack of self-awareness. Leary et al. (2003) experimentally manipulated social approval and disapproval and found no interaction between self-reports of the dependence of self-esteem on social approval and participants' self-esteem; in fact, those who claimed that their self-esteem is independent of others' approval were affected by others' disapproval to similar degree as those who claimed their self-esteem depends on others' approval. Moreover, it is telling that self-reported contingency of self-esteem on others' approval is inversely related to a measure of social desirability while the opposite pattern holds for contingencies such as virtue and God's love (Crocker, Luhtanen, Cooper, & Bouvrette, 2003).

Because people experience considerable deficits in well-being when the level of their relational value is deficient, it can be said that people have a *need* for relational value (Baumeister & Leary, 1995). But people may also pursue relational value even when their

relational value is not deficient, that is, when they are motivated to maintain or establish it rather than restore it in response to deficiency (Leary & Allen, 2011). Since only deficiency in relational value is linked to deficits in well-being, it can be assumed that there are differences between the influence of factors that guide people to act to restore or maintain their relational value and those that guide them to augment it. Evidence about how people are influenced by their perceptions of in what they need to succeed in order to be relationally valued can be inferred from research on contingencies of self-esteem. When examined as relatively stable individual differences (trait contingencies of self-esteem), contingencies of self-esteem can be seen as reflection of differences in people's relatively stable conceptions of what it takes to be valued in their environment.

### **Domain-Specific Contingencies of Self-Esteem**

**Self-worth contingency model.** According to the self-worth contingency model (Crocker & Wolfe, 2001), people's self-esteem is contingent on different domains and fluctuates more in response to indices of success or failure in the domains of contingency. For example, state self-esteem of graduate school applicants was shown to fluctuate in response to acceptances and rejections from graduate programs, and this fluctuation to both acceptances and rejections was shown to be moderated only by self-reported contingency of self-esteem on academic competence rather than also other contingencies such as contingency of self-esteem on physical appearance or virtue (Crocker, Sommers, & Luhtanen, 2002). In the domain of academics, this moderation by self-esteem contingency on academics (but not a general level of self-reported self-esteem contingency) has also been shown on measures of students' state self-esteem, affect (which tends to accompany changes in self-esteem), and identification/belonging with major (the decrease in which may serve as a self-esteem protective measure; Leitner, Jones, & Hehman,

2013; Major & Schmader, 1998) in response to obtaining better or worse grades than the students expected (Crocker, Karpinski, Quinn, & Chase, 2003). At the level of trait self-esteem, the model would predict that those with a history of success in the domains of self-esteem contingency experience greater self-esteem than those with a history of failure in the domains of contingency.

**Intrapersonal vs. interpersonal perspectives.** Researchers examining contingencies of self-worth have traditionally employed an intrapersonal perspective on self-esteem. Intrapersonal perspectives on self-esteem assume that self-esteem is determined by individual's own self-evaluations according to one's own standards. Intrapersonal perspectives on self-esteem can be traced as far back as James's (1890) speculation that self-esteem can be understood as a ratio of one's own current level of competence to one's desired level of competence in the domains of personal importance, with the individual being able to raise self-esteem either by achieving a higher level of competence or lowering one's aims for desired competence. In contrast, interpersonal perspectives on self-esteem—such as sociometer theory—have their origin in Cooley's (1902) work on looking-glass self that described the process through which self-feeling emerges out of appraisal of one's self-image and imagined others' reaction to that image (also termed a reflected appraisal). The intrapersonal conceptualization of self-esteem in self-worth contingency model can be evidenced in the operationalization of self-esteem contingencies in Contingencies of Self-Worth Scale (Crocker et al., 2003), which includes “acceptance from generalized others” as one of the contingency domains rather than an underlying determinant of all acceptance contingencies; as well as theorizing that classified self-esteem contingency on academics as a *non*-interpersonal contingency (Park, Crocker, & Mickelson, 2004).

This is not to say that intrapersonal perspectives on self-esteem embraced by researchers examining self-esteem contingencies in educational settings are entirely bereft of assumptions

about social influences on self-esteem. The formation of self-esteem contingencies (in terms of which domains self-esteem is contingent on, Crocker & Wolfe, 2001; or in terms of whether self-esteem is vs. is not contingent, Moller, Friedman, & Deci, 2006) tends to be attributed by these researchers to gradual socialization influences as individuals learn (primarily in childhood) the conditions of obtaining close others' esteem, love, and acceptance (as discussed, e.g., in Crocker & Park, 2004).

That individuals' self-esteem will be differentially responsive to indications of performance in different domains can be predicted using either perspective but the use of intrapersonal perspective diminishes the extent to which the domains of self-esteem contingency and standards used for self-evaluation in these domains are predicted to be influenced or determined by other people. This has implications for how the relationship between self-esteem contingencies and other variables is researched. In particular, insufficient consideration of interpersonal determinants of self-esteem contingencies has led to treatment of self-esteem contingencies as relatively stable individual differences separated from relational factors that may mediate or moderate their effects (Anthony, Holmes, & Wood, 2007).

**Domain-specific contingencies of self-esteem as domain-specific contingencies of acceptance.** The proposition of sociometer theory that self-esteem reflects relational value can be extended to the proposition that self-esteem is primarily responsive to satisfaction of standards and contingencies of interpersonal acceptance. If, for example, one believes that one's relational value in the close others' eyes depends on how well one performs academically more so than on how good one looks, changes in one's academic performance are going to affect one's self-esteem to a greater degree than changes in one's physical appearance.

Findings from several studies show correspondence between trait domain-specific self-esteem contingencies and trait domain-specific acceptance contingencies. First, there are strong positive correlations between how people rank importance of domains to their self-esteem and to relational evaluation (vanDellen, Hoy, & Hoyle, 2009). For example, those who rank highly importance of academics to their self-esteem also rank highly importance of academics to being accepted by individuals important to them. Further, measured at the level of trait self-esteem, people's assessment of the importance of a given domain for gaining the approval of others has been shown to moderate the effect of people's self-evaluation of their performance in the given domain on trait self-esteem for domains of competence, physical attractiveness, material possessions, and sociability (MacDonald et al. 2003). That is, people who do not deem themselves academically successful compared to their peers may experience lower self-esteem when they also believe that academic competence is important to being valued by important others than when they do not think academic competence matters to important others.

Likewise, since the social environment tends to impose different acceptance contingencies on people occupying different social roles, membership in social roles moderates relationship between trait self-esteem and self-evaluations in domains of importance for acceptance in the social roles. For example, women, people in relationships, and those of East Asian descent have been found to be more likely than others to have their self-esteem contingent on possession of communal qualities such as kindness and warmth (Anthony et al., 2007).

The associations between self-esteem and acceptance contingencies can also be evidenced in higher accessibility of acceptance and rejection words following primes of positive and negative appearance words in those with self-esteem contingent on appearance (vanDellen et al., 2009). Moreover, those with self-esteem more contingent on academics have more biased

memory for events related to academic achievement as well as higher accessibility of words related to academic achievement following experience of social rejection (vanDellen, Hoy, Fernandez, & Hoyle, 2011).

### **Relational Self and Situationally Activated Acceptance Contingencies**

The connection between self-esteem contingencies and acceptance contingencies has been shown even with respect to situationally activated acceptance contingencies, including relationship-specific acceptance contingencies that are domain-specific (Horberg & Chen, 2010). This research largely builds on theorizing and findings that have been synthesized under the broad conceptual umbrella of *relational self* (“the self in relation to significant others”; Chen, Boucher, & Tapias, 2006, p. 151).

**Relational self.** Relational self may be conceived of as a *working self-concept* (the self-concept accessible at a given time; Markus & Wurf, 1987) that is constituted of an activated representation of self out of a repertoire of stored representations of self in relation to a variety of other people. An individual’s relational selves are assumed to differ in their level of relationship specificity (for example, the self in relation to one’s best friend Helen, one’s classmates, or people in general), the level to which they are chronically activated, and the conditions that may activate them situationally (Chen, Boucher, & Kraus, 2011). The components of relational self are assumed to be cognitive in nature, and thus subject to the same structural constraints and governing principles as any other knowledge structure (Higgins, 1996).

Theorizing about the structure of cognitive representations of the interaction patterns between the self and others and about mechanisms through which these representations may influence affect, thoughts, and behaviors can be found in research on *relational schemas* (Baldwin, 1992, 1997).

**Relational schemas.** Baldwin (1992) defined relational schemas as “cognitive structures representing regularities in patterns of interpersonal relatedness” (p. 461). According to Baldwin (1992), the relational schemas include information about the self, others, and sets of scripts that take a form of if-then expectancies about others’ reactions to one’s behavior that develop based on experiences of past interactions. The relational schemas are specific to specific people, and become influential when the representation of the specific people is mentally activated, the imagined people becoming one’s *private audience* (Baldwin, 1997). For example, a student may have a relational schema for interacting with her teacher that includes expectancy that if she receives a poor grade, her teacher will belittle her. The student may have developed such a schema based on experienced or observed teacher’s criticism following intellectual performance or even inferred criticism based on experienced or observed praise following intellectual performance. Content of relational schemas concerning expectancies about others’ reactions is hypothesized to underlie patterns of responses in people’s self-esteem (Baldwin, 1997; Baldwin & Baccus, 2003). For example, the student with the relational schema connecting intellectual failure with teachers’ rejection may feel her self-esteem decline as she fails an exam (provided the schema is active) due to expectation of rejection from a valued significant other. Moreover, the primed person may even change her definition of what constitutes failure in the domain of acceptance contingency in the first place. For example, in one of the seminal studies on relational schemas, psychology graduate students were shown to evaluate their research ideas more negatively following a prime of their department chair known for his high standards than following a prime of a friendly postdoctoral scholar (Baldwin, Carrell, & Lopez, 1990).

**Situationally-activated acceptance contingencies.** Acceptance contingencies can be induced through situational priming of close others. This demonstrates utility of studying

acceptance contingencies (rather than merely individual differences in levels or domains of self-esteem contingencies). Namely, it helps to account for the process through which activations of other individuals may dynamically change manifestations of people's need and motivation to be valued in ways that are specific to the activated acceptance contingencies.

***Domain-specific acceptance contingencies.*** Published research examining domain-specific acceptance contingencies is extremely limited. To date, only a single study by Horberg and Chen (2010) has directly examined whether domains of self-esteem contingencies are relationship-specific attributes that can be changed through activation of distinct private audiences. In a series of 3 studies, the researchers subliminally primed participants with representations of their significant others, and then examined changes in their self-esteem contingencies (Study 1), state self-esteem following a success or failure in a competition domain (Study 2), and state self-esteem and relationship perceptions in an appearance domain (Study 3). Activation of representations of significant others shifted the participants' self-esteem contingencies in the direction toward the domains in which the participants perceived that their significant others cared that the participants do well.

Specifically, Horberg and Chen (2010) showed that after being primed with a word "father" (compared to being primed with a word "mailman"), participants reported that their self-esteem depended more on the domains that they subsequently rated as the central domains in which their fathers cared that they succeeded; this relationship was moderated by participants' desired closeness to their fathers, such that only participants who desired closeness to their fathers came to stake their self-esteem on the fathers' central domains of acceptance contingency (Study 1).



In Study 2, participants who initially indicated that their self-esteem was not very affected by outperforming others but that their father cared whether they succeeded over other people reported to a greater extent that their self-esteem depended on succeeding over others after being primed with the word “father” (again, compared to a word “mailman”) and exhibited greater changes in self-esteem after succeeding (though strangely not after failing) in the relationship-relevant domain of competition. In this study, success and failure were manipulated by provision of items of differing difficulty and comparative feedback on the Remote Associates Task, which was presented as a measure of “an ability related to verbal competence and creativity but not necessarily to academic competence”. The lack of observed decrease after failing might have been explained by participants’ beliefs that relational value from their fathers could only be increased but not decreased via their performance but such a possibility was not assessed.

Study 3 examined these effects in the domain of appearance. It showed greater changes in self-esteem following failure in the domain of physical appearance among participants who were primed with a name of a close other who cared about their appearance and with whom participants desired closeness (the failure induction took form of description of a physical feature participants disliked about themselves). Importantly, the changes in self-esteem in Study 3 appeared to have been due to perceived changes in relational value: after failure, participants in the control condition (who had been primed with a bogus name-like word) exhibited positive correlation between desired closeness and current feelings of closeness with the close other but this correlation disappeared for participants primed with the close other who cared about their appearance. Thus, the study provided strong support for sociometer theory by indicating that

people monitor their relational value in relation to outcomes in activated acceptance contingencies.

Horberg and Chen (2010) also showed that individuals are capable of identifying close others who are seen as having only one central domain of acceptance contingency. Nearly all participants at least once assigned the highest rating on the scale (6 or 7 out of 7) of their father's domains of acceptance contingency, and 45% of participants assigned this rating to only one domain of acceptance contingency (out of 14 domains which the participants rated). While the centrality of one domain of acceptance contingency might be characteristic of only this sample (undergraduate U.S. college students with majority Asian ethnicity) or a type of a relational figure (i.e., the participants' father), this finding provided support for the possibility of guiding individuals to identify close others based on their central acceptance contingencies and intentionally activating them as their private audiences to obtain desired domain-targeted effects of acceptance contingencies. It also suggests the need to examine effects of acceptance contingencies in a domain-specific fashion rather than as relatively broader clusters of acceptance contingencies as was done in prior research (described below).

***Extrinsic vs. intrinsic acceptance contingencies.*** Research on situationally-activated acceptance contingencies has otherwise focused on differentiating between *extrinsic* and *intrinsic* acceptance, or what has been also roughly correspondingly termed *contingent* and *noncontingent* acceptance (Arndt, Schimel, Greenberg, & Pyszczynski, 2002; Baldwin & Sinclair, 1996; Schimel, Arndt, Pyszczynski, & Greenberg, 2001). These distinctions can be traced back to self-determination theory and related perspectives, which differentiate between self-esteem based on living up to standards (contingent self-esteem) and self-esteem based on simply being who one is, or being “true” to oneself (noncontingent or *true* self-esteem; Deci & Ryan, 1991). For

example, Deci and Ryan (1995) defined contingent self-esteem as “feelings about oneself that result from—indeed, are dependent on—matching some standard of excellence or living up to some interpersonal or intrapsychic expectations” and true self-esteem as something that is “more stable, more securely based in a solid sense of self” and that “developed as [one] acted autonomously within the context of authentic relationships” (p. 32).

Some have argued (e.g., Arndt & Schimel, 2003; Crocker & Wolfe, 2001) that noncontingent self-esteem does not really exist because even acting authentically to oneself can be understood as a type of self-esteem contingency. The alternative terms—extrinsic vs. intrinsic self-esteem contingencies—can be seen as capturing this notion while both theoretically and empirically maintaining hypothesized differences between outcomes associated with these clusters of contingencies (for example, positive association between psychological well-being and intrinsic bases of self-esteem, Vonk & Smit, 2012). While this theoretical tradition conceptualizes intrinsic contingencies as a reflection of psychological well-being or a contributor to well-being by means of prompting pursuit of goals that fulfill people’s needs, intrinsic contingencies could also be seen as leading to higher, more resilient relational value due to greater abstractness of their requirements. Indeed, greater abstractness in construal of self-esteem contingencies has been shown to lead to greater self-esteem stability (Updegraff, Emanuel, Suh, & Gallagher, 2010). Accordingly, the tendency to positively self-evaluate on what tends to be classified as intrinsic contingencies emerges in both people with low and high self-esteem even though people with low self-esteem otherwise tend to evaluate themselves more critically (Anthony et al., 2007). Another possibility that has been suggested is that intrinsic bases of self-esteem lead to perception of relational value that is more stable because individuals perceive these qualities as more stable (Schimel et al., 2001).

Situational activation of contingent vs. noncontingent acceptance contingencies provide additional support for responsiveness of self-esteem contingencies to primed relationships. For example, Baldwin and Sinclair (1996) asked participants to either provide initials of “a person who tends to be very accepting and nonevaluative of you and simply accepts you for who you are” (noncontingent acceptance condition) or “a person who tends to be very evaluative of you and seems to accept you only if you live up to certain standards of performance” (contingent acceptance condition) and visualize the person (Study 3). Following visualization of the contingently accepting person, the participants showed decreased reaction times to recognizing rejection words following failure words on a lexical decision task (compared to participants who visualized a noncontingently accepting person), suggesting activation of a schema connecting failure and rejection—a schema otherwise chronically evidenced in people with low trait self-esteem (Study 1; Baldwin & Sinclair, 1996).

Research has also indirectly showed how this type of induction of acceptance contingency can exert motivational effects toward maintenance of relational value. Following visualization of a contingently accepting other (compared to a noncontingently accepting other), individuals were more likely to seek social comparison information when they were led to believe that others performed more poorly on what was presented as a test of social sensitivity (Study 1; Schimel et al., 2001). Assuming that the individuals’ relational value in the eyes of the contingently accepting private audience would be responsive to a variety of competence outcomes, ascertaining one’s superiority to others and avoiding information that might lead to disconfirmation of one’s competence might be one way of maintaining or augmenting one’s relational value. Similarly, visualization of a contingently accepting private audience (compared to a noncontingently accepting private audience) led participants to indicate greater amount of

externalizing attributions for what they believed to be their upcoming performance on a mental arithmetic task, thus enabling them to protect their relational value in case they performed poorly (Study 1; Arndt et al., 2002).

These findings collectively illustrate how people's thoughts, feelings, and behaviors tend to take a form of what it takes to satisfy activated contingencies of relational value.

### **Relational Value and Pursuit of Competence**

As evidenced in the studies reviewed above, people may associate outcomes in a variety of domains with information about relational value (e.g., Baldwin & Sinclair, 1996; vanDellen et al., 2011, 2009), and relational value can be impacted by outcomes in an activated domain of acceptance contingency (Horberg & Chen, 2010). Competence (academic, professional, athletic, and so on) may accordingly be seen as simply another broad domain in which success or failure may impact relational value and be pursued for the sake of it. More academically successful individuals may have higher relational value to teachers and peers who value academic achievement, more professionally successful individuals may have higher relational value to bosses and coworkers (or even to romantic partners), more skilled conversationalists may have higher relational value to their friends, and so on. Given the general perceived importance of competence for maintaining or increasing relational value (e.g., MacDonald et al., 2003), perceived competence in what is important to those close others with whom one desires closeness is particularly likely to become a target of pursuit of relational value (Leary & Allen, 2011).

Theorizing and evidence about what pursuit of competence in service of relational value may look like can be mostly found in research on individual differences in trait self-esteem

contingencies, which, as reviewed earlier, can be seen as proxy for trait acceptance contingencies (i.e., summative perceptions of what it takes to be valued by one's close others).

Research on trait self-esteem contingencies shows that students who report having their self-esteem contingent on academics experience increases in self-esteem following positive academic outcomes and decreases in self-esteem following negative academic outcomes (Crocker, Karpinski, et al., 2003; Crocker et al., 2002). This affective fluctuation may potentiate conscious motivation to approach emotional highs and avoid emotional lows associated with success and failure on academics. It could also result in nonconscious facilitation of goal pursuit by means of association of relationally valued goals with positive affect (Custers & Aarts, 2005). Accordingly, students who report having their self-esteem contingent on academics also report spending more time studying (Crocker, Luhtanen, et al., 2003). This corresponds to research on interpersonally activated acceptance contingencies, which shows that people assign greater importance to extrinsic goals such as financial success after being primed with acceptance based on extrinsic domains (Sheldon & Kasser, 2008). On the positive side, contingency on the domain may also produce increased self-efficacy due to people's self-enhancing tendencies (i.e., tendencies to enhance relational value) because self-enhancement may take a form of increased perceived validity of the task when individuals experience success (Leitner et al., 2013).

But there is also evidence that having one's self-esteem contingent on academics can put people under too much stress and increase their use of undesirable self-defensive strategies. Indeed, students with self-esteem contingent on academics perform worse on tasks described as diagnostic of academic ability compared to tasks described as non-diagnostic (Lawrence & Crocker, 2009); this relationship was shown to be mediated by increased anxiety that the contingent students experience under ability-diagnostic conditions (Lawrence & Williams,

2013). Students with self-esteem contingent on academics also report greater amount of academic problems such as conflicts with teaching assistants or professors, losing interest in learning, or perceiving that there is never enough time to meet all their obligations (Crocker & Luhtanen, 2003). As a caveat to such correlational findings, since students who experience difficulties in the domain of contingency experience more negative affect, it is possible that they are more likely to notice contingencies of their self-esteem, and thus to report them. Students whose self-esteem is more contingent on academics further exhibit greater tendencies to self-handicap. For example, students who held an incremental theory of intelligence and had highly contingent self-esteem on academics were more likely to choose to listen to performance-impairing music and to withhold effort on a difficult compared to an easy ability-diagnostic task, a pattern that was not obtained for students low on self-esteem contingency on academics (Niiya, Brook, & Crocker, 2010).

This line of research thus indicates that while students with self-esteem contingent on academics may have extra motivation to do well, their efforts may be offset by self-handicapping and anxiety. Anxiety may be more likely to be expected under conditions feared to threaten self-esteem (i.e., relational value) because social anxiety is hypothesized to arise from expectation of making an undesirable social impression and desire to avoid making that impression (Schlenker & Leary, 1982). The same applies for self-handicapping, which is generally assumed to result when individuals fear that decrease in relational value is likely unless they set up excuses for the potential failure. It is therefore possible to presume that the negative effects associated with self-esteem contingencies on academics will manifest predominantly under conditions when decrease in relational value is perceived as likely.

Support for this proposition can be evidenced in research that examined effects of *upward* vs. *downward* self-esteem contingencies (that is, increase in self-esteem following success vs. decrease in self-esteem following failure; Vonk & Smit, 2012). This research has shown downward extrinsic self-esteem contingencies to be negatively predictive of all indicators of well-being used in the study (such as a measure of positive and negative affect, a measure of self-compassion, or a measure of personal well-being that included items related to having purpose in life, positive relationships with others, feelings of autonomy, and so on) but showed upward extrinsic contingencies to be either unrelated to well-being or only weakly negatively correlated with it (Vonk & Smit, 2012). The relational analogue to upward and downward self-esteem contingencies would be increase in relational value following success (i.e., upward acceptance contingency) vs. decrease in relational value following failure (i.e., downward acceptance contingency). For example, if a student's grandmother had only an upward acceptance contingency on academic achievement, the student's bad grade would have little impact on his relational value when the grandmother is his private audience but the student might increase his relational value if he received a good grade. This might make the student relatively resistant to self-handicapping or anxiety but still give him extra motivation to strive for academic excellence.

Positive effects of self-esteem contingencies on motivation (even in the presence of downward acceptance contingencies) may also be expected when one is operating under non-evaluative conditions or works on tasks which are perceived as within one's control (effort-dependent tasks or tasks for which one has sufficiently high self-efficacy).



## **Chapter 3: Present Studies**

### **Overview of Present Studies**

To summarize, since self-esteem can be seen as an indicator of relational value (Leary et al., 1995), domains on which self-esteem is contingent can be seen as indicators of domains on which relational value is contingent. Prior research has showed that subliminally activating cognitive representations of a close other can shift bases of people's self-esteem toward domains perceived to affect their relational value in the eyes' of the close other (Horberg & Chen, 2010). This demonstrates that (1) contingencies of self-esteem can also be understood as states that are responsive to activations of representations of close others, and suggests that (2) correlational findings between trait self-esteem contingencies and various outcomes of interest might be caused by need and motivation for relational value (doing what one thinks it tends to take to be valued by close others in one's life) rather than strivings for self-esteem per se.

The present studies investigated whether changing bases of relational value via activation of cognitive representations of a close other may produce effects that correspond to those observed in the research on trait self-esteem contingencies. Of importance to the present studies, when self-esteem contingencies have been investigated as a personality trait in prior research, basing self-esteem on academics has been linked to self-reports of greater anxiety about intellectual performance (Lawrence & Williams, 2013) and self-reports of increased study time (Crocker, Luhtanen, et al., 2003). Analogously, the present studies investigated whether inducing contingency of relational value on a domain leads to increased self-reported anxiety about performance on a task evaluative of one's performance in that domain (Study 1), and whether it guides individuals to exert effort toward improving themselves in that domain (Study 2). By gathering some additional data on perceptions of the activated close others as well as participant

characteristics that may heighten sensitivity to acceptance contingencies, the present studies also examined relational factors that may moderate these effects (such as desired closeness to the close other or perceived potential for loss of relational value given one's incompetence).

## **Overview of Methods**

Data about participants' characteristics and their close others who fit a given profile of acceptance contingency (competence, physical appearance, and intrinsic acceptance contingency) were gathered in a prescreening survey (Survey 1). Instructions for identifying the close other were adapted from procedure used by Baldwin and Sinclair (1996) in a way that captured targeted domain-specificity.

After a delay of several days, participants were invited for a follow-up survey (Survey 2). Using a between-group experimental design, a visualization of a close other (identified in advance in the prescreening survey as possessing specified acceptance contingencies) was used to induce acceptance contingent on either competence, physical appearance, or intrinsic qualities (i.e., noncontingent acceptance). Following the visualization, self-reported anxiety about taking an anticipated intelligence test was measured in Study 1, and effort and intention to exert effort toward improving one's intelligence were measured in Study 2.

## **Hypotheses**

Hypotheses for the two studies were formulated as follows.

**Study 1 (H1).** Controlling for baseline trait self-esteem contingency on academics and gender, those who will visualize a close other whose acceptance is perceived to be contingent on intelligence will report greater anxiety about upcoming intelligence test than those in the other visualization conditions (acceptance contingent on physical appearance, intrinsic acceptance). This relationship will be moderated by desired closeness, such that individuals with higher

desired closeness will be more affected by the acceptance contingency (i.e., experience greater anxiety when in a task-relevant acceptance contingency condition).

These results were predicted because activation of the domain of acceptance contingency that matches the domain of the anticipated evaluative performance may augment the extent to which the evaluative performance may affect one's relational value. The hypothesis was based on multiple sources, including theorizing that test anxiety has origins in social evaluation (Covington, 2009; Schlenker & Leary, 1982), evidence that social anxiety can be ameliorated by expectation of being accepted rather than rejected (Baldwin & Main, 2001), or evidence of the link between self-esteem contingency on academics and anxiety about intellectual performance (Lawrence & Williams, 2013).

Prior research (e.g., Arndt, Schimel, Greenberg, & Pyszczynski, 2002; Schimel, Arndt, Banko, & Cook, 2004; Vonk & Smit, 2012) has frequently operated under the assumption that any form of acceptance besides acceptance for "who one truly is" (i.e., acceptance based on intrinsic qualities) undermines the feeling that one's level of being accepted is *stable*, and that this feeling of instability potentiates negative affect, or potentiates defensiveness to reduce the negative affect whenever one is in evaluative situation. In contrast, the present work assumed that these effects are primarily linked to specific situations that may result in changes to relational value. For example, a person may believe that her mother's acceptance of her is based solely on her career success and that her husband's acceptance is based on how good she looks but not on her career success. If the primary difference is in perception of whether one's acceptance is *stable*, the woman after seeing a picture of a supermodel might be predicted to be similarly anxious about looking into a mirror when she thinks about her mother as when she thinks about her husband because her mother's acceptance is potentially unstable. However, if

the primary difference is in anticipation of changes in relational value with respect to evaluative situations within the domain of acceptance contingency, thinking about her mother might not have the same effect on the woman's anxiety as would thinking about her husband. Since the present studies assumed the latter (i.e., effects of contingent valuing are domain-specific), the hypothesis stated that both activation of acceptance contingent on intrinsic qualities and physical appearance (i.e., task-irrelevant domain) would lead to less anxiety than activation of acceptance based on intellectual competence (task-relevant domain).

A threat to the design involving imagining of a close other with contingent valuing of the subject is the subject's desire for closeness with the imagined other. As in past studies using primes of other individuals (e.g., Horberg & Chen, 2010), there was hypothesized to be an interaction between visualized acceptance contingency condition and desired closeness with the visualized individual, with greater closeness leading to greater anxiety about being evaluated by the close other whose acceptance is contingent on intellectual competence.

Because anxiety was measured only with self-reports, it was not possible to rule out the possibility that the self-reports reflected claimed self-handicapping (in this case, claiming anxiety in order to render performance on the evaluative task less diagnostic; Smith, Snyder, & Handelsman, 1982) rather than anxiety. If the self-reports reflected claimed self-handicapping, Study 1 could be partially seen as an attempt at conceptually replicating Arndt et al.'s (2002) finding that visualizing contingently accepting close other (compared to noncontingently accepting one) increases externalizing attributions for performance on an anticipated mental arithmetic task (externalizing attributions can be seen as another form of claimed self-handicapping). Regardless of whether self-reported anxiety reflected claimed self-handicapping, the direction of the hypothesized results would remain the same in as much as the desire to

protect one's relational value in the close other's eyes and uncertainty about being able to do so might give rise to both increased self-handicapping and anxiety.

**Study 2 (H2).** Controlling for reading speed, people will exert more effort and will report intention to exert more effort toward improving their intelligence after visualizing a close other whose acceptance is perceived to be contingent on intellectual competence. This relationship will be moderated by desired closeness, such that individuals with higher desired closeness will be more affected by the acceptance contingency (i.e., exert greater effort when in a task-relevant acceptance contingency condition).

The hypothesis built on support from many sources, including findings of greater self-reported study time among students with self-esteem more contingent on academics (Crocker, Luhtanen, et al., 2003), evidence of using competence pursuit as a way of increasing belonging (Jamieson, Harkins, & Williams, 2010) and enacting achievement goals for social means (Urdan & Mestas, 2006), or theorizing that links pursuit of relational value to a variety of thoughts and behaviors that appear to be enacted in its service (e.g., Covington, 2009; Leary & Baumeister, 2000).

While under certain circumstances tasks linked with one's intelligence might result in defensive withdrawal of effort, this study was designed to avoid such inferred linkages by the subjects: a task involving reading about possibilities for improving one's intelligence with no evaluative component should diminish performance concerns and the corresponding tendency to withdraw effort. It was also deemed a suitable task for improving one's relational value in the domain of intellectual competence for both people who perceive that their close other's acceptance is contingent on intellectual ability per se, and those who perceive that it is contingent

on one's level of intellectual competence (which may be enhanced by improved intellectual ability).

## Chapter 4: Methods

Both studies consisted of two surveys separated in administration by at least five days. Survey 1 served for gathering information about participants and their close others. At the beginning of Survey 2, participants were primed with a randomly assigned close other (one whose acceptance was perceived as intrinsic vs. contingent on appearance vs. contingent on competence) by means of a visualization exercise. In Study 1, participants' anxiety about an intelligence test was subsequently measured; in study 2, participants' effort toward improving their intelligence was subsequently measured. Figure 1 displays a simplified schema of this between-group experimental design.

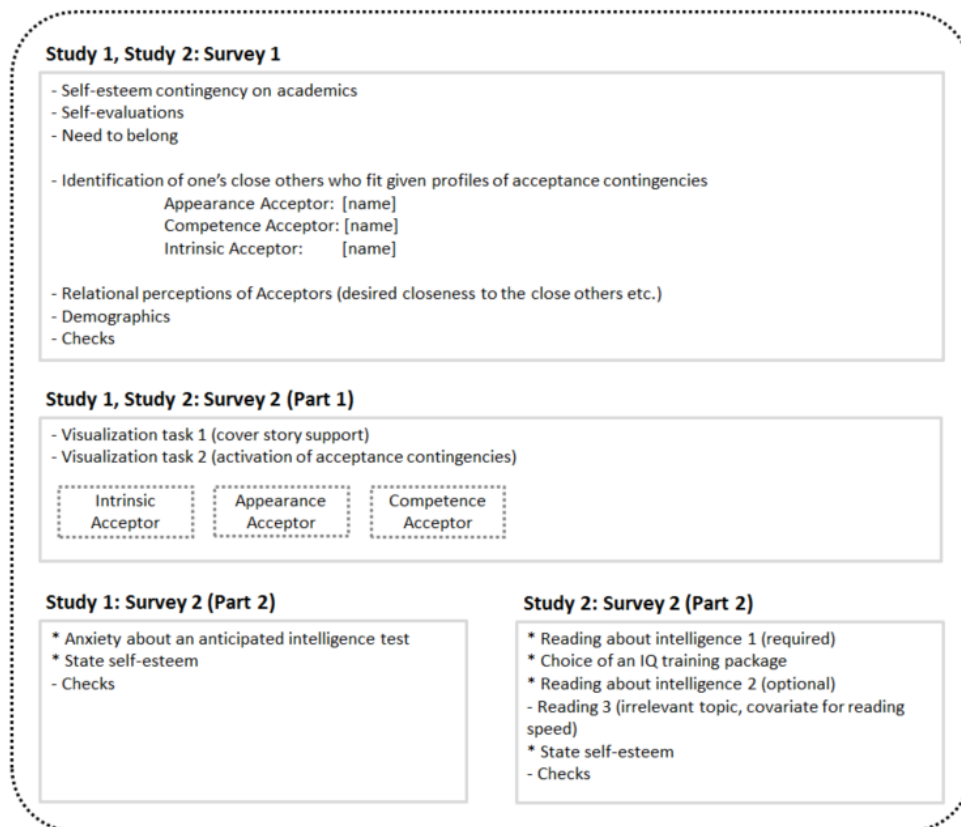


Figure 1. Schema of the experimental design for Study 1 and Study 2

## **Study 1: Effects of Acceptance Contingencies on Anxiety**

**Participants.** Members of the Amazon Mechanical Turk (MTurk) workforce participated in the study by completing online surveys (Survey 1, Survey 2) in exchange for monetary compensation. Participants received \$2.25 for completion of Survey 1, and \$1.10 for completion of Survey 2. Similar to other studies using MTurk (e.g., Levay, Freese, & Druckman, 2016), participation was limited to individuals located in the U.S. who completed more than 100 assignments on the Mechanical Turk in the past and have been approved by requesters in over 90% of cases (these qualifications are based on data maintained about the workers by MTurk).

Minimum sample size of 179 was determined based on power calculation for contrasting 3 groups with desired power of .80 and anticipated effect of  $F = 0.25$  using G\*Power (Faul et al., 2007) software. To protect against unexpectedly high attrition and insufficient number of participants passing screening criteria in Survey 1, 291 participants were assigned for Survey 1 for this study (Survey 1 data collection was joint for Study 1 and Study 2; the total number of recruited participants for Survey 1 for both studies was 661; 543 participants passed screening criteria for eligibility for invitation for Survey 2; of the 543 participants, a randomly selected subset of 291 was assigned for Study 1, and the rest, 252, for Study 2—more participants were recruited for Study 1 than Study 2 because of lower costs of Survey 2). Because it was assumed that attrition would be overestimated yet budgetary constraints precluded inclusion of all eligible participants who completed Survey 1 and might wish to participate in Survey 2, a stopping rule for Survey 2 data collection was determined in advance of the start of Survey 2 at 221 participants (preregistered at [osf.io/93kfx](https://osf.io/93kfx); note that actual number of collected responses was



222, probably because one of the participants completed the survey but did not submit it on MTurk, so he or she was included in the downloaded survey responses).

Participants were excluded from receiving invitation for Survey 2 for any of the following reasons: inability to identify three unique individuals for the profiles of acceptance contingencies (for example, reusing a single name multiple times or writing “NA” or “myself”), use of nonsense words or strings of letters for provided reasoning for selecting close others for given profiles of acceptance contingencies, failure to pass second attention check (the first attention check was not used as it appeared that participants might have had troubles understanding it), suspicion of a single person using different worker accounts (use of the same names of close others in the survey in conjunction with accessing the survey at about the same time), failure to reclassify identified close others for the same description of acceptance contingency at the beginning and end of the survey. Application of these criteria screened out 18% of participants from eligibility for Survey 2.

Survey 2 participants were excluded from analyses if they did not answer affirmatively that they recognized the name of the close other they were asked to visualize in Survey 2 or if they did not recall what type of a test they were told they would take (i.e., an intelligence test). As only participants who passed these two checks were used for analyses (as per preregistered order of prioritization of checks, [osf.io/93kfx](https://osf.io/93kfx)), sample characteristics are subsequently provided only for these participants ( $N = 194$ ).

Participants who classified themselves as females composed 57.7% of the sample. In terms of ethnicity, 79.4% of the participants classified themselves as White, 10.8% as Black or African American, 5.7% as Asian, and 0.5% as American Indian or Alaska Native. In terms of age, 41.2% participants reported being 18-34 years old, 42.7% being 35-54 years old, and 15.4%

being 55-74 years old. Participants reported being employed full-time in 56.2% of cases, being employed part-time in 16.5% of cases, and being a student in 5.2% of cases. Nearly all participants claimed native English fluency (96.4% of participants). Participants reported having a college degree in 40.7% of cases, and having completed some postgraduate work or degree in 20.1% of cases.

**Procedure.** The study consisted of two surveys, a prescreening survey (Survey 1) and a survey with the manipulation of acceptance contingency and measure of anxiety (Survey 2). Administration of the surveys was separated by 5-11 days (depending on how soon from the posting of the surveys participants answered each of the surveys). After giving their consent, participants read that survey examines connections between personality and characteristics of social environment, and that they may be later offered a chance for a follow-up. In the survey, participants first responded to questions related to their trait contingency of self-esteem on academics, their self-evaluation of competence and appearance, as well as one-item question about their need to belong (additional filler questions and one attention check were inserted). Then they identified one of their close others for each of three given profiles of acceptance contingencies (physical appearance acceptance contingency, competence acceptance contingency, intrinsic contingency) and provided justification for their selection. After identification of their close others, participants answered a series of questions about each of the identified close others (the extent to which their acceptance is intrinsic, contingent on physical appearance, and contingent on competence; desired closeness to the close others; frequency of thinking about the close others; etc.; one attention check was included among these questions). Finally, participants answered a few demographic questions about themselves and completed a task that asked them to assign the names of the close others they provided earlier in the survey

again to the given descriptions of acceptance contingencies. The survey ended with thanking for participation and a survey code for obtaining monetary reimbursement.

After a minimum of 5 days, participants who satisfied selection criteria based on the data in the prescreening survey received an email that they qualified to take part in another paid task on MTurk. To prioritize participation by individuals who were able to identify close others who were a good fit for the target criteria, participants who answered that the close other identified for competence acceptance contingency evaluates them to a greater extent based on competence than the close other identified for appearance acceptance contingency does received the email several hours in advance of the other participants (because of how the survey was set up though, all eligible participants had access to the survey once it was released, i.e., a few minutes before the first batch of participants received the email). The email stated that they qualified to complete a follow-up survey to the survey that they already completed, and another unrelated survey. A hyperlink was given to the survey with a description that it combines the two unrelated surveys for which the participants qualified.

The introduction to the survey 2 reiterated that participants would take part in two ostensibly unrelated studies and mentioned that the first study concerns people's visualization ability and the second development of a new measure of intellectual aptitude. The introduction was followed by a bogus task that included visualization of an animal and a task designed to activate representations of close others modeled on visualization tasks used in prior studies (e.g., Baldwin & Holmes, 1987). The visualization task corresponded to one of three conditions into which participants were randomly assigned: competence (visualization of *Competence Acceptor*), physical appearance (visualization of *Appearance Acceptor*), or intrinsic acceptance

contingency (visualization of *Intrinsic Acceptor*). Then, participants read that they completed the first study and are now about to answer questions for the second study.

The ostensible “second study” was introduced as testing reliability of a few new items for a short well-established test designed to measure intelligence in adults. The well-established test was presented as a significant predictor of one’s intellectual achievements (in academic and professional settings) as well as one’s ability to reason logically in everyday situations.

Participants also read that feedback would be provided after they complete the test but that first they needed to answer a few questions about themselves and how they feel about taking the test.

After these instructions, participants completed measures for anxiety and state self-esteem. Then, they were invited to guess what they think the study investigated and respond to a few checks for their responses. At the end, participants were informed that no actual intelligence testing would take place and were debriefed about the purpose of the study (that it assessed anxiety about an anticipated intelligence test following visualization of a close other who did vs. did not care about one’s competence), thanked for their participation, and awarded a survey code to receive monetary reimbursement.

### **Materials (survey 1).**

***Trait contingency of self-esteem on intellectual competence.*** Participants responded to an adaptation of a five-item academic competence subscale of Contingencies of Self-Worth Scale (Crocker, Luhtanen, et al., 2003). This measure ( $\alpha = .81$ ) served to control for potential differences in the level of trait self-esteem contingency between experimental groups.

Sample original items: “I feel better about myself when I know I’m doing well academically”; “My opinion about myself isn’t tied to how well I do in school” (reverse scored). Two of the items refer to whether participants agree that their self-esteem depends on academic

performance; two items refer to whether their self-esteem goes up when they do well academically, and one item refers to whether their self-esteem goes down when they do poorly academically. Participants rate their agreement with the statements on a 7-point scale (1 = *Strongly disagree*, 4 = *Neutral*, 7 = *Strongly agree*). This measure has been shown to have an acceptable level of reliability for the timespan within which it is used in the present study (test-retest correlation of .74 after 3 months; Crocker, Luhtanen, et al., 2003). The predictive validity of the measure can be evidenced by its ability to predict changes in self-esteem in response to academic outcomes (e.g., Crocker, Karpinski, et al., 2003).

The instructions for responding to the items stated that if individuals have not experienced the described situation, they should answer how they think they would feel if it occurred (Crocker, Luhtanen, et al., 2003). This should have made it possible to answer the items for individuals who were not students.

***Self-evaluation of competence and appearance.*** Participants indicated agreement with four items for perceived competence (e.g., “I am competent”;  $\alpha = .90$ ) and four items for perceived appearance (e.g., “My facial features are attractive”;  $\alpha = .80$ ) on a 7-point scale: 1 = *Strongly disagree*, 4 = *Neutral*, 7 = *Strongly agree* (Lemay & Clark, 2008).

***Need to belong.*** Need to belong was assessed with a single item “I have a strong need to belong” (this item showed good validity and test-rest reliability in prior research, Nichols & Webster, 2013). Participants indicated their agreement with the statement on a 7-point scale: 1 = *Strongly disagree*, 4 = *Neutral*, 7 = *Strongly agree*.

***Attention check 1.*** Participants’ attention to instructions was evaluated based on selection of *Strongly agree* in response to “I focus. Pick strongly agree for this item.”

***Filler items.*** Five additional questions about personality traits were included to disguise the purpose of the research. For example, participants were asked to indicate agreement on a 7-point scale (1 = *Strongly disagree*, 4 = *Neutral*, 7 = *Strongly agree*) with items such as “I see myself as open to new experiences and complex” (Gosling, Rentfrow, & Swann, 2003).

***Identification of close others matching target profiles of acceptance contingencies.***

Participants were then instructed to think about people who are close or important to them and whom they think about frequently. In order to identify individuals who would be used as primes of acceptance contingencies in Survey 2, the participants were next instructed to pick one unique individual who would be the best match for each provided description (i.e., descriptions of acceptance contingencies). To protect participants’ identity, participants were instructed to use the people’s first names (with the initial for the last name if necessary; e.g., Jane L.), nicknames (e.g., mom), or initials (e.g., JL).

The description for the appearance acceptance contingency stated, “This person tends to mainly evaluate me based on my physical appearance (for example, how good my face or my body looks) and the extent to which I live up to his or her standards of physical appearance greatly influences how much he or she likes me.” The description for competence acceptance contingency stated, “This person tends to mainly evaluate me based on my competence (for example, based on how smart I am or how good I am at work or school) and the extent to which I live up to his or her standards of competence greatly influences how much he or she likes me.” And, finally, the description for intrinsic acceptance contingency stated, “This person tends to be accepting and nonevaluative of me and simply likes me for who I am.”

These descriptions were modeled based on descriptions used in prior research that manipulated contingent (~extrinsic) vs. noncontingent (~intrinsic) acceptance contingencies and

successfully obtained outcomes theorized to correspond to the contingencies following visualization of close others identified based on the descriptions (e.g., Baldwin & Holmes, 1987; Schimel et al., 2001; Sheldon & Kasser, 2008). The descriptions used in the prior research were: “a person who clearly likes you, tends to be evaluative of you, and seems to accept you only to the extent that you live up to certain standards of performance” for contingent acceptance, and “a person who clearly likes you, tends to be very accepting and non-evaluative of you, and simply accepts you for who you are” for noncontingent acceptance (note: the descriptor “who clearly likes you” has been added only in Arndt et al., 2002).

For each given description of acceptance contingency, participants were instructed to provide justification for why they selected the particular close other.

***Relational perceptions.*** Once participants identified the three close others, they answered a series of questions about the close others. These questions were designed to be used mainly for exploratory purposes to see whether they interact with the visualization condition on the main dependent variables because, for example, Horberg and Chen (2010), showed interaction between primed close other and desired closeness on shifting participants’ self-esteem contingency toward the close other’s central domain. These questions were also included to assist with evaluation of potential alternative explanations for findings.

***Fit of the close other for target acceptance contingencies.*** The fit of the identified close others for the target acceptance contingency and potential contamination with non-target acceptance contingency for each of the close others were evaluated with question items as follows. Participants indicated their agreement that their close other “tends to be very evaluative of [their, i.e., participants’] physical appearance,” “tends to be very evaluative of [their] competence (for example, of how smart [they are] or how good [they are] at work or school,”

and “clearly accepts [them] just for who [they are].” The ratings were made on a 7-point scale (1 = *Strongly disagree*, 4 = *Neutral*, 7 = *Strongly agree*).

*Type of relationship to the close other.* Participants were asked to classify the type of relationship they have to each of the individuals they selected: “How would you describe [name of the identified close other]’s current relationship to you?” The response options included: *Acquaintance (not school- or career-related)*, *Friend (not related to school or your career)*, *Romantic partner*, *Family member (not a romantic partner)*, *Professional relationship (for example, a colleague or a supervisor)*, *School-related relationship (for example, a classmate or a teacher)*, *Other (specify)*.

*Index of desired closeness to the close other.* Desired closeness to each of the close other was assessed with three items ( $\alpha = .92$  for Intrinsic Acceptor;  $\alpha = .94$  for Appearance Acceptor;  $\alpha = .88$  for Competence Acceptor); the answers to the items were averaged to obtain the index. Participants answered the question “How close do you WANT to be to [name of the selected close other]?” using a 7-point scale (1 = *Not at all close*, 5 = *Moderately close*; 7 = *Extremely close*); the question, “How important is it for you feel valued by [name of the selected close other]?” using a 7-point scale (1 = *Not at all important*, 5 = *Moderately important*, 7 = *Extremely important*); and question “How valued do you WANT to be by [name of the selected close other]?” using a 7-point scale (1 = *Not at all valued*, 5 = *Moderately valued*, 7 = *Extremely valued*).

*Frequency of thinking about the close other.* Participants were asked: “On average, how often did you think about [name of the selected close other] over the last 30 days?” The response options were as follows: 1 = *Never*, 2 = *Less than once a week*, 3 = *Once a week*, 4 = *4-6 times a week*, 5 = *Daily*.



*The close other's evaluation of the participant's intelligence and appearance.* Two questions assessed whether the close other considers the participants unintelligent (reverse-scored) and intelligent ( $\alpha = .79$  for Intrinsic Acceptor;  $\alpha = .85$  for Appearance Acceptor;  $\alpha = .84$  for Competence Acceptor), and not good looking (reverse-scores) and good looking (Lemay & Clark, 2008). Participants indicated agreement with the statements on a 7-point scale (1 = *Strongly disagree*, 4 = *Neutral*, 7 = *Strongly agree*).

*Upward and downward acceptance contingencies.* Participants indicated how they believed their relationship with each of the three close others (i.e., those selected as matching the descriptions of acceptance contingencies) would be affected if they suddenly improved in each of the targeted domains of acceptance contingencies (i.e., perceived *upward* acceptance contingency in the domain) and if they suddenly became worse (i.e., perceived *downward* acceptance contingency in the domain). That is, they answered a total of 18 questions about acceptance contingencies (two questions per three domains per three close others).

Specifically, to measure upward acceptance contingency on intellectual competence, participants were asked: "Imagine that by magic you suddenly became much more intelligent, competent, talented, or skilled than you currently are. How would it influence how much [name of the selected individual] values you as a person?" The words "became much more intelligent, competent, talented, or skilled" (the phrase "intelligent, competent, talented, and skilled" was used to measure competence acceptance contingency in MacDonald et al., 2003) were replaced with "became much more good-looking" for measuring upward contingency on appearance and by "started to act much more true to yourself" for measuring upward intrinsic contingency. For downward acceptance contingencies, the word "more" were replaced with "*less*" (e.g., "became much *less* intelligent, competent, talented or skilled"). Participants answered the items about the

changes in relational value on a 7-point scale (1 = *Would value me much less*, 4 = *Would value me still the same*, 7 = *Would value me much more*). The measure of downward acceptance contingency was reverse scored.

***Attention check 2.*** Participants' attention to instructions was evaluated based on selection of *Strongly agree* in response to "I focus. Pick strongly agree for this item."

***Re-matching the identified close others to their assigned acceptance contingencies.*** To ensure that participants selected close others who they would reliably recognize as matching the acceptance contingency for which the participants identified them, participants were again presented with each of the descriptions of acceptance contingencies. For each of the descriptions, the names of the three identified close others were displayed, and participants were asked to pick which of the close others fits the description best.

***Demographics.*** Participants were asked to indicate their gender, age, ethnicity, educational level, employment status, and English proficiency using several listed options. For ethnicity and employment status, participants were able to endorse multiple options. Option to decline to answer the question was provided for each of the questions.

## **Materials (survey 2).**

***Visualization task 1 (cover story).*** To reinforce the cover story that the first part of the survey examined visualization, participants were first instructed to spend 15 seconds imagining an exotic animal and how they are feeding it. Then, they answered several questions about the visualization (which animal they visualized, which food they fed the animal, how vivid their visualization was, etc.)

***Visualization task 2 (activation of acceptance contingencies).*** To make the second visualization task used for experimental manipulation of acceptance contingencies fit within the

cover story of the first part of the survey, the task was framed to participants as involving visualization of something from their life that they are more familiar with (making it seem as if the familiarity dimension of the object to be visualized was of interest to the study). The participants were informed that they listed a name of a close other in one of past surveys they took, and that they would be asked to visualize this person for this exercise.

Participants were randomly assigned into one of the three conditions of acceptance contingencies (i.e., competence, appearance, or intrinsic contingency). The close other's name from Survey 1 corresponding to the acceptance contingency condition to which participants were assigned was then used as a basis for the visualization. The visualization served the purpose of activating cognitive representations of the close other (and his or her acceptance contingencies). While this approach slightly differed from some prior research in which people were asked to visualize a person identified based on the description of acceptance contingencies within the same study session (e.g., Sheldon & Kasser, 2008)—which might have resulted in more direct manipulation of acceptance contingencies—, merely asking people to think of the close others (without direct mention of acceptance contingencies in close temporal proximity to measurement of dependent variables) might have been a more ecologically valid way of assessing effects of daily thoughts about close others and cues that might remind people of them.

The visualization approximated procedure originally developed by Baldwin and Holmes (1987). For example, participants were asked to focus attention on the person, picture his or her face, and imagine hearing his or her voice. Then they were asked several questions regarding the visualization (e.g., rating vividness of the visualization, describing the voice of the close other they imagined in the visualization, indicating the close other's hair color) whose purpose was to

reinforce the cover story about examining visualization and further activate mental representation of the close other.

**Anxiety.** Using a 7-point scale (1 = *Strongly disagree*, 2 = *Strongly agree*), participants responded to two items: “I feel anxious about taking this test” and “I feel distressed and uneasy about taking this test” ( $\alpha = .89$ ; Lawrence & Williams, 2013; originally adapted from Sarason, 1984). This measure was selected in this study because it was used in prior research to show that anxiety mediates the association between self-esteem contingencies on academics and worsened performance under ability-diagnostic conditions (Lawrence & Williams, 2013).

**Filler items.** As in Survey 1, participants answered several filler personality questions to conceal the purpose of the questions.

**State self-esteem.** Two measures of state self-esteem were used: Self-Liking subscale of Self-Liking/Self-Competence Scale-Revised Version ( $\alpha = .95$ ; SLCS-R; Tafarodi & Swann, 2001) adapted for measurement as a state, and a measure of self-evaluative emotions ( $\alpha = .77$ ; Arndt et al., 2002; Leary et al., 1995). While the measures were slightly different from those used by Horberg and Chen (2010), the choice of two measures for state self-esteem followed the same rationale—that self-evaluative emotions may be more contextually sensitive. State self-esteem was measured to see whether participants in intellectual competence contingency experienced lower self-esteem than participants in other conditions (assuming that individuals have a tendency to doubt their intelligence when facing an intellectual assessment, their self-esteem might decrease more following activation of acceptance contingent on intellectual competence; similarly, following activation of this type of acceptance contingency, participants in Study 2 might experience greater increase in their self-esteem after working to improve their intelligence).

SLCS-R is a measure developed to better capture the two factor nature of the Rosenberg Self-Esteem Scale (Rosenberg, 1965)—that is, to differentiate between items that capture one’s perception of competence (corresponding to Self-Competence subscale in SLCS-R) and those that capture one’s perception of being loveable (corresponding to Self-Liking subscale in SLCS-R; Tafarodi & Swann, 2001). Prior research has supported reliability and validity of the measure (e.g., Tafarodi & Swann, 2001). The Self-Liking subscale was selected because it is theorized (Tafarodi & Swann, 1995) to be more closely tied to perception of being socially accepted than the Self-Competence subscale (for a discussion of how common measures of self-esteem may not cleanly assess self-esteem, see also Leary & Baumeister, 2000). The Self-Liking subscale includes eight items. Sample items include “I am very comfortable with myself” and “I do not have enough respect for myself” (reverse scored). Participants rate their answers on a 5-point scale (1 = *Strongly disagree*, 5 = *Strongly agree*). To convert the measure into measuring state self-esteem, participants were asked to respond to items with respect to how they feel “right now” and adverbs like “never” (which refer to the past feelings) were not used. Asking people to make judgments about items measuring self-esteem with respect to “right now” is a common practice in measurement of state self-esteem (e.g., Heatherton & Polivy, 1991).

Self-evaluative emotions were measured by asking participants to rate how they feel right now using a 7-point scale with the following adjectives (summed into an index of self-evaluative emotions): good–bad, proud–ashamed, valuable–worthless, and loved–unloved (as in Leary et al., 1995, with a switch from happy–dejected to loved–unloved as in Arndt et al., 2002). As evidence of validity of these feelings in terms of their reflection of being valued, rankings of how approvingly others would react to various outcomes have been shown to correlate with the index (Leary et al., 1995).

**Attention check.** Participants' attention to instructions was evaluated based on selection of *Somewhat agree* in response to "I read instructions. Select somewhat agree for this item."

**Hypothesis guessing.** Participants were asked to type if based on the questions they had completed so far they had any guesses about what the study investigated, and if so, to state what those guesses were.

**Careful reading of questions.** Participants responded to a question, "How carefully have you read all the instructions and questions in this survey so far?" Five options were provided: 1 = *Not at all carefully*, 3 = *Moderately carefully*, 5 = *Extremely carefully*. Participants were asked to answer the question honestly (it was emphasized that their compensation does not depend on the answer to the question).

**Number of breaks taken.** Participants were asked, "How much time in total did you spend taking a break (for example, to answer a phone call or read an email) while completing the study?" They selected from the following options: *0 minutes*, *1-5 minutes*, *10-20 minutes*, *20 minutes or more*.

**Manipulation checks.** As manipulation checks, participants were asked to select among several options to see whether they could recall the type of test they were told they would take (i.e., test of intelligence) and type the name of the close other they were asked to visualize.

**Re-matching the identified close others to their assigned acceptance contingencies.** To check whether the visualized close other would still be classified as fitting the acceptance contingency it was assumed to represent, participants were again presented with each of the descriptions of acceptance contingencies and asked to select the name of the close other (out of the three names they provided in Survey 1) who best fits each of the descriptions.

## **Study 2: Effects of Acceptance Contingencies on Effort**

**Participants.** Participants were selected for Survey 2 in Study 2 the same way they were selected in Study 1. Identical considerations were applied for determining minimum sample size. The data collection for Study 2 was stopped at 189 participants. Because application of the first exclusion criterion (confirmation of having recognized the name of the close other in the visualization task) already dropped the number of participants beyond the minimum sample size that was calculated, no other exclusion criteria were applied. The subsequent sample characteristics are provided only for these participants ( $N = 173$ ).

Participants who classified themselves as females composed 54.3% of the sample. In terms of ethnicity, 80.9% of the participants classified themselves as White, 9.2% as Black or African American, 5.8% as Asian, and 2.3% as American Indian or Alaska Native. In terms of age, 43.4% participants reported being 18-34 years old, 42.7% being 35-54 years old, and 13.9% being 55-74 years old. Participants reported being employed full-time in 61.8% of cases, being employed part-time in 16.2% of cases, and being a student in 3.5% of cases. Nearly all participants claimed native English fluency (97.1% of participants). Participants reported having a college degree in 40.5% of cases, and having completed some postgraduate work or degree in 14.5% of cases.

**Procedure.** The second study consisted of two surveys whose administration was separated by 5-11 days. The first survey was identical to the survey 1 in Study 1. The same procedure as in Study 1 was used for contacting participants to take the second survey. In the second survey, participants underwent the same visualization tasks aimed at activating acceptance contingencies as in Study 1 according to one of the three acceptance contingency conditions into which they were randomly assigned. The visualization tasks were followed by introduction to the second part of the survey for the ostensibly separate study.

The second part of the survey was presented as a study that examined suitability of background reading materials for an intelligence training program. Participants were told that they would be asked to provide their impressions of the materials and answer a few questions about themselves. Then, they had a chance to read the materials. After reading the first article on the possibility of growing their intelligence, participants answered several questions about their perceptions of the article (these questions served primarily for reinforcement of the cover story). Afterwards, participants were asked whether they would like to receive by email free access to materials with exercises for training intelligence (and if yes, how extensive a training package they would prefer). The choice of the package served as a measure of intentions to exert effort toward improving intelligence. After they made a selection, participants were also told that on the next page they would have an opportunity to read and subsequently evaluate one additional reading but that once the page loads, they can skip the reading and evaluating if they wish. The reading times on the articles were used as measures of effort. Participants were also asked to read one more article about an irrelevant topic (coral reefs), which were to serve as a covariate for reading speed.

After participants completed the readings, they responded to measures of state self-esteem. Finally, as in Study 1, participants answered questions about how carefully they read instructions, how much time they spent taking a break, and what type of training program the instructions stated that the readings were intended for. They also typed the name of the close other they were asked to visualize at the beginning of the survey and then matched the close others from Survey 1 again to their contingencies of acceptance. Debriefing about the purpose of the study and a survey code to receive monetary reimbursement followed. Participants received \$2.40 for completion of Survey 2.



**Materials.** Difference in Study 2 from Study 1 is only in a part of the second part of the second survey. For that reason, only materials that are included in Study 2 but not in Study 1 are described below.

***Readings on intelligence training.*** The first reading that all participants were asked to read was adapted from the article “You can grow your intelligence” by Blackwell, Trzesniewski, and Dweck (2007). This article conveyed a message that intelligence can be increased through practice the same way that muscles can be strengthened through exercise.

In addition to this article, participants were able to read an optional reading (all participants accessed the reading but were told they could skip to the next page if they so wished); this reading described a method for training intelligence and was adapted from the article “A simple exercise to boost IQ” (Lehrer, 2011).

***Reading to assess reading speed.*** A reading about an unrelated topic, adapted from “Hawaii’s mysterious coral reefs turn out to be super weird” (Simon, 2016), was used to control for participants’ reading speed.

***Perceptions of the readings.*** To reinforce the cover story, participants were asked to rate how credible, worthwhile, and interesting they found the provided readings using single-item questions with 5-point response scales (1 = *Not at all credible/worthwhile/interesting*, 5 = *Highly credible/worthwhile/interesting*).

***Effort.*** Participants’ time spent reading the articles about intelligence training was recorded and used as an indicator of effort.

***Intentions to exert effort.*** Participants’ selection of which free intelligence training package they would like to receive was used as a measure of intentions to exert effort.

Participants were given five choices: 1 = *no package*, 2 = *package for occasional practice*, 3 = *package for frequent practice*, and 4 = *package for very frequent practice (most effective)*.

***Manipulation checks.*** The manipulation checks took the same form as the checks in Study 1 except that instead of asking about what participants were told a test would measure, they were asked for what type of training the provided readings were intended (i.e., training of intelligence).

## **Chapter 5: Results**

This chapter consists of sections for preliminary analyses, confirmatory analyses, and exploratory analyses. Preliminary analyses include descriptive information relevant to evaluation of intervention implementation (prime characteristics; information about participants' responding), evaluation of main measures (correlation of anxiety and effort with self-esteem contingency on academics), and examination of assumptions for subsequent inferential analyses. Confirmatory analyses examine effect of acceptance contingency on anxiety (Study 1) and effort (Study 2). The prediction for the confirmatory analyses was that participants for whom competence acceptance contingency was activated would report more anxiety and more effort than participants with other activated acceptance contingencies, and that this relationship would be moderated by closeness to Competence Acceptor (those closer to Competence Acceptor would experience more anxiety and exert greater effort). Exploratory analyses in both studies additionally examine presence of differences among acceptance contingency conditions on measures of state self-esteem (because it was predicted that under activation of competence acceptance contingency state self-esteem might be decreased by self-doubts induced by anticipation of an intelligence test and increased by indication of willingness to improve one's intelligence to a greater extent than under activation of other acceptance contingencies). Because confirmatory analysis in Study 1 suggested presence of moderating factors, exploratory analyses were also conducted to examine influence of additional potential moderating factors (those that might theoretically strengthen the influence of prime for competence acceptance contingency or general sensitivity to social influences).

## Study 1: Preliminary Analyses

The study included a number of checks to evaluate implementation fidelity. While only a subset of the checks (i.e., self-reported ability to recognize the visualized person; recall of being asked to take a test of one's intelligence) deemed the most important was used for exclusion of participants from the analyses in order not to excessively limit sample size, descriptive information about the checks is provided for evaluation purposes. There were 28 participants (12.6% of all survey 2 participants) who did not pass the check of recognition of the visualized person or of recall of the purpose of the anticipated test; these participants were excluded from all analyses (leaving a sample of 194 participants available for analyses).

**Perceived characteristics of the identified close others.** In order for the primes of close others to activate intended acceptance contingencies, it is assumed that the close others should fit the intended profile of acceptance contingencies. That is, at minimum, Competence Acceptor should be perceived as more evaluative of competence than Intrinsic and Appearance Acceptor, Appearance Acceptor should be perceived as more evaluative of appearance than Competence and Intrinsic Acceptors, and Intrinsic Acceptor should be less evaluative of competence and appearance as well as be perceived as more accepting of one simply for who one is than Competence and Appearance Acceptors. That said, it is plausible that other conditions may be necessary (such as a minimum level of the target contingency, or sufficient distinctiveness of the target contingency in relation to other contingencies for the close other). Information about acceptance contingencies may be inferred from the perceived close others' evaluativeness of the target characteristics. Table 1 displays the means for these items per the identified close other. The mean values for these characteristics suggest that the minimum requirements were met. Appearance Acceptors also tended to care more about competence than Competence Acceptors

tended to care about appearance. This suggests that Appearance Acceptors might have, on the whole, been perceived as more contingently accepting. While appearance is only one potential task-irrelevant domain, somewhat greater disagreement with the statement that Appearance Acceptor simply accepts one for who one is suggests that this prime was indeed more contingent. Hence, comparison of the level of anxiety elicited by appearance vs. competence prime should enable comparison of the effects of greater task-irrelevant contingency with greater level of contingency in general. However, because of the presence of competence contingency in appearance prime, it is not possible to tell whether any potential greater anxiety following appearance prime compared to intrinsic prime is due to greater level of contingency or greater presence of task-relevant contingency (i.e., competence).

Table 1

*Descriptive statistics for the extent to which the identified close others accept one based on intrinsic qualities, appearance, and competence in Study 1*

Acceptance Contingency	Close Others Identified for the Acceptance Contingency Primes					
	Intrinsic Acceptor		Appearance Acceptor		Competence Acceptor	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Intrinsic Acceptance	6.7	0.67	3.5	1.57	4.3	1.58
Appearance Acceptance	2.2	1.27	6.1	0.82	2.9	1.62
Competence Acceptance	3.0	1.68	4.0	1.71	6.2	0.92

Participants' justifications for selection of close others for acceptance contingency descriptions may provide additional information about what may be primed in different

experimental conditions. Reasons based on which participants made acceptance contingency inferences were varied. For example, for appearance and competence contingencies, the reasons included the close other's high performance in the domain (e.g., "She is smoking hot" for appearance), fit of the relational role with the participant's acceptance schema for the role (e.g., "He is my boss" for competence), the close other's comments, praise, or criticism about the participant's performance in the domain (e.g., "She compliments me when I have on a really nice outfit but otherwise says nothing."), the close other's evaluation of others or differential acceptance based on performance in the domain or general evaluative style (e.g., "she bases her opinion on people by the degrees that they have" for competence), or perceptions of whether one's performance in the domain determines acceptance (e.g., "This is my boss, my performance and competence determines his like or dislike for me" for competence). Reasons for intrinsic contingency included, for example, kindness, lack of being judgmental, supportiveness, or unconditional love (e.g., "She is my spouse and no matter what happens she will always support me"). The provided reasons overall indicated that participants understood descriptions of the acceptance contingencies and made their selections in accordance with the criteria.

Even if the close others fit the target profile of acceptance contingency, the prime might not be effective unless participants desire closeness to the close other (as seen in studies conducted by Horberg & Chen, 2010) or the prime is sufficiently strong as to lead to automatic activation of acceptance contingency (the strength of the prime may be indexed by reported frequency of thinking about the close other). The information about potential effectiveness of the primes is displayed in Table 2. Greater desired closeness and frequency of thinking about the close other corresponded to lower overall contingency of the prime.

Table 2

*Descriptive statistics for desired closeness to the identified close others and for frequency of thinking about them in Study 1*

Characteristic	Close Others Identified for the Acceptance Contingency Primes					
	Intrinsic Acceptor		Appearance Acceptor		Competence Acceptor	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Desired closeness	4.3	0.81	2.8	1.29	3.2	1.04
Frequency of thinking about the close other	5.1	1.18	3.8	1.74	3.9	1.54

Of course, any effects due to activation of the identified close others may have been due to characteristics of close others that correlate with the acceptance contingency and may exert unexpected effects on the dependent measures. Three such additional characteristics were included in this study: type of relationship to the close other, the close other's evaluation of one's competence, and the close other's evaluation of one's appearance. The information about these additional characteristics is displayed in Table 3 and Table 4.

This information indicates a potential confound—Intrinsic Acceptor evaluates participants more highly than Appearance and Competence Acceptors do. Activating representations of close others has been shown to influence one's success expectancies in line with how positive the activated close others are perceived to evaluate the individual (Shah, 2003). If improved self-evaluation resulted in decreased anxiety, participants might experience less anxiety following prime of Intrinsic Acceptor compared to primes of Appearance and Competence Acceptors.

Appearance Acceptors were most likely to be friends, romantic partners, and family members; Competence Acceptors were most likely to be friends, those with whom one has a professional relationship, and family members; Intrinsic Acceptors were most likely to be friends, family members, and romantic partners. Greater percentage of professional relationships in the competence prime might be problematic as it might prime greater stress that participants might experience at work, which may influence participants' level of anxiety.

Table 3

*Descriptive statistics for how the identified close others are perceived to evaluate participants' competence and appearance in Study 1*

Characteristic	Close Others Identified for the Acceptance Contingency Primes					
	Intrinsic Acceptor		Appearance Acceptor		Competence Acceptor	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Evaluates participant as competent	6.2	0.78	5.4	1.27	5.7	1.14
Evaluates participant as good-looking	5.5	1.17	4.7	1.66	4.5	1.14



Table 4

*Identified close others' relationship to the participants in Study 1*

Relationship	Close Others Identified for the Acceptance Contingency Primes		
	Intrinsic Acceptor	Appearance Acceptor	Competence Acceptor
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Acquaintance (not related to school or career)	0.0	14.9	1.5
Friend (not related to school or career)	43.8	32.0	32.0
Romantic partner	25.8	20.6	3.6
Family member (not a romantic partner)	26.3	17.5	26.8
Professional relationship (for example, a colleague or a supervisor)	1.5	6.7	28.9
School-related relationship (for example, a classmate or a teacher)	1.0	0.5	5.7
Other	1.5	7.7	1.5

**Manipulation and attention checks.** The attention check was passed by 95.5% of Survey 2 participants. No breaks taken during the study were reported by 93.2% of participants. Reading instructions very or extremely carefully was reported by 97.8% of participants. The type of test (i.e., intelligence test) included in instructions was correctly recalled by 92.3% of participants (note that several participants reported confusion about this question as they thought it related to the visualization exercises). Participants confirmed that they recognized the close other they were instructed to visualize in 94.6% of cases. Participants identically reclassified

92.8% of close others with competence contingency, 92.8% of close others with appearance contingency, and 95.5% of close others with intrinsic contingency (these numbers should not be understood as evidence that participants' perception of these close others in relation to each other did not change as it is possible that the participants mistakenly believed that they have to choose the same description as they did in a previous survey). Participants recalled at the end of the survey the name of the close other they were asked to visualize in 99.0% percent of cases (two participants wrote a description of the person rather than a name, so it was not possible to ascertain their answers). The relatively high rate of correct answers to each of the checks suggests that participants indeed paid attention to instructions, possessed consistent representation of the visualized close others, and were cognizant that they are about to take an intelligence test while answering questions about anxiety and self-esteem.

**Hypothesis guessing.** Only five individuals expressed opinion that the study examined connection between visualization of a person and feelings (this does not include individuals who expressed connection between visualization task in general or visualization ability and feelings).

**Attrition.** Ten individuals began the survey but did not complete it. Only one of these individuals left the study at a point that could be relevant to the effect of experimental conditions (i.e., once or after the name of the randomly assigned close other was displayed); this participant was in competence contingency condition.

**Correlation between baseline self-esteem contingency on academics and anxiety.**

There was a moderate positive correlation between average anxiety and average self-worth contingency on academics,  $r(192) = .251, p < .001$ . The covariance suggests that the measure of anxiety may be sensitive to activation of competence acceptance contingency. This supports the

use of the measure in the study as it signifies that the measure may be capable of detecting effects of situationally activated acceptance contingencies.

**Distribution of relevant variables.** Distributions of the variables used to examine effects of activated acceptance contingencies on anxiety were examined for normality (see Table 5). Self-esteem contingency on academics, self-evaluation of competence, and closeness to Competence Acceptor distributions had a largely negative skew. Threat to relational value from Competence Acceptor had a largely positive skew (participants tended to perceive that the close other would value them much less if they became less competent).

Table 5

*Descriptive statistics for variables used as covariates in the confirmatory analysis and additional variables that were used as moderators in exploratory analyses examining effects on anxiety*

Variable	M	SD	Skewness	Kurtosis
Self-esteem contingency of academics	5.3	1.03	-0.922	0.597
Self-evaluation of competence	6.1	0.79	-1.446	3.470
Closeness to Competence Acceptor	3.2	1.04	-0.294	-0.452
Frequency of thinking about Competence Acceptor	3.9	1.53	-0.111	-1.048
Need to belong	3.9	1.66	-0.008	-0.930
Threat to relational value from Competence Acceptor (Competence Acceptor's downward acceptance contingencies on competence)	2.46	1.179	0.547	0.098
Sum of risk factors	3.3	1.49	-0.058	-0.646

*Note.* *SE* for skewness = 0.175; *SE* for kurtosis = 0.347.

In order to ascertain whether the data is suitable for analyses of variance, the distributions of anxiety were examined for normality (by acceptance contingency condition and by desired closeness, see Table 6; and by acceptance contingency and by susceptibility to acceptance

contingencies, see Table 7). The Shapiro-Wilk test for normality indicated considerable departures from normality in almost all groups. Homogeneity of variance was also examined. For grouping of acceptance contingency condition by desired closeness, Levene's test did not indicate violation of homogeneity of variance,  $p = .120$ ; for grouping of acceptance contingency condition by susceptibility to acceptance contingencies, Levene's test also did not indicate violation of homogeneity of variance,  $p = .076$ .

Table 6

*The Shapiro-Wilk test for normality of distribution of anxiety for acceptance contingency condition by desired closeness to Competence Acceptor*

Cell	Shapiro-Wilk test	
	Statistic	p-value
Above-average closeness, Intrinsic contingency	.920	.014
Above-average closeness, Appearance contingency	.917	.020
Above-average closeness, Competence contingency	.915	.014
Below-average closeness, Intrinsic contingency	.931	.047
Below-average closeness, Appearance contingency	.900	.004
Below-average closeness, Competence contingency	.905	.013

Table 7

*The Shapiro-Wilk test for normality of distribution of anxiety for acceptance contingency condition by susceptibility to acceptance contingencies*

Cell	Shapiro-Wilk test	
	Statistic	p-value
High susceptibility, Intrinsic contingency	.925	.025
High susceptibility, Appearance contingency	.931	.093
High susceptibility, Competence contingency	.938	.079
Low susceptibility, Intrinsic contingency	.924	.030
Low susceptibility, Appearance contingency	.891	.001
Low susceptibility, Competence contingency	.895	.006

Visual inspection of the histograms (Figure 2 and 3) indicated several shapes of distributions for different cells of analyses. Participants below-average in desired closeness to

Competence Acceptor and those with a small number of identified risks to susceptibility to acceptance contingencies (i.e., three or fewer) tended to exhibit bimodal distribution of anxiety in all experimental conditions. In contrast, those with above-average desired closeness or high susceptibility to acceptance contingencies tended to exhibit flat or slightly positively skewed distribution of anxiety when in either intrinsic or appearance acceptance contingency conditions, and negatively skewed distribution in competence acceptance contingency condition.

The negatively skewed distribution in competence acceptance contingency condition might be construed as a result of the effects of the experimental condition (individuals who would have otherwise reported little anxiety reported more anxiety because of the visualization of Competence Acceptor), and thus be an evidence supporting the hypothesis of the study.

Different shapes of the distributions do not enable uniform transformation, and thus complicate analyses. For the confirmatory analysis that used self-esteem contingency on academics and gender as covariates, another violation of the assumptions might be heterogeneity of variances (while self-esteem contingency on academics and gender did not statistically significantly interact with anxiety, exploratory analyses indicated that women and those above-average on self-esteem contingency on academics might be more sensitive to the effects of competence acceptance contingency). Despite violations of normality and differences in shapes of distributions, analyses of variance were conducted anyway (due to the author's lack of knowledge of techniques that would be more appropriate). However, because of the multiple violations of assumptions, caution has to be exercised in interpreting the reported results of the statistical significance tests and effect sizes.

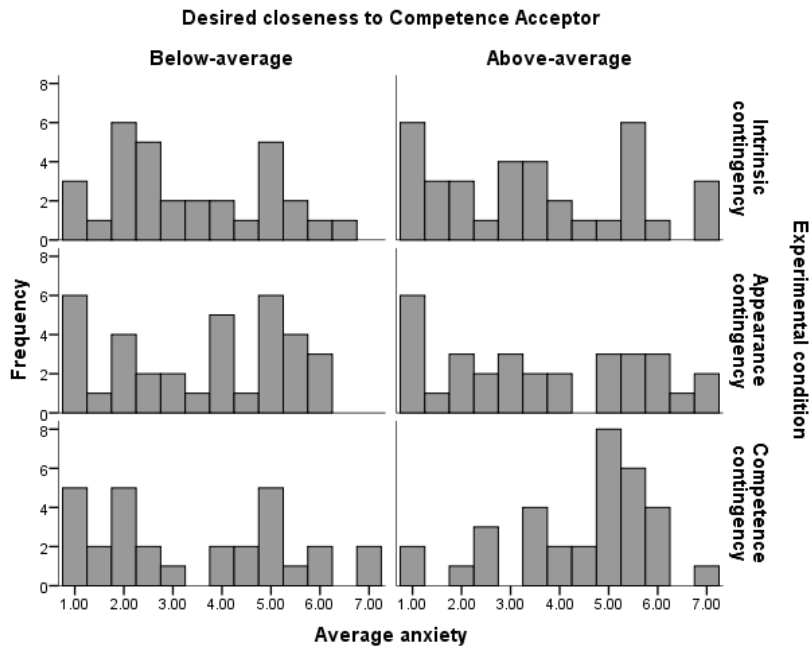


Figure 2. Histogram for distribution of anxiety by acceptance contingency condition and by closeness to Competence Acceptor

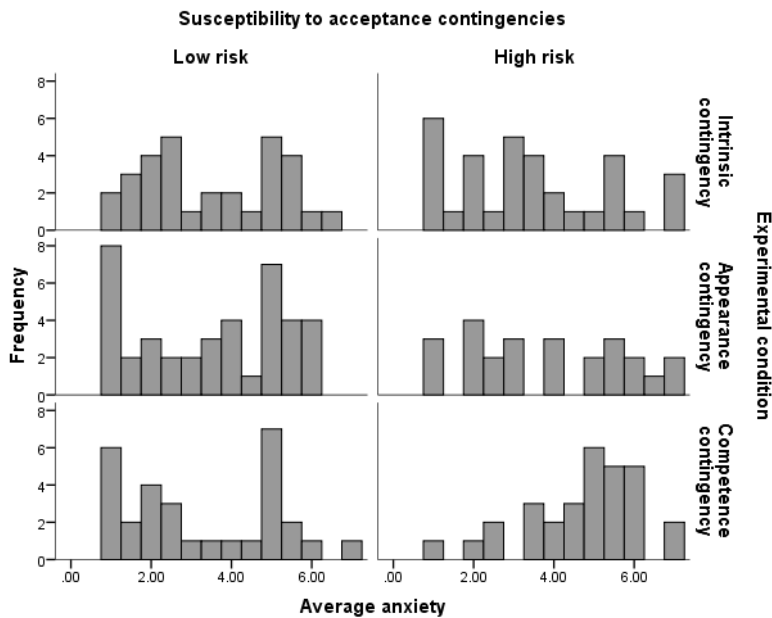


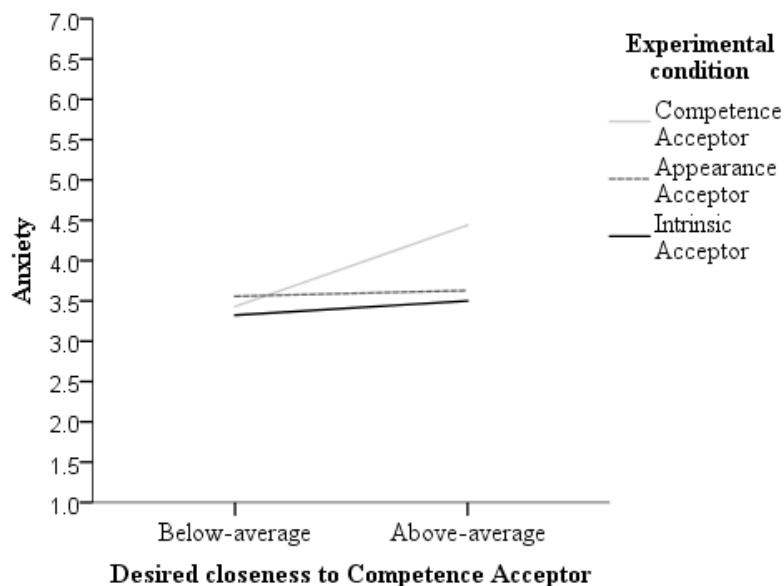
Figure 3. Histogram for distribution of anxiety by acceptance contingency condition and by susceptibility to acceptance contingencies

### **Study 1: Effects of Acceptance Contingencies on Anxiety (Confirmatory Analysis).**

A 3 (*contingency*: intrinsic vs. appearance vs. competence) x 2 (*desired closeness to Competence Acceptor*: dichotomized at below-average vs. above-average) analysis of covariance (ANCOVA) was conducted to examine whether activating domain-specific acceptance contingencies influenced participants' anxiety and whether this relationship was moderated by desired closeness to Competence Acceptor; self-esteem contingency on academics, self-evaluation of competence, and gender were used as covariates. The effects of condition were predicted to be moderated by desired closeness to Competence Acceptor because greater desired closeness might enhance the effectiveness of the prime (loss of relational value in the eyes of close other with whom one highly desires closeness might be more threatening). Higher baseline self-esteem contingency on academics (an indicator of how much others in one's life in general may evaluate one based on intellectual performance), lower self-evaluation of competence (lower perceived competence may lead to greater worries about performing poorly), and being a female were characteristics that were predicted to be associated with higher anxiety, and thus were chosen as covariates to reduce the error term.

All three covariates were statistically significant predictors of anxiety in the predicted direction: contingency of self-worth on academics,  $F(1, 184) = 11.729$ ,  $MSe = 539.869$ ,  $p = .001$ ,  $\eta_p^2 = .060$ ; self-evaluation of one's competence,  $F(1, 184) = 4.034$ ,  $p = .046$ ,  $\eta_p^2 = .021$ ; and gender,  $F(1, 184) = 7.720$ ,  $p = .006$ ,  $\eta_p^2 = .040$ . The interaction between desired closeness and contingency condition was not statistically significant,  $F(2, 184) = .943$ ,  $p = .391$ ,  $\eta_p^2 = .010$ . The main effect of contingency condition was not statistically significant,  $F(2, 184) = 1.361$ ,  $p = .259$ ,  $\eta_p^2 = .015$ . The main effect of closeness was not statistically significant either,  $F(1, 184) = 0.701$ ,  $p = .404$ ,  $\eta_p^2 = .004$ .

Nevertheless, the direction of the means was as predicted, with larger differences between competence contingency and other conditions observed among those who desired closeness to the close other with perceived competence-contingent acceptance (see Figure 4). Moreover, the effect sizes for the differences between competence contingency and other conditions among those above-average in desired closeness were sizeable considering the brief procedure used to activate the acceptance contingencies:  $d = 0.54$  for difference between competence and intrinsic contingency,  $d = 0.46$  for difference between competence and appearance contingency (see Table 8). These results provide initial support for the hypotheses of this study and substantiate a need for replication of the study with larger, more targeted sample.



*Figure 4.* Means for anxiety as a function of the experimental condition and desired closeness to Competence Acceptor



Table 8

*Descriptive statistics of average anxiety displayed by dichotomized desired closeness to the close other with competence-contingent acceptance, and by experimental group*

				Cohen's <i>ds</i> for differences between group means					
Factor	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Desired closeness below-average									
1. Intrinsic contingency	31	3.32	1.60						
2. Appearance contingency	35	3.56	1.74	0.14					
3. Competence contingency	28	3.48	1.97	0.09	0.04				
Desired closeness above-average									
4. Intrinsic contingency	35	3.50	1.95	0.10	0.03	0.01			
5. Appearance contingency	31	3.63	2.02	0.17	0.04	0.07	0.07		
6. Competence contingency	33	4.44	1.48	0.72	0.54	0.55	0.54	0.46	

*Note.* Unadjusted means are displayed.

### Study 1: Exploratory Analyses

**Examining moderation by theorized individual difference variables of effects of contingency conditions on anxiety.** Given quite large error variance in the whole sample, means for the experimental conditions were obtained for subgroups of participants based on individual difference variables hypothesized to influence the strength of the effects (see Table 9 for correlations of membership in these groups). The purpose of these analyses was to identify whether the activated acceptance contingencies might be differentially effective for different groups of participants. Evidence that they are may inform selection of participants for the future replication study.

Table 9

*Correlations among the dichotomized variables used to investigate differential effectiveness of the experimental conditions*

Subgroup classification	1	2	3	4	5	6
1. Above-average desired closeness to Competence Acceptor	--					
2. Above-average frequency of thinking about Competence Acceptor	.42	--				
3. Above-average need to belong	.30	.15	--			
4. High threat to relational value	-.04	-.05	-.01	--		
5. Above-average self-worth contingencies on academics	.22	.12	.08	.09	--	
6. Female	.01	.08	.09	-.01	.01	--

***Frequency of thinking about the close other whose acceptance depends on competence.***

The influence of competence contingency prime should theoretically also be strengthened by higher frequency of thinking about the close other identified for the competence contingency acceptance profile. Thinking about close others more frequently should lead to greater consideration of what their acceptance depends on, and thus greater likelihood of automatic activation of their acceptance contingencies when being reminded of them. A plot of means by frequency of thinking about the close other identified for competence contingency (above-average vs. below-average) is displayed in Figure 5. There was a trend for larger differences in anxiety between competence contingency condition and appearance contingency condition as well as between competence contingency condition and intrinsic contingency condition among those in the subgroup who reported thinking about the close other more frequently compared to

the other subgroup; the relative magnitude of the means was also in the predicted direction. This result reflected the trend evidenced in grouping by closeness to the close other. The result of the analysis of the effect of experimental condition on anxiety when the sample for analysis was restricted to those above-average in frequency of thinking about Competence Acceptor was as follows:  $F(2, 113) = 1.748$ ,  $MSe = 3.366$ ,  $p = .179$ ,  $\eta_p^2 = .030$ . Among those above-average in frequency of thinking about Competence Acceptor, the effect sizes were  $d = 0.43$  for difference between competence and intrinsic contingency, and  $d = 0.31$  for difference between competence and appearance contingency.

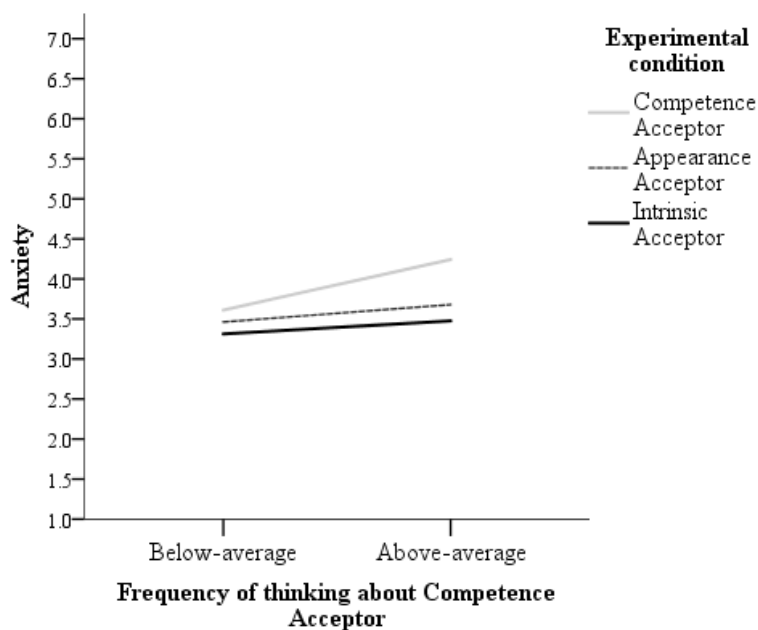


Figure 5. Means for anxiety as a function of the experimental condition and frequency of thinking about Competence Acceptor

***Need to belong.*** Desired closeness to the close other who cares about one's competence and frequency of thinking about him or her enable only comparison of the influences of stronger prime of competence contingency to less strong prime of competence contingency relative to the primes of appearance and intrinsic contingency that are of whichever strength that happens to correlate with the desire to be close to someone who cares about one's competence or thinking about him or her more frequently. For that reason, the moderation of the influence of conditions on anxiety was also examined for individuals who were above-average vs. below-average on a single-item measure of need to belong. Since the need to belong should index one's susceptibility to being accepted, susceptibility to the influence of *all* activated acceptance contingencies should be higher in individuals who are higher in the need to belong. As seen in Figure 6, the trend for larger difference between competency contingency and intrinsic contingency again emerged. In contrast to the groupings that included a group that strengthened only competence contingency prime, the differences in means between the competence contingency condition and appearance contingency condition were quite similar. As close others identified for appearance contingency profile tended to also be perceived as somewhat evaluative of one's competence, it is plausible that participants sensitive to social cues reacted to the presence of the competence contingency in appearance-contingent close others. The result of the analysis of the effect of experimental condition on anxiety when the sample for the analysis was restricted to those above-average on need to belong was as follows:  $F(2, 102) = 1.743$ ,  $MSe = 3.338$ ,  $p = .180$ ,  $\eta_p^2 = .033$ . Among those above-average in need to belong, the effect sizes were  $d = 0.44$  for difference between competence and intrinsic contingency, and  $d = 0.15$  for difference between competence and appearance contingency.

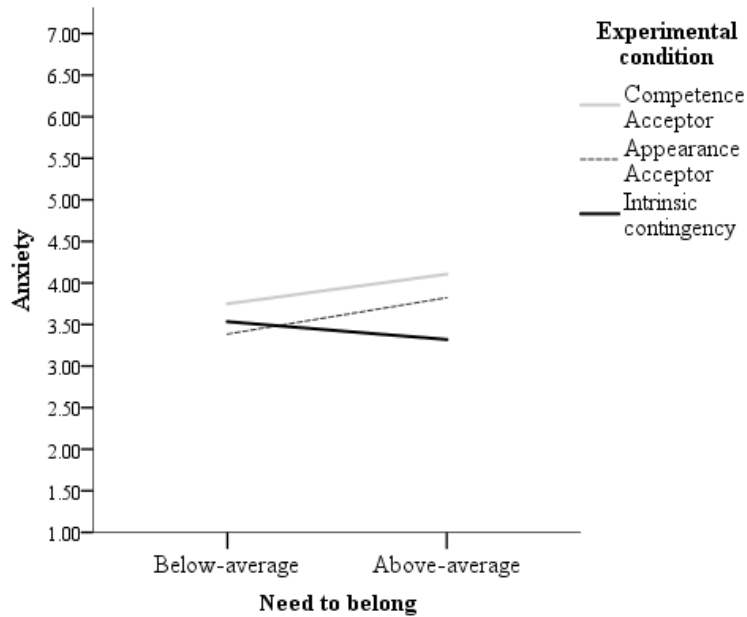


Figure 6. Means for anxiety as a function of the experimental condition and need to belong

**Threat to relational value.** Both desired closeness to the competence person, frequency of thinking about the competence person, and general susceptibility to social influences should exacerbate participants' responsiveness to the activated acceptance contingencies. But in order for the acceptance contingencies to be influential when one is sensitive to them, participants should perceive that their value in the close others' eyes indeed substantially hinges on performance in the domain of acceptance contingency. For that reason, the influence of activated contingency was additionally examined for participants for whom failure at the task evaluative of their competence would result in the highest loss in terms of relational value vs. those for whom it would have relatively little consequence. The participants with high risk of loss of relational value were operationalized as those who indicated that the person identified for competence contingency profile would value them "less" or "much less" if they became much less competent; those with low risk of loss of relational value as those who indicated "slightly less",

“still the same”, or more for the same question. As seen in Figure 7, those at a greater risk for loss of relational value from the competence person reported higher anxiety when in competence contingency condition than in either of the appearance or intrinsic contingency conditions; this trend did not emerge for participants who faced little threat to their relational value from competence person. This result is consistent with the theoretical prediction. When the sample for analysis of the effect of experimental condition on anxiety was restricted to participants at high risk of loss of relational value, an effect of experimental condition emerged at a conventionally statistically significant level,  $F(2, 103) = 3.416$ ,  $MSe = 3.125$ ,  $p = .037$ ,  $\eta_p^2 = .062$ . Among those with high threat to relational value from Competence Acceptor, the effect sizes were  $d = 0.57$  for difference between competence and intrinsic contingency, and  $d = 0.54$  for difference between competence and appearance contingency.

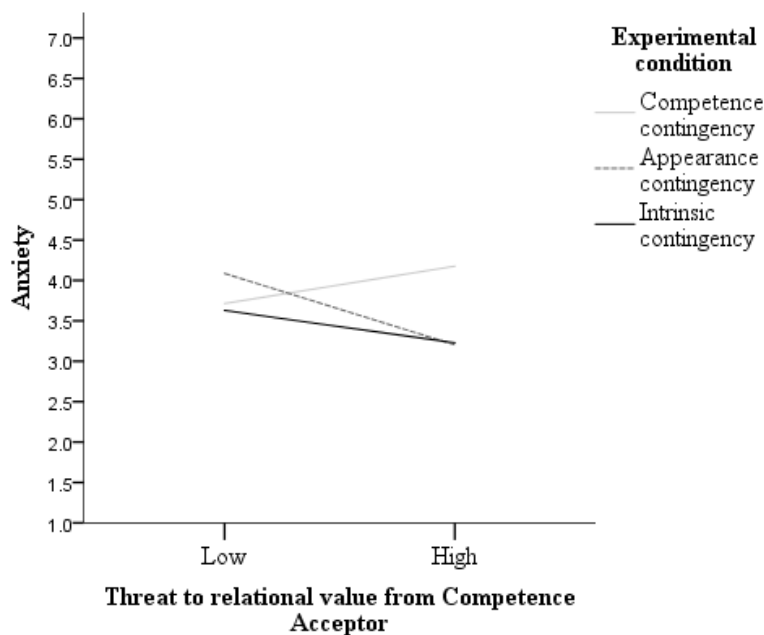


Figure 7. Means for anxiety as a function of the experimental condition and threat to relational value from Competence Acceptor

***Baseline self-worth contingency on academics.*** Individuals with higher baseline contingency of self-worth on academics might be more sensitive to the activation of competence contingency acceptance. This possibility is consistent with the observed relationships (see Figure 8). This may indicate that those most likely to be at risk for experiencing side effects of competence contingency may be the ones who are the most sensitive to situational changes in acceptance contingencies (rather than that the observed relationships are driven by individuals who are at a relatively low risk but become considerably more anxious once the competence contingency is activated). The result of the analysis of the effect of experimental condition on anxiety when the sample for the analysis was restricted to those above-average on self-worth contingency on academics was as follows:  $F(2, 108) = 3.017$ ,  $MSe = 3.152$ ,  $p = .053$ ,  $\eta_p^2 = .053$ . Among those with above-average contingency of self-worth on academics, the effect sizes were  $d = 0.59$  for difference between competence and intrinsic contingency, and  $d = 0.40$  for difference between competence and appearance contingency.

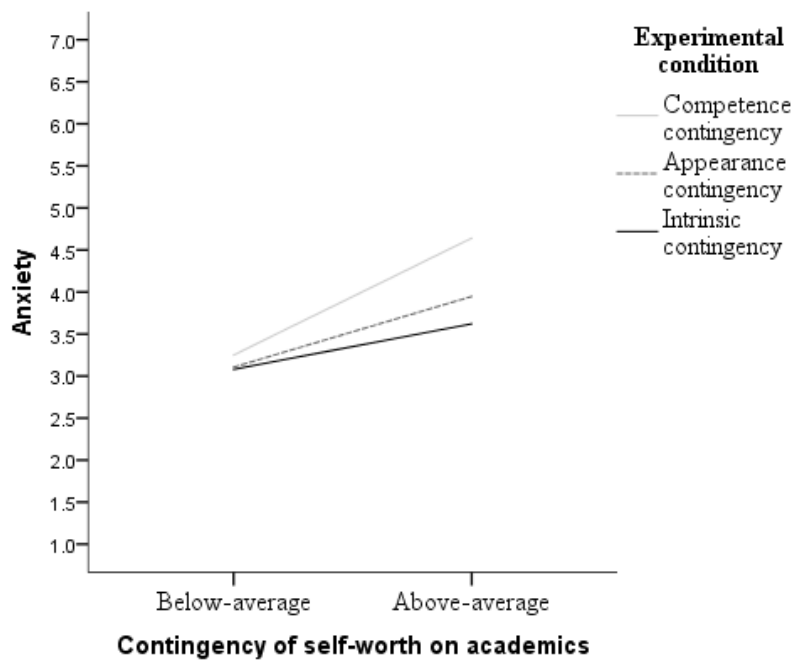


Figure 8. Means for anxiety as a function of the experimental condition and contingency of self-worth on academics

**Gender.** Because women in this study reported more anxiety ( $M = 4.00$ ,  $SD = 1.80$ ) than men ( $M = 3.25$ ,  $SD = 1.76$ ) and because prior research showed gender differences in responses to anxiety-reducing interventions that were based on reminders of social support (e.g., Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013), differences in means across experimental groups were also examined with the means grouped by gender. Similar pattern of results emerged as when the results were grouped by the other individual-differences variables assumed to enhance sensitivity to social influences (or strengthen the influence of competence prime). As seen in Figure 9, there was a trend for women in competence contingency condition to report higher anxiety compared to women in non-task related contingencies; this trend was not evidenced in men. The result of the analysis of the effect of experimental condition on anxiety



when the sample for the analysis was restricted to women was as follows:  $F(2, 109) = 3.017$ ,  $MSe = 3.143$ ,  $p = .053$ ,  $\eta_p^2 = .052$ . Among women, the effect sizes were  $d = 0.54$  for difference between competence and intrinsic contingency, and  $d = 0.44$  for difference between competence and appearance contingency.

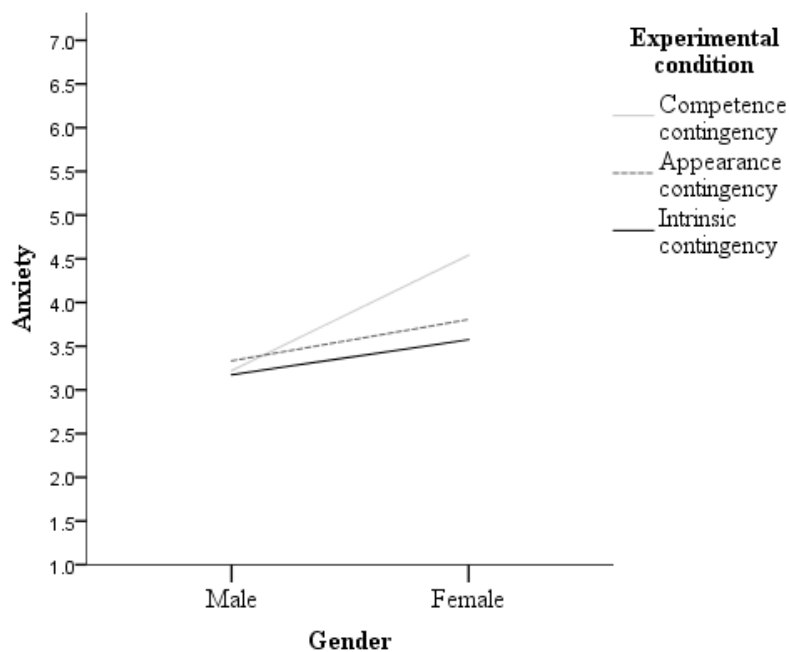
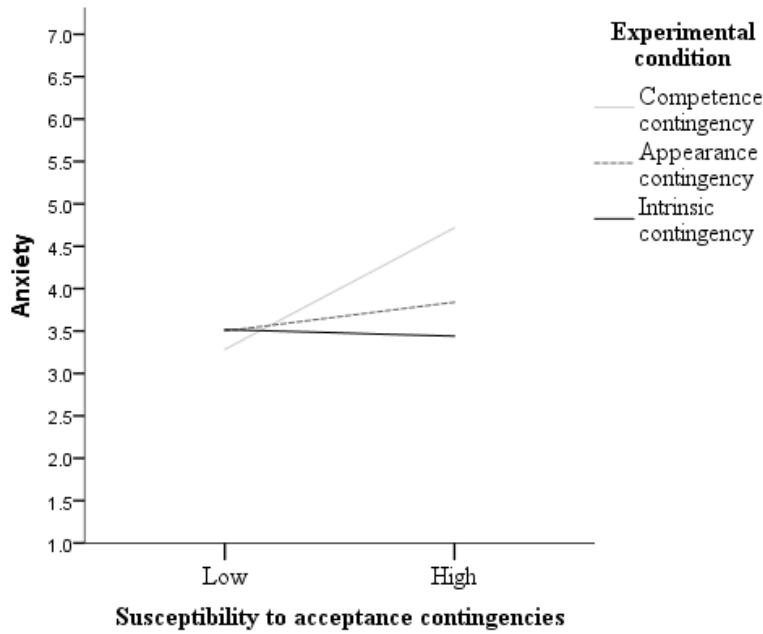


Figure 9. Means for anxiety as a function of the experimental condition and gender

**Summed risk factors.** Because of participant overlap among the six risk factors for susceptibility to acceptance contingencies (45.4% of participants had four or more risk factors), the results are also presented for one-way ANOVA conducted only with participants who had a high number of risk factors (i.e., four or more). The assumption of homogeneity of variances was not formally violated for this analysis, as assessed by Levene's test of homogeneity of variances

( $p = .066$ ). However, Shapiro-Wilk's test indicated that scores on anxiety were not normally distributed in intrinsic acceptance contingency condition ( $p = .025$ ); there were no formal violations of normality for appearance acceptance contingency condition ( $p = .093$ ) and competence acceptance contingency condition ( $p = .079$ ). With the analysis restricted to those who had four or more risk factors, one-way ANOVA revealed a statistically significant main effect of acceptance contingency condition,  $F(2, 85) = 4.234$ ,  $MSe = 3.119$ ,  $p = .018$ ,  $\eta_p^2 = .091$ . Tukey HSD indicated that the mean level of anxiety in competence acceptance contingency was significantly higher than the mean level of anxiety in intrinsic acceptance contingency,  $p < .05$ ; the other comparisons were not statistically significant. Among those with four or more identified risk factors for susceptibility to acceptance contingencies, the effect sizes were  $d = 0.77$  for difference between competence and intrinsic contingency condition, and  $d = 0.53$  for difference between competence and appearance contingency condition. Among those at low risk of susceptibility to acceptance contingencies (i.e., those with three or fewer risk factors), the effect sizes were negligible:  $d = 0.07$  for difference between competence and intrinsic contingency condition, and  $d = .10$  for difference between competence and appearance contingency condition. See Figure 10 for the means per group. These results suggest that the hypothesized effects of acceptance contingencies on anxiety may apply only to individuals for whom failure may result in perceptibly high loss of relational value.



*Figure 10.* Means for anxiety as a function of the experimental condition and susceptibility to acceptance contingencies

**Differences in state self-esteem among contingency conditions.** If activations of representations of close others indeed shift participants' self-esteem contingencies (Horberg & Chen, 2010) and if possibility of taking an intelligence test makes one doubt one's intellectual abilities and if there are not substantial differences in the way that close others accept participants or the way they evaluate them, it could be expected that those in the competence contingency condition experience lower state self-esteem than those in the other conditions.

To examine this possibility, ANOVAs were conducted to examine the effect of the experimental condition on self-esteem emotions, and on state self-esteem. The effect of condition on self-esteem emotions was statistically non-significant,  $F(2, 191) = 1.014$ ,  $MSe = .981$ ,  $p = .365$ ,  $\eta_p^2 = .011$ . For state self-esteem, the effect of condition was statistically significant,  $F(2,$

191) = 3.586,  $MSe = 2.218$ ,  $p = .030$ ,  $\eta_p^2 = .036$ . However, the direction of the results was not as predicted. A Tukey HSD follow-up procedure revealed that the mean for participants in appearance acceptance contingency condition ( $M = 5.27$ ) was statistically significantly larger than the mean for participants in the intrinsic acceptance contingency condition ( $M = 4.58$ ),  $p < .05$ . This effect might have been obtained if the measure was sensitive to the way that the close others evaluate participants. Intrinsic Acceptor was perceived to evaluate participants the most positively on both competence and physical appearance; and Appearance Acceptor's evaluation of participants' appearance was more negative than Competence Acceptor's evaluation of participants' competence. Provided people respond defensively on measure of self-esteem to being more negatively evaluated in the domain of activated acceptance contingency, the observed effect might be obtained.

## **Study 2: Preliminary Analyses**

As Study 1, Study 2 featured a number of checks. Because passing of what was deemed to be the most important check to the manipulation (confirming that one recognized the name of the close other in the visualization) already lowered the number of participants to an amount that was smaller than the amount originally calculated as the necessary minimum for sufficient power for the study, no other checks were used for exclusions. In total, 17 participants claimed not to have recognized the close other they were asked to visualize, leaving 173 participants available for analyses.

**Perceived characteristics of the identified close others.** The same considerations for an effective prime of target acceptance contingency apply as in Study 1. Descriptive statistics for the profiles of contingencies for each of the identified close others in this study are displayed in Table 10, for desired closeness and frequency of thinking about the identified close others are in

Table 11, for how the close others are perceived to evaluate participants' competence and appearance in Table 12, and for the relationship type the close others occupy with respect to the participants in Table 13. The sample characteristics in this study overall mirrored the sample characteristics in Study 1.

Table 10

*Descriptive statistics for the extent to which the identified close others accept one based on intrinsic qualities, appearance, and competence in Study 2*

Acceptance Contingency	Close Others Identified for the Acceptance Contingency Primes					
	Intrinsic Acceptor		Appearance Acceptor		Competence Acceptor	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Intrinsic Acceptance	6.8	0.49	3.5	1.65	4.0	1.56
Appearance Acceptance	2.2	1.44	6.2	0.78	3.0	1.79
Competence Acceptance	3.0	1.72	4.1	1.73	6.4	0.76

Table 11

*Descriptive statistics for desired closeness to the identified close others and for frequency of thinking about them in Study 2*

Characteristic	Close Others Identified for the Acceptance Contingency Primes					
	Intrinsic Acceptor		Appearance Acceptor		Competence Acceptor	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Desired closeness	4.3	0.75	2.8	1.28	3.3	0.93
Frequency of thinking about the close other	5.2	1.07	3.5	1.67	4.1	1.47

Table 12

*Descriptive statistics for how the identified close others are perceived to evaluate participants' competence and appearance in Study 2*

Characteristic	Close Others Identified for the Acceptance Contingency Primes					
	Intrinsic Acceptor		Appearance Acceptor		Competence Acceptor	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Evaluates participant as competent	6.3	0.75	5.3	1.24	5.6	1.32
Evaluates participant as good-looking	5.6	1.13	4.6	1.66	4.5	1.18

Table 13

*Identified close others' relationship to the participants in Study 2*

Relationship	Close Others Identified for the Acceptance Contingency Primes		
	Intrinsic Acceptor	Appearance Acceptor	Competence Acceptor
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Acquaintance (not related to school or career)	0.0	16.2	2.9
Friend (not related to school or career)	38.7	33.5	19.1
Romantic partner	29.5	17.9	3.5
Family member (not a romantic partner)	26.6	18.5	27.2
Professional relationship (for example, a colleague or a supervisor)	2.9	6.4	42.2
School-related relationship (for example, a classmate or a teacher)	0.0	2.3	2.9
Other	2.3	5.2	2.3

**Manipulation and attention checks.** The attention check was passed by 96.3% of Survey 2 participants. No breaks taken during the study were reported by 83.2% of participants. Reading instructions very or extremely carefully was reported by 98.9% of participants. The type of training program (i.e., intelligence training program) included in the instructions was correctly recognized by 96.3% of participants. Participants confirmed that they recognized the close other they were instructed to visualize in 91.1% of cases. Participants identically reclassified 94.2% of close others with competence contingency, 96.3% of close others with appearance contingency,

and 95.3% of close others with intrinsic contingency. Participants recalled at the end of the survey the name of the close other they were asked to visualize in 97.9% percent of cases (3 of the participants who did not recall the name typed the name of the animal they visualized). Again, as in Study 1, the overall rate of passing these various checks was sufficiently high so as not to cast doubt about participants' lack of conscientiousness in responding to the survey.

**Hypothesis guessing.** Participants appear to have been unaware of the hypotheses of the study. Only one person wrote that the study might be investigating the connection between the visualized person and answers on subsequent questions.

**Attrition.** Seven individuals began the survey but did not complete it. Six of these individuals reached at least the page with the visualization exercise of their close other (three were in competence acceptance contingency condition, one in intrinsic acceptance contingency condition, and one in appearance acceptance contingency condition).

**Correlation between baseline self-esteem contingency on academics and effort measures.** There were no associations between self-esteem contingency on academics and any of the effort measures:  $r_s(171) = -.005, p = .952$ , for association with reading time 1;  $r_s(171) = -.042, p = .581$ , for association with reading time 2; and  $r_s(171) = .095, p = .212$ , for association with choice of the intelligence training package. Failure to find any association between self-esteem contingency on academics (which is assumed to index chronic level of acceptance contingency) and the effort measures suggests that the measures for effort are inadequate representations of the construct, effort is not related to acceptance contingencies under contexts similar to the study, there are unexamined moderators of this relationship, or perhaps that the measures are subject to the influence of too many other variables, making it difficult to detect the relationship. Because chronic levels of acceptance contingencies are assumed to be stronger



predictors of effects associated with acceptance contingencies than any differences between experimental conditions that might have been induced by relational priming, the observed lack of the associations suggests that the effect of the activated acceptance contingencies on the measures of effort was unlikely to be obtained in this study.

**Distribution of relevant variables.** Distributions of the three main dependent variables were examined for normality.

The distribution of choice of an intelligence training package was mostly bimodal, with participants either choosing not to receive the package or to receive its most intensive form: 35.3% of participants chose to receive no package, 12.1% of participants chose to receive a package for occasional practice, 10.4% of participants chose to receive a package for frequent practice, 42.2% of participants chose to receive package for very frequent practice.

In order to ascertain whether the data is suitable for ANCOVA, the distributions of reading times on articles 1 and 2 were examined for normality and equality of variances. There was homogeneity of variances for reading time of article 1, as assessed by Levene's test of equality of variances,  $p = .303$ ; on reading time of article 2, the assumption of homogeneity of variances was violated,  $p = .027$ . As can be seen in Tables 14 and 15 as well as Figures 11 and 12, the data did not follow a normal distribution. There was a large positive skew in both reading times, with reading time on article 2 additionally showing inflation around zero (representative of participants' decision not to read the optional article). Multiple outliers were also apparent.

The obtained data make the selected analytical method inappropriate; however, it was used anyway due to the author's inexperience with other statistical methods. Based on the visual inspection of the distributions, it is not anticipated that there would be any differences among the groups even if more appropriate analytical methods were employed.

For means and standard deviations of variables used for confirmatory analyses of effects on reading times, see Table 16.

Table 14

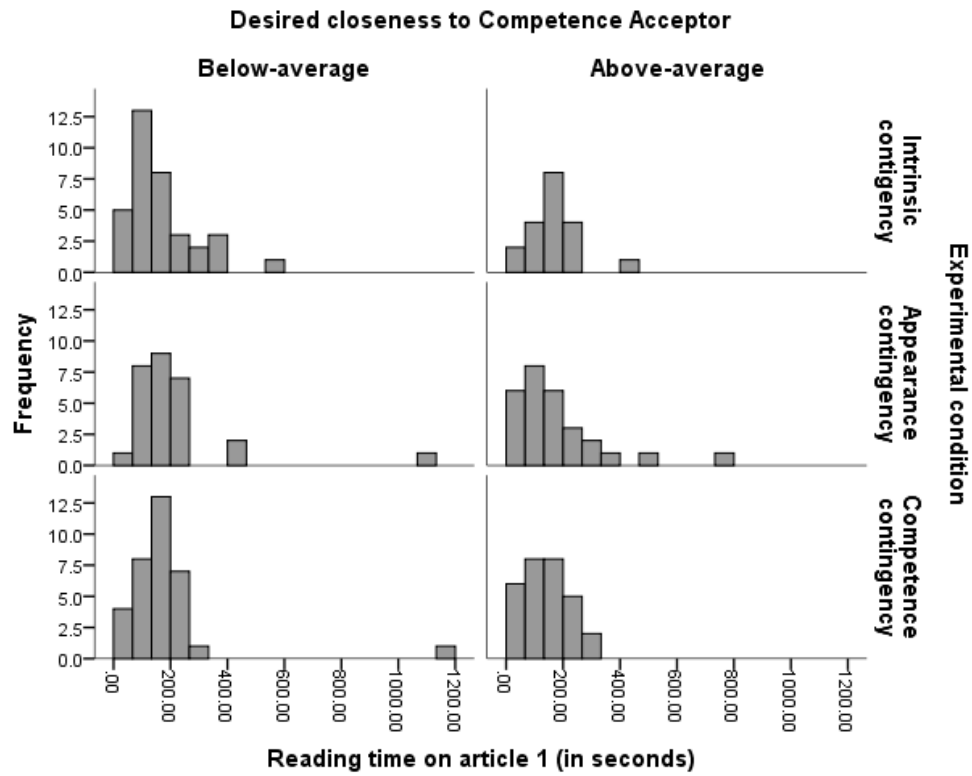
*The Shapiro-Wilk test for normality of distribution of reading time on article 1 for acceptance contingency condition by desired closeness to Competence Acceptor*

Cell	Shapiro-Wilk test	
	Statistic	p-value
Above-average closeness, Intrinsic contingency	.926	.145
Above-average closeness, Appearance contingency	.782	<.001
Above-average closeness, Competence contingency	.975	.700
Below-average closeness, Intrinsic contingency	.846	<.001
Below-average closeness, Appearance contingency	.585	<.001
Below-average closeness, Competence contingency	.469	<.001

Table 15

*The Shapiro-Wilk test for normality of distribution of reading time on article 2 for acceptance contingency condition by desired closeness to Competence Acceptor*

Cell	Shapiro-Wilk test	
	Statistic	p-value
Above-average closeness, Intrinsic contingency	.847	.006
Above-average closeness, Appearance contingency	.786	<.001
Above-average closeness, Competence contingency	.811	<.001
Below-average closeness, Intrinsic contingency	.848	<.001
Below-average closeness, Appearance contingency	.846	.001
Below-average closeness, Competence contingency	.636	<.001



*Figure 11.* Histograms for distribution of reading time 1 by acceptance contingency condition and by closeness to Competence Acceptor

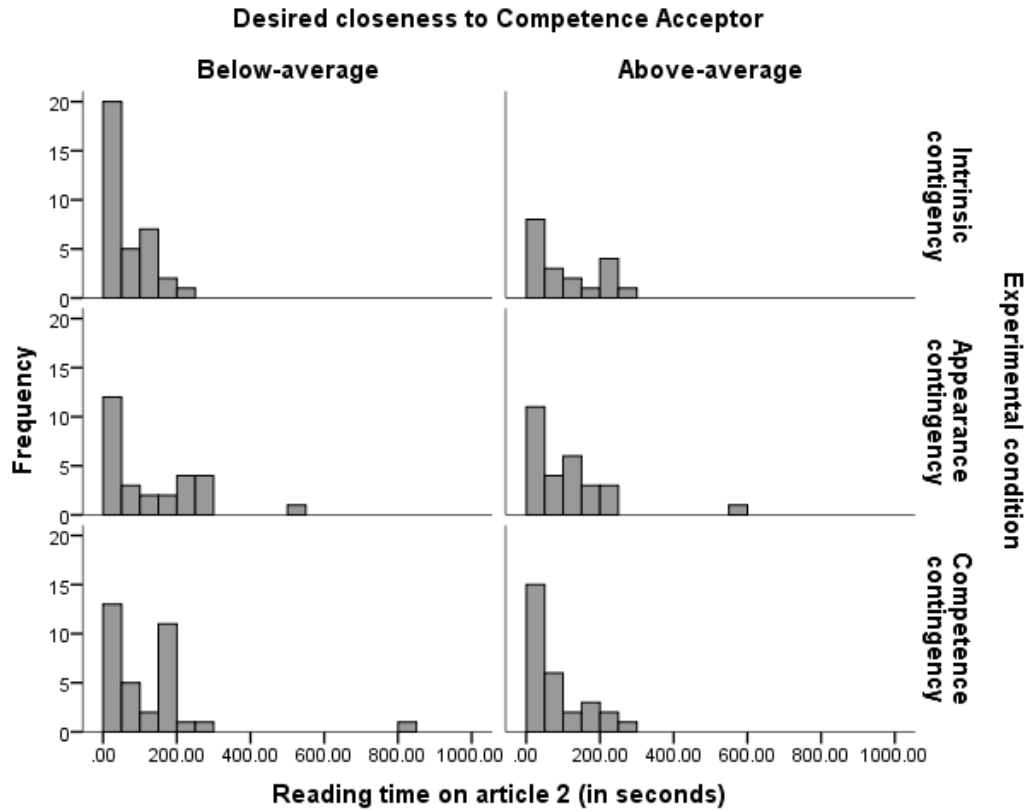


Figure 12. Histogram for distribution of reading time 2 by acceptance contingency condition and by closeness to Competence Acceptor

Table 16

*Descriptive statistics for the variables used in the confirmatory analysis in Study 2*

Variable	<i>M</i>	<i>SD</i>
Reading time on article 1	173.9	149.56
Reading time on article 2 (optional)	95.4	111.52
Reading time on article 3	191.4	219.40
Desired closeness to Competence Acceptor	3.34	0.93

*Note.* The reading times are expressed in seconds.

## **Study 2: Effects of Acceptance Contingencies on Effort (Confirmatory Analyses)**

**Effects on selection of intelligence training package.** A chi-square test of independence was conducted between experimental condition and choice of a type of intelligence training package (classified into three categories: no package, package for occasional or frequent practice, package for very frequent practice). There was no statistically significant association between the experimental condition and the choice of the intelligence training package,  $\chi^2(4) = 1.51, p = .825$ .

**Effect on reading time of article 1.** A 3 (*contingency*: intrinsic vs. appearance vs. competence) x 2 (*desired closeness to Competence Acceptor*: dichotomized at below-average vs. above-average) ANCOVA was conducted to examine whether activating domain-specific acceptance contingencies influenced participants' effort as operationalized by reading time of article 1, and whether this relationship was moderated by desired closeness to Competence. Reading speed (reading time of article 3) was used as a covariate.

No statistically significant effects were detected. The interaction between desired closeness and contingency condition was not statistically significant,  $F(2, 166) = 0.376, \text{MSe} = 7257.131, p = .687, \eta_p^2 = .005$ . The main effect of contingency condition was not statistically significant,  $F(2, 166) = 0.125, p = .883, \eta_p^2 = .001$ . The main effect of closeness was not statistically significant either,  $F(1, 166) = 2.717, p = .101, \eta_p^2 = .016$ .

**Effect on reading time of article 2.** The same analysis as for effect of acceptance contingencies on reading time of article 1 was conducted for effect on reading time of article 2.

No statistically significant effects were detected. The interaction between desired closeness and contingency condition was not statistically significant,  $F(2, 166) = 2.169, \text{MSe} = 23560.265, p = .118, \eta_p^2 = .025$ . The main effect of contingency condition was not statistically

significant,  $F(2, 166) = 1.018, p = .364, \eta_p^2 = .012$ . The main effect of closeness was not statistically significant,  $F(1, 166) = 0.641, p = .424, \eta_p^2 = .004$ .

## **Study 2: Exploratory Analyses**

**Differences in state self-esteem among contingency conditions.** Reading about articles that include information about the possibility to improve one's intelligence might improve one's state self-esteem provided one's acceptance is contingent on it (as it may mitigate doubts about potential future changes in relational value due to one's lack of intelligence). If this was the case, it could be plausible that activation of competence acceptance contingency would increase state self-esteem compared to activation of other acceptance contingencies.

For that reason, one-way ANOVAs were conducted to examine the effect of the experimental condition on self-esteem emotions, and on state self-esteem. Neither the effects on self-esteem emotions,  $F(2, 170) = .975, MSe = .733, p = .379, \eta_p^2 = .011$ , nor the effects on state self-esteem,  $F(2, 170) = 1.668, MSe = 1.854, p = .192, \eta_p^2 = .019$ , were statistically significant.

Possible reasons for the failure to find any differences might have been, for example, due to a lack of participants' perceived relevance of the activated acceptance contingency to the domain of the task, or due to reading of an article about possibility to improve one's intelligence not being a sufficiently strong stimulus as to improve one's self-assessment of competence in the absence of direct success feedback (similarly as perhaps a potential for failure at a task in Study 1 might not have been enough to worsen one's self-assessment in the absence of any direct failure feedback).

## Chapter 6: Discussion

### Overview

The present studies were the first to examine the domain-specific impact of situational activation of contingencies of acceptance on anxiety (Study 1) and effort (Study 2). In Study 1, sample participants who were reminded of a close other whose acceptance was perceived to be mainly contingent on competence reported greater anxiety about evaluative performance in the domain of contingency (i.e., competence) compared to participants who were reminded of a close other whose acceptance was perceived to be mainly contingent on a domain irrelevant to the anticipated test (i.e., appearance) or unconditional; this relationship was not statistically significant at a conventional level when the analysis was carried out for the whole sample but was significant or approaching significance when carried out for certain theorized subgroups (membership in these subgroups can be seen as indexing risk for susceptibility to influence of acceptance contingencies; medium to large effect sizes were obtained for participants with four or more of the six identified risk factors).

When analyses of the effects of experimental condition on anxiety were restricted to subgroups of participants theorized to have greater general sensitivity toward social influences or those for whom the prime of competence acceptance contingency is theorized to be particularly strong, the effects emerged at  $p$ -values that ranged from .037 to .180. The Cohen's  $d$ s for the differences between the means were around 0.5. The effect size of this magnitude may be considered substantial given the relatively brief procedure used to activate acceptance contingencies and absence of specific mentioning of acceptance schema during the session when anxiety was measured. This effect size is of practical significance because multitude of day-to-day reminders of one's significant others may lead to large cumulative effects. The effect of

experimental condition was statistically significant at a conventional level for the participants theorized to be the most vulnerable to the potential exposure to the prime of competence acceptance contingency (i.e., those who reported that the close other whose acceptance depends on competence would value them less or much less if they became more incompetent). Given that the results for the theorized subgroups emerged in consistent, predicted directions and given that they are conceptually corroborated by prior research, these results may with caution be collectively interpreted as providing initial support for the domain-specific effects of acceptance contingency on anxiety. However, replication of the study with larger, more targeted sample will be essential to obtaining stronger evidence. Overall, the findings of Study 1 shed light on factors that may contribute to negative emotional experiences during pursuit of competence (as well as perhaps other pursuits that may impact one's relational value) and point to potential untapped sources of resilience that individuals may be able to learn to draw upon if they are educated about these mechanisms and trained to take advantage of them.

The Study 2 showed no effects of experimental condition on measures of effort and intention to exert effort to improve one's intellectual competence. Since the measures were not even weakly correlated with baseline level of relevant domain of self-esteem contingency (academics; self-esteem contingency is assumed to function as proxy for chronic level of acceptance contingency in the given domain), these results suggest that the measures were not a good representation of the target construct or that the relationship between acceptance contingency and effort may be weak or non-existent (or a product of more complicated processes than was anticipated).



## **Limitations**

One of the important limitations of present research is tied to inevitable issues that arise in research that contrasts effects of activations of mental representations of other individuals based on the individuals' target characteristics. Namely, the primes for the target characteristic to be activated may lack clarity, be contaminated with presence of characteristics that were intended to be activated in other experimental conditions, or be confounded in their effects with other correlated characteristics of the identified individuals.

Previous studies contrasting effects of primes consisting of mental activation of close others (intrinsic vs. contingent) typically relied on the wording of description based on which participants identified the primes; measures of the extent to which the desired characteristics were actually obtained were not included (except for Horberg & Chen, 2010, who included only participants who expressed at least moderate certainty about the close other possessing a given acceptance contingency). For example, to ensure that the activated close others are comparable with respect to how they like the participant, (Arndt et al., 2002) added specification that the selected close other who fits given criteria of acceptance contingency profile also clearly likes the participant; however, no measures as to the extent to which participants were able to identify individuals who fit the criterion were included.

The measures included in present studies suggest that inclusion of a certain characteristic in a wording of acceptance contingency profile is likely methodologically insufficient to infer its presence in the identified individual and that measures should be included to enable estimation of the extent to which suitable primes were obtained. For example, in the present study, there was a clear evidence of presence of competence acceptance contingency in the appearance contingency prime. That said, the present studies used a set of criteria that might have been more difficult to

meet than criteria used in prior studies (prominent acceptance contingency in a given domain compared to just general acceptance contingency).

In contrast to prior research, present studies also included a larger number of measures to make it possible to identify and evaluate confounds that may need to be disentangled in future research. For example, there were systematic differences in the types of relationships that the identified close others had with respect to the participants. If participants experienced difficulties more often in a particular type of relationship, the differences might have influenced the effects of primes in unexpected ways because they could have primed negative affective reactions. Some researchers have speculated that the type of relationship may be also important based on the extent to which different relationships can be easily dissolved or replaced (Horberg & Chen, 2010), with relationships that would be difficult to dissolve or replace wielding larger influence.

Additionally, there were some differences in the way that the close others evaluated the participants' competence. Because primes of close others may influence participants' perceived competence at a task (Shah, 2003) and because lower perceived competence is associated with greater anxiety, lower evaluation of participants in the eyes of the close others may have an effect on participants' anxiety. According to the participants' perception, Intrinsic Acceptors tended to view participants as more competent than did Competence Acceptors, which in turn viewed the participants as somewhat more competent than Appearance Acceptors. However, given that Appearance Acceptors were perceived to evaluate participants' competence more negatively but participants nevertheless tended to be more anxious in competence acceptance contingency condition compared to appearance acceptance condition suggests that the way in which the close others evaluated participants might not have been as important as the acceptance contingencies the close others were perceived to possess.

Another limitation is that no research today has demonstrated which aspects of acceptance contingencies are particularly likely to elicit the effects of a given acceptance contingency. It may be, for example, that for a given perceived acceptance contingency to exert its effects, it needs to be perceived as being of a certain strength. Or, perhaps, in order for a given acceptance contingency to exert effects, it needs to be sufficiently distinct from other acceptance contingencies the close other is perceived to have—it is likely that akin to a goal being more likely to be primed when there are no competing goals (Shah & Kruglanski, 2000), an acceptance contingency may be more likely to be primed when there are fewer competing acceptance contingencies. Because of the uncertainty about characteristics of the acceptance contingency profile that can potentiate a given acceptance contingency, it is impossible to evaluate the extent to which the obtained acceptance contingency profiles for the identified close others actually led to activation of acceptance contingencies.

The procedure used to identify close others may also present challenge to ecological validity of the way the effects of acceptance contingencies may be activated in real life upon activation of representation of close others. While the visualization task is not assumed to alter the effects that might result from real-world ways through which the close others might be activated (spontaneous thinking about the close others; encounters of the close others in real life; reminders of the close others through an activity associated with the close others; etc.), the procedure used to identify the close others in the survey and obtain information about the close others' acceptance contingencies might have induced a level of self-reflection that is not common for participants in daily life, and thus unduly exacerbated the level of acceptance contingencies associated with the close others. However, the week-long separation between the two survey administrations is assumed to have mitigated the effects of the reflective procedure.

Additionally, while the procedure may complicate inferences to real-world activation processes, it may be more representative of effects that might be evidenced if people were trained to take advantage of thinking about close others with particular acceptance contingencies (as such training would involve teaching participants about processes associated with acceptance contingencies and self-reflection on the acceptance contingencies operative in their social environment). Because of desire to draw inferences about feasibility of interventions, the procedure is also superior to the procedure involving subliminal priming of close others (subliminal and supraliminal priming procedures of close others have been shown to have different impacts for a subset of participants who may be more likely to doubt their close others' acceptance, i.e., anxiously attached participants; Mikulincer, Shaver, & Rom, 2011). A related caveat with respect to ecological validity is that it also remains unclear whether effects would be measurable in the context of more common daily tasks that may not have as powerful consequences to one's relational value as an intelligence test might.

The main objective of the studies was to examine impact of intrinsic vs. contingent acceptance on dependent variables that were previously unexamined in the context of situational activation of acceptance contingencies, and to compare greater level of general task-irrelevant contingency with greater level of task-relevant contingency. For that reason, it was not deemed necessary to include a measurement of the dependent variables in the absence of visualization of close others. Yet, the lack of no visualization of close other condition makes it difficult to ascertain whether observed effects represented a reduction or augmentation compared to no visualization. That said, even if no visualization of close other condition was performed, making such a judgment would be problematic because the relative effects might depend on the type of

contingencies that are chronically accessible to participants, which may differ across different populations and contexts even though the underlying mechanisms may be identical.

Nevertheless, it is recommended that future research examines the effects separately under conditions in which baseline task-relevant acceptance contingency is assumed to be high vs. low (or in which there is difference in the general level of threat to one's relational value such as when one suspects that one's performance might actually be observable by others vs. not): it is plausible that brief activation of task-relevant acceptance contingency exacerbates threats when baseline task-relevant contingency is low but that when baseline task-relevant contingency is high, replacement of task-relevant acceptance contingency with task-irrelevant contingency is not a feasible mechanisms (the greater effects observed in subgroup of participants with higher baseline self-esteem contingency on academics suggest that this is not the case though).

Additionally, the inferences about the domain-specificity of acceptance contingencies would be strengthened if effects were also examined within a context of a task in a domain that is different from competence. That said, there is no clear reason to assume that the specificity would be evidenced only for competence but not for other domains.

There are also questions about the extent to which the measurements in the studies reflect target constructs. As noted previously, self-reported anxiety may reflect greater self-handicapping. Addition of physiological measurement of anxiety if the study is replicated in the future in laboratory setting would mitigate the concern. Nevertheless, because self-handicapping is reflective of the level of threat experienced, the inferences about the extent to which there are domain-specific effects of acceptance contingencies on eliciting/mitigating threat should be valid regardless of whether greater reported anxiety reflects greater anxiety or greater self-handicapping. The validity of analogous inferences about processes in question in Study 2,

however, needs to be questioned as the measures of effort did not correlate with baseline self-esteem contingency on academics. As an alternative explanation to the measure being a poor representation of the construct, the lack of correlation in the study might have been caused by a lack of instructions that would connect relevance of wider contingency of acceptance on competence to improvement of intelligence. In Study 1, the description of the test of intelligence explicitly connected importance of intelligence to outcomes connected to competence (such as performance at school or at work); such a description was omitted in Study 2. This omission might have caused the lack of correlation with the self-esteem contingency as well as observed lack of effects of priming of acceptance contingencies.

Limitations of the present research also involve use of parametric inferential statistics for data that violates multiple assumptions of the analyses that were carried out. Effect sizes and judgments about statistical significance might have been affected because of the chosen analytical methods.

### **Lack of Observed Effects of Acceptance Contingencies on Effort**

As explained above, the lack of observed differences among experimental conditions might have been due to an insufficient connection between the domain of activated acceptance contingency (competence) and the domain of the effort measures (intelligence). This could have occurred if participants perceived that competence acceptance depends on actual school or workplace performance but not on intelligence per se. The same issue might have occurred for the lack of association of between baseline contingency of self-esteem on academics and the effort measures.

Results of prior research suggest that relationship between self-esteem contingencies and effort may be moderated by trait self-esteem, perceived difficulty of the task, as well as presence

of feedback and its valence (Brook, 2005; Park & Maner, 2009). This may suggest that the relationship of activated contingencies of acceptance to effort should be examined more systematically with respect to contextual variables. For example, it is possible that activating contingency of acceptance in a given domain increases effort only when participants have a need to increase their relational value, perceive a clear connection between engaging in a task and their relational value, and possess sufficient ability to engage in the task in a way that may enhance their relational value.

### **Effects of Activated Acceptance Contingencies on Anxiety**

In the context of examination of a different dependent variable (i.e., anxiety), reports of less anxiety following priming of Intrinsic Acceptor compared to Competence Acceptor conceptually replicated prior research that showed less defensive responding following priming of intrinsic acceptance compared to contingent acceptance (e.g., Arndt et al., 2002). The observed trends in the direction of results also suggested that the effects of acceptance contingencies might operate in domain-specific fashion; this was evidenced by somewhat smaller amounts of anxiety following priming of Appearance Acceptor compared to Competence Acceptor even though Appearance Acceptor was perceived as being more contingently accepting. This may suggest that potential of performance on a task to change one's relational value may constitute a source of threat, and that the threat may be greater when the task is in the domain that matches the activated domain of acceptance contingency.

The examination of the effects within various subgroups of participants additionally contributed to the research on effects of situationally activated acceptance contingencies by identifying potential moderators of the effects. The moderators included factors that may strengthen the influence of the prime of contingent acceptance (desired closeness to the close

other, frequency of thinking about the close other, the perceived magnitude of the extent to which failure in the domain relevant to acceptance contingency would result in loss of relational value, and contingency of self-esteem on the relevant domain) and factors that may index general sensitivity to the influences of acceptance contingencies (need to belong and gender).

According to these results, the reminder of a close other with competence contingency is more likely to elicit threat on a task related to competence when an individual desires closeness to the close other, frequently thinks about the close other, and/or perceives that his or her value in the close other's eyes would substantially diminish if he or she were to perform poorly (note that these inferences for moderators are made based on effect sizes and consistent direction of results rather than statistical significance). These results are consistent with prior research that showed moderation of effects of situationally activated domain-specific acceptance contingencies by desired closeness (Horberg & Chen, 2010). Evidence of these relational moderators strengthens the inference that the observed effects were due to acceptance contingencies rather than other primed constructs. Future research should examine whether these risk factors combine additively, multiplicatively, or simply function as thresholds for sensitivity to acceptance contingencies. For example, it is plausible that greater desired closeness to the close other matters only for individuals who perceive that their relational value would decrease substantially in the close others' eyes if they performed poorly.

Evidence of moderating role of need to belong is consistent with evidence of greater sensitivity to social cues in individuals who are higher in need to belong (Pickett, 2004). Besides enhanced sensitivity to detection of acceptance contingencies in the first place, it is additionally plausible that those who are higher in need to belong are affected by any potential changes in



relational value to a greater degree, thus diminishing the requirement of substantial potential for loss of relational value in order to experience the effects.

There could be a variety of reasons for why women appeared to have responded to a greater degree than men to the effects of the acceptance contingencies. One plausible reason is that the difference was due to gender differences in qualitative features of cognitive representations of social environment. While men tend to possess more categorical representations of their social environment, women tend to possess more representations involving specific relational exemplars within the larger categories (for example, when thinking of important relationships for a particular relational group, men are more likely to think of college community as a whole while women more of specific classmates; Foels & Tomcho, 2009). Provided these representations extend to general thinking about what it takes to be accepted, women may perhaps have more developed representations of specific individuals, and thus be more responsive to primes of specific individuals than men; or perhaps activation of a specific individual is more likely to activate representation of a group as a whole for men, thus diffusing profiles of activated acceptance contingencies. The difference might also have been attributable to greater general tendency of women to report anxiety, or perhaps differences in perceived abilities required to do well on an intelligence test. If women suspected they were more likely to perform poorly than men, their perception of potential for loss of relational value might have been greater, thus making them more sensitive to the effects of acceptance contingency primes compared to men. It remains up to future research to examine whether men who possess presently identified risk characteristics for susceptibility to acceptance contingencies exhibit similar responses as women.

While any conclusions drawn from the present work are largely tentative given what was probably too small of a sample size because only a subset of participants appears to have possessed characteristics that index sensitivity to activation of acceptance contingencies, the evidence of smaller amounts of anxiety in competence-irrelevant acceptance contingency conditions for those at an elevated risk to sensitivity to acceptance contingencies enables speculations about practical significance of the findings for pursuit of competence and improvement of well-being.

One of the most obvious practical implication of the current findings for educational settings lies in connection of the findings to self-affirmation intervention (Cohen, Garcia, Apfel, & Master, A., 2006). Self-affirmation intervention consists of writing about one's important values; its effectiveness in reducing anxiety-induced underperformance has been shown to be mediated by the extent to which students mention belonging themes in their writings (Shnabel et al., 2013). As the intervention appears to be effective only for certain subgroups of students (such as women or Blacks) and has been even shown to have negative effects for other subgroups (such as men, Miyake et al., 2010), the question emerges about whether there may be differences in acceptance contingencies of the affirmed social connections among the groups. The present work suggests that if a particular subgroup of students spontaneously tends to affirm social connections with those perceived to have competence acceptance contingency, that subgroup should benefit less or perhaps even be harmed by the intervention in the context of competence-related tasks. Future research examining differences in acceptance contingencies in groups for which the effectiveness of the intervention differs may help to account for the differential effectiveness of the intervention. Future research might also assess whether the

intervention is more consistently effective for larger segments of population if instructions are adjusted in a way that reduces likelihood of activation of harmful acceptance contingencies.

The results also provide additional support for the importance of understanding consequences of acceptance contingencies for well-being. Self-esteem contingency on academics (which, as analyzed in the literature review, can be understood as an indicator of chronic level of acceptance contingency on academics) is a predictor of depressive symptoms in students (Sargent, Crocker, & Luhtanen, 2006). A large body of literature has documented the need to belong and importance of its satisfaction for people's well-being (e.g., León & Núñez, 2012; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). In order to satisfy the need to belong, people need to perceive that they are close to the individuals important to them. However, failure at relationally-activated acceptance contingencies diminishes the perceived closeness (Horberg & Chen, 2010), and thus satisfaction of the basic need to belong.

Accordingly, evidence of influences of situational activations of different acceptance contingencies suggests that an individual's thinking patterns about close others may change the extent to which particular acceptance contingencies wield influence over the individual, and thereby the extent to which failures or potential failures affect well-being by means of depriving satisfaction of the individual's need to belong. If this is indeed the case, interventions that encourage individuals to establish social ties to people whom they perceive as having acceptance contingencies irrelevant to the domains in which the individuals frequently experience failure (or in which they are afraid of failure) could improve the individuals' well-being. In fact, it is plausible, though admittedly still highly speculative, that well-being might be considerably improved even in the absence of any new actual social connections if individuals are guided to draw on reservoirs of strength present in their already existing social connections. The present

work suggests that the individuals may do so simply by reminding themselves of their close others who are perceived to have suitable profiles of contingencies of acceptance.

## Appendix

Approval of the study by UNLV Institutional Review Board (IRB)



### UNLV Social/Behavioral IRB - Exempt Notice

**DATE:** September 21, 2016

**TO:** Matthew Bernacki, PhD  
**FROM:** Office of Research Integrity - Human Subjects

**PROTOCOL TITLE:** [955594-1] Thinking about those who value you based on how smart you are:  
Effects on effort and anxiety

**ACTION:** DETERMINATION OF EXEMPT STATUS

**EXEMPT DATE:**

**REVIEW CATEGORY:** Exemption category # 2

Thank you for your submission of New Project materials for this protocol. This memorandum is notification that the protocol referenced above has been reviewed as indicated in Federal regulatory statutes 45CFR46.101(b) and deemed exempt.

We will retain a copy of this correspondence with our records.

#### PLEASE NOTE:

Upon final determination of exempt status, the research team is responsible for conducting the research as stated in the exempt application reviewed by the ORI - HS and/or the IRB which shall include using the most recently submitted Informed Consent/Assent Forms (Information Sheet) and recruitment materials. The official versions of these forms are indicated by footer which contains the date exempted.

Any changes to the application may cause this protocol to require a different level of IRB review. Should any changes need to be made, please submit a **Modification Form**. When the above-referenced protocol has been completed, please submit a **Continuing Review/Progress Completion report** to notify ORI - HS of its closure.

If you have questions, please contact the Office of Research Integrity - Human Subjects at [IRB@unlv.edu](mailto:IRB@unlv.edu) or call 702-895-2794. Please include your protocol title and IRBNet ID in all correspondence.

Office of Research Integrity - Human Subjects  
4505 Maryland Parkway . Box 451047 . Las Vegas, Nevada 89154-1047  
(702) 895-2794 . FAX: (702) 895-0805 . [IRB@unlv.edu](mailto:IRB@unlv.edu)

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## **Curriculum Vitae**

Lucie Vosicka

[vosicka@unlv.nevada.edu](mailto:vosicka@unlv.nevada.edu)

### Education:

Bachelor of Arts, Psychology, 2013

University of California, Berkeley

### Thesis title:

Thinking about those who value you based on how smart you are: Effects on effort and test anxiety

### Thesis examination committee:

Committee chair, Matthew L. Bernacki

Committee member, Gwen C. Marchand

Committee member, CarolAnne M. Kardash

Graduate College representative, Rachael D. Robnett