

RUNNING HEAD: AUTONOMY AND THREAT REACTIONS

Defensiveness and Threat Across the Continuum of Relative Autonomy

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Abstract

Relative autonomy describes the degree to which people connect their actions to internal values and goals, rather than external standards and expectations (Deci & Ryan, 2000). The present research examined how relative autonomy moderates defensive responses to psychological threats. The first set of studies compared the effects of negative performance feedback to negative feedback about internal aspects of the self (i.e., motivation). The latter threat was expected to be more self-relevant to higher than lower autonomy individuals, who typically do not react defensively to performance threats. In Study 1 ($N = 106$), having a more autonomous disposition predicted decreased positive affect in neutral and performance threat conditions, but not under motivation threat. In Study 2 ($N = 165$), participants having a more autonomous disposition showed a consistent desire to engage in intrinsic pursuits across all conditions, but a decreased interest in extrinsic pursuits when threatened. The second set of studies aimed to expand the spectrum of threat-responses to determine whether autonomy would predict greater commitment toward personal goals upon exposure to universally relevant threats (i.e., mortality salience, relational threat). Results of Study 3 ($N = 120$) suggested that more autonomous participants reacted to the threat of mortality (i.e., thinking about their own demise) by planning for future goals and maintaining positive affect. Study 4 ($N = 122$) compared positive with negative relationship feedback and revealed that participants higher in autonomy were increasingly likely to agree with positive, and disagree with negative, feedback. Additionally, autonomy predicted consistent positive affect and sustained engagement with intrinsic pursuits. In sum, compared with individuals lower in autonomy, those higher in autonomy displayed more positive affect and eagerness to accept positive feedback under a variety of threats, including threats to motivation, relational need satisfaction, and existence as an individual. More

autonomous participants distinguished themselves from less autonomous participants by sustaining their interest in existing pursuits and selectively disengaging from less intrinsic activities. Expanding on existing self-determination theory research, these results suggest that a more autonomous disposition relates to greater positivity overall and to a tendency to react to threat with focus on and discernment among personal goals.

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Introduction

Negative feedback about the self is inevitable. Most people face social rejection, personal goal failures, and other self-relevant threats on multiple occasions throughout their lives. A question that has received considerable attention is whether, or in what circumstances, defending against a threat is adaptive or maladaptive. Defensiveness is a reaction to threat that is primarily aimed at restoring self-esteem (Hodgins, Weibust, Weinstein, et al., 2010). Under some circumstances defensive behaviours such as sustaining positive illusions about the self can be beneficial for performance (e.g., Blanton, Buunk, Gibbons, & Kuyper, 1999), and relationships (Murray, 1999). Not all researchers agree that reacting defensively is adaptive, instead viewing these actions as indicative of an inauthentic and immature manner of facing the world that deprives people of opportunities for growth and development (e.g., Lakey, Kernis, Heppner, & Lance, 2006; Sheldon & Kasser, 2001). A wide array of defensive reactions are possible and include excuse-making, aggression, redoubling commitment, and affirming non-threatened aspects of the self (vanDellen, Campbell, Hoyle, & Bradfield, 2011). Although the preceding list of defensive behaviours is not comprehensive, it does point to variations in positive and negative consequences based upon which behaviour is selected. How people react in the face of threat is partially determined by individual differences, such as relative autonomy.

The concept of relative autonomy is situated within a broader theory of motivation and action called Self-Determination Theory, which derives in turn from broad principles of humanistic psychology. Relative autonomy reflects the degree to which people enact behaviour on the basis of central personal values, instead of external demands (Deci & Ryan, 2000). Autonomous action is experienced as freely chosen and often enjoyable because it is more likely

to satisfy basic human needs for autonomy, competence, and relatedness (Deci & Ryan, 2000). These needs reflect being able to act volitionally, feeling able to attain valued outcomes, and being able to connect with others, respectively. Autonomy is also characterized by a high degree of internalization of personal values and goals, such that people see these activities as important parts of their identities or have strong personal reasons for acting in line with them. As autonomy decreases, identification with a goal decreases and behaviour arises from a desire to avoid guilt and shame for failing to live up to societal or another person's standards. At the opposite end of the spectrum, actions are experienced as spurred entirely by situational forces rather than by any type of internal impetus. One way of conceptualizing autonomy is in terms of dispositional differences in what Deci & Ryan, (1985) have referred to as causality orientations. This framework is the one used primarily within this dissertation and defines causality orientations as the force responsible for people's actions. If people are more *autonomous*, they experience action as self-determined and feedback as information. If people are more *controlled*, they seek out external forces to guide behaviour and can respond with defiance to unpleasant circumstances. Finally, people who are *impersonal* typically question their ability to enact behaviour that can help them achieve desired outcomes. In this manner, autonomy is typically viewed as acting on a continuum, in terms of people's reasons for action being more or less internally driven, or autonomous.

Some technical issues surround the measurement of relative autonomy for research, and several different approaches have been advanced in previous research. One issue concerns the notion of autonomy as a continuous dimension, representing people's more or less internalized (autonomous) reasons for acting. In an early self-determination theory paper, Ryan and Connell

(1989) put forth a simplex model of autonomy, which does not require a negative correlation between separate motivational states along the continuum. More specifically, a simplex model holds that items within subscales that are conceptualized as more similar are correlated more highly than items in subscales that are viewed as more distinct. This conceptualization fits with how autonomy is defined because it accounts for differences in the degree to which behaviour is experienced as internally or externally driven, while also accounting for the fact that there are some distinct qualitative differences in the motivational states that are represented across the continuum (Ryan & Connell, 1989). Thus, the construct of autonomy was initially validated as existing along a continuum. In spite of this early validation, however, the issue of autonomy as a continuous dimension is still a matter of debate. For instance, in a recent paper, Chemolli and Gagne (2014) argued that categorizing autonomy as a continuous variable and analyzing the data with difference scores sacrifices the richness of the different motivational constructs.

Furthermore, they cite evidence suggesting that autonomous and controlled forms of motivation activate different brain regions, when experienced (Lee, Reeve, Xue, & Xiong, 2012; Lee & Reeve, 2013). They also refer to early evidence from Ryan and Connell (1989) that different qualitative states occur as a result of experiencing different types of motivation, with anxiety being predicted only by introjected or extrinsic regulation (which are categorized as less autonomous), and enjoyment being predicted by identified regulation or intrinsic motivation (i.e., more autonomous). Chemolli and Gagne (2014) argue that if it were the case that autonomy operated along a continuum, then states such as anxiety and enjoyment should differ incrementally along that continuum. Thus, it is clear that researchers disagree about the continuous, or not, nature of autonomy. In order to address this concern and to capture the

richness of motivational differences, autonomy was measured with two scales in the current research, was not examined as a difference score, and was operationalized in terms of individual differences and also as a situation-based (primed) state.

Previous research has suggested that autonomy blunts defensive responding to numerous ego-threats. For instance, people who are high in autonomy show less defensiveness in response to ego-threats about their performance (Hodgins, Yacko, & Gottlieb, 2006), and in response to criticism about their interpersonal transgressions (Hodgins & Liebeskind, 2003). Autonomous people not only react less defensively, but also feel less threatened and show lower physiological arousal when faced with negative self-relevant information (Hodgins et al., 2010). However, this research has not presented participants with a variety of other threats to intrinsic qualities of people, such as their basic rights, needs, or existence as individuals. In this dissertation, I planned to examine these threats that might be highly relevant to people who are high in autonomy. Because this disposition is characterized by experiences of volition, and by carrying out self-endorsed actions, it follows that threats to perceived choice or to motivation should be more relevant than externally-directed threats (e.g., to performance) to highly autonomous individuals.

The above notion rests on the assumption that not all types of negative feedback, particularly about external standards, are likely to be perceived as self-relevant for people who have higher levels of relative autonomy. If the threat is not self-relevant, then there is no reason for people to react defensively. Previous researchers have shown that when people perceive negative health-related information as self-relevant, they are less likely to believe the information and more likely to derogate the source of the feedback by questioning the diagnostic ability of tests. (Jemmott, Ditto, & Croyle, 1986; Liberman & Chaiken, 2003). This type of

biased processing is congruent with Kunda's (1990) theory of motivated reasoning, which argues that people are adept at thinking of reasons and justifications that support the conclusions that they want to arrive at, regardless of whether or not that claim is true. Thus, if people do not want to believe threatening information, they are able to find information to contradict it. With respect to the present research, I wanted to examine alternative, internally-relevant threats to determine whether this process is also active within higher autonomy individuals, but have not yet been observed because previous threats may have been perceived as irrelevant to the self.

In order to explore the notion that the self-relevance of threats could vary by autonomy, I will first consider this question within the context of existing research on the structure of self-esteem. Research on self-esteem considers how aspects of the self, in this case, level of self-regard, influence people's reactions to negative self-directed information. This work has examined various threat responses through the lens of differences in the structure, level, and stability of people's self-esteem. Thus, in order to understand how negative defensive reactions occur in response to threat, it is essential to review the literature on self-esteem, which will follow in the subsequent section. This focus on the content of threats and autonomy-based variations in self-relevance is the primary aim of the first 2 of 4 studies. Studies 3 and 4 expand the focus beyond threat self-relevance to study differences in the types of reactions that people might engage in when faced with threats that are universal (i.e., mortality and relatedness threats), some of which extend beyond typical defensive reactions that have been studied previously. Thus, the remaining part of my introduction will review literature on defensiveness, and propose the notion that specific reactions to universal threats could also vary based upon autonomy.

Threat and Defensiveness as a Function of Level of Self-esteem

The level of self-esteem (high vs. low) is the first and most obvious feature of self-esteem. Self-esteem refers to general positive or negative evaluations that people have about themselves (Baumeister, Campbell, Krueger & Vohs, 2003). People with high self-esteem enjoy globally positive self-views, believing that they are worthy individuals. As self-esteem decreases, people categorize themselves less positively and sometimes negatively, believing that they have few positive qualities. As seems intuitive from this definition, high self-esteem confers some benefits, such as persistence on difficult tasks, initiative-taking in relationships and work, and a lower risk of mental and physical health problems (Baumeister, et al., 2003; Burhmester, Furman, Wittenberg & Reis, 1988; Trzezniewski, Donnellan, Moffitt, et al., 2006). High self-esteem does have a dark side, however, and increases the likelihood that people will become defensive when faced with ego-threat (vanDellen, Campbell, Hoyle, & Bradfield, 2011). Generally speaking, for people with lower or moderate levels of self-esteem, negative feedback is more believable because it is typically closer to their existing beliefs about themselves. As negative feedback diverges further from people's existing self-appraisals, they become less accepting of it, and often respond defensively, as is often the case with high self-esteem individuals. These defensive reactions vary in severity from ignoring the source of negative information to reacting aggressively.

A considerable amount of research has supported the notion that high self-esteem individuals are indeed more defensive in the face of threat than their moderate or lower self-esteem counterparts (for a recent meta-analysis, see vanDellen, et al., 2011). In reviewing the literature, vanDellen and colleagues argue that three reactions are possible in the event of threat:

breaking means that people can accept the threat as valid (e.g., “I failed that test, so I must be stupid”), *compensating* means that people can alter perceptions to make the threat seem less important (e.g., “I may have failed that test, but it’s only worth 10% of my grade”), and *resisting* means that people can deny that the information is relevant to them (e.g., “I failed that test, but it has nothing to do with my future career”). For instance, one compensating defensive behaviour that high self-esteem people are prone to is defensive persistence.

Persisting in the face of failure is often an adaptive reaction to failure, but in other cases caution or taking a step back to reassess one’s skills is a better response. In one study, Baumeister and colleagues (1993) provided participants with money, which could be kept, or used to increase winnings by betting on personal performance on a video game. The betting took place after participants had already tried the game, so that they could have some gauge of their past performance. The ego-threat manipulation was either the suggestion that participants would “choke” under pressure, or it was failure feedback. Across procedures, participants who were high in self-esteem self-regulated better in the absence of threat, but worse when threatened. That is, compared with participants low in self-esteem, those high in self-esteem bet more money than was warranted by past performance, made riskier decisions, and left the experiment with less money. The results of this study indicate that higher self-esteem individuals are persistent, which may or may not have benefits, depending on the circumstances. In a review paper, Baumeister and colleagues (2003) have argued for this same point, that persistence can be defensive and not in a person’s best interest because it occupies valuable attentional and time resources, and that disengagement is often the more adaptive response.

The meta-analysis by vanDellen and colleagues (2011) combined research on a variety of threat types and a wide array of defensive reactions. Threats ranged from specific pieces of negative feedback that targeted single aspects of the self, to broader threats that were relevant to people's basic needs (i.e., social exclusion), feelings of personal consistency (i.e., cognitive dissonance), and their ultimate existence as individuals (i.e., mortality salience). They concluded that high self-esteem was most consistently related to compensatory reactions whereas low-self esteem consistently predicted breaking.

The most relevant question for the present research was to consider whether high autonomy, which also involves a positive sense of self-regard, would relate to the same types of compensatory reactions as does high self-esteem. Proponents of self-determination theory cast doubt upon this prediction, arguing that the positive self-regard of high autonomy individuals is fundamentally different from the type of high self-esteem that leads to defensiveness (Deci & Ryan, 1995). People who enjoy true self-esteem do not feel compelled to restore a shattered self-image in the case of threatening information by reacting defensively. Additionally, people who are primed with autonomy show higher implicit self-esteem than do people who are primed with a controlled orientation (Hodgins, Brown & Carver, 2007). People are more defensive when there is a greater discrepancy between the internal and external dimensions of self-esteem, so this is the first research to suggest that autonomy could have a causal effect on self-esteem and defensiveness. This theoretical inconsistency about whether or not all individuals have contingent self-esteem suggests that some exceptions may be needed to account for behaviour of individuals with high autonomy and high self-esteem under threat. Consequently, several other aspects of self-esteem will be reviewed to further understand how high autonomy could elicit

different types of threat reactions, even when people have a high level of self-regard, typically associated with high self-esteem.

Threat and Defensiveness as a Function of Self-esteem Stability

In addition to having high or low self-esteem, people can have self-esteem that is stable or fragile (Kernis, 2005), and this also has implications for defensive responding to threats. The stability dimension of self-esteem is relevant to state self-esteem, which involves the short-term highs and lows that people experience in response to positive and negative self-relevant information. Theorists in this avenue argue that greater stability is better, providing people with self-esteem that is less assailable by information that could cause these short-term fluctuations, and provides people with a more consistent sense of well-being. In contrast, people with unstable or fragile self-esteem have self-views that are constantly changing in response to external feedback, and that are strongly swayed by both positive and negative information. Thus, people with fragile self-esteem feel more proud when the news is positive and more unworthy when it happens to be negative. Such fluctuations are not conducive to well-being (Paradise & Kernis, 2002).

Out of this distinction between fragile and stable self-esteem, two separate predictions arise for individuals with high self-esteem. In other words, people can have high, stable self-esteem or high, fragile self-esteem. This distinction leads to divergent consequences for defensive responding to threat and for other adaptive behaviours. For instance, people with stable self-esteem report feeling less tense with respect to their goal strivings, and greater self-concept clarity, regardless of their level (high or low) of self-esteem (Kernis et al., 2000). Stable self-esteem also has positive consequences for self-regulation. In one study, participants were

presented with bogus feedback about their performance on a video game prior to asking participants to bet experimenter-granted money on their anticipated success in the next trials (Hoffman Lambird & Mann, 2006). Because participants should have been making betting information based upon past performance, how much money participants bet was used as a measure of self-regulation. Participants with stable, high self-esteem were most adept at self-regulation (i.e., they kept more of the money, rather than betting it when past performance was relatively poor). In contrast, participants with unstable high self-esteem were prone to over-betting based on past performance. The results of this study partially mirrored the results of the Baumeister and colleagues (1993) study reviewed in the previous section, which showed that high self-esteem led to over-betting relative to past performance. This study also qualified the relationship between threat and self-esteem by showing that *stable* high self-esteem did not predict this same risky response and was in fact, associated with better self-regulation under threat.

Other researchers added further support to this notion that stable self-esteem predicts more positive reactions to negative feedback. In another study, researchers examined whether level and stability of self-esteem predicted differences in whether participants reacted to negative information with a sense of challenge or by feeling threatened (Seery, Blascovich, Weisbuch, & Vick, 2004). In comparing participants with high self-esteem, those with unstable/fragile high self-esteem felt threatened by negative information, whereas their stable self-esteem counterparts experienced a sense of challenge. Instead of feeling the need to defend self-esteem from negative information, people with stable self-esteem may view negative feedback as an opportunity for growth and learning.

The adaptive response tendencies of people with high, stable self-esteem illustrate that there are, indeed, exceptions to the defensive types of threat responses that were outlined by vanDellen and colleagues (2011). This dimension is important to the current focus because stable high self-esteem is conceptually similar to the true self-esteem thought to be enjoyed by higher autonomy individuals. Research by Kernis and colleagues (2000) also supports the hypothesis of a positive relationship between autonomy and stable self-esteem.

In summary, research on the stability dimension of self-esteem and on autonomy indicates that the simple division of high and low self-esteem is not enough to capture all the variance associated with defensive threat responses. It sheds further light on this relationship by showing that stable self-esteem or high autonomy could relate to simply feeling less threatened by negative self-relevant information. An important question not answered by previous research is whether defensive reactions are a matter of assailable versus unassailable self-esteem and are therefore determined by the strength of the threat, or if defensiveness also depends on the qualitative basis of self-esteem and therefore, the domain of the threat.

Threat and Defensiveness as a Function of Contingencies of Self-worth

Defensive responding is also known to depend on the self-relevance of negative feedback. One of the factors that determines the personal relevance of information, and therefore the experience of threat, is whether or not self-esteem is based on the particular domain on which negative feedback is received (Crocker & Wolfe, 2001). For most people, self-esteem is based on evaluations of global traits (e.g., being a “good person”) and of specific domains, which can include personal goals (e.g., being the fastest speed skater). According to this perspective, although the particular domains of importance will vary, everyone’s self-esteem is contingent

upon some evaluation, making everyone susceptible to self-esteem threat. According to the contingencies of self-worth perspective, people experience threat and act defensively when they receive self-relevant information that is inconsistent with their positive self-evaluations in important domains.

One study that examined whether threat reactions differed in response to the self-relevance of the feedback considered academics as a component of self-esteem. Failure was accompanied by high negative emotions, only when self-esteem was contingent upon academic success (Crocker, Karpinski, Quinn, and Chase, 2003). Additionally, self-esteem that was contingent upon physical appearance predicted defensive responding when this aspect of the self was threatened (Park & Maner, 2009). This relationship was further moderated by level of self-esteem determining whether participants desired affiliation with others (high self-esteem participants) or wanted to improve physical appearance (low self-esteem participants).

In summary, the research on contingencies of self-worth indicates that people can base self-esteem on a variety of domains, and that defensiveness and other threat reactions are apt to occur only when the negative information is relevant to the domains upon which people stake their self-worth. It is necessary for the current research to consider how relative autonomy fits with the notion of contingent self-esteem. Deci and Ryan (1995) argue that the high self-esteem of autonomous individuals is non-contingent, precluding any need for intense threat reactivity or defensiveness in the event of negative feedback. In contrast, Crocker and colleagues argue that no one is exempt from contingent self-esteem, but that well-being will be influenced by the particular types of domains that people base their self-worth upon (Crocker & Wolfe, 2001; Crocker & Park, 2003). They argue, for instance, that self-worth with a basis upon internal

standards and broad values (e.g., being an honest person) is conducive to positive well-being and lowered instances of intense threat reactivity, whereas self-esteem that is based upon external standards (e.g., praise, performance) predicts the negative reactions observed in threat reaction studies summarized above. Although Crocker and colleagues have not done so, if one were to try to represent autonomy in terms of a contingency theory, the basis of autonomous self-esteem would likely be upon broad qualities that are subject to internal self-evaluation, instead of external outcomes that require validation from an outside source (e.g., performance relative to other people).

The current research was designed to examine whether autonomous people might have contingent self-esteem that is based on internal qualities such as values or goals, as opposed to external standards. If so, this could be demonstrated empirically by means of an experiment that varied the nature of threatening feedback about the self along an internal/external dimension and subsequently measured a variety of possible defensive reactions, which might be further construed along an adaptive/maladaptive dimension.

Variations in Threat

Three types of threats were presented in this research: external, internal and universal. The first two were varied experimentally to deal with the question of relevance outlined above. The third provided a means of examining consequences of autonomy, in terms of a variety of defensive options or strategies.

External threats. Previous research examining the link between autonomy and defensiveness has focused primarily on external sources of negative feedback that are certainly relevant to less autonomous individuals but of uncertain relevance to more autonomous

individuals. Examples include performance feedback and appraisals from other people (Hodgins & Liebeskind, 2003; Hodgins, Yacko, & Gottlieb, 2006). Specifically, these researchers examined threat reactions that were elicited by a variety of negative types of information, including past transgressions that led to negative evaluations by other people, past behaviour that conflicted with personal values (Hodgins et al., 2010; Hodgins & Liebeskind, 2003), and threats to performance (Hodgins, et al., 2006). These studies consistently show that lower autonomy individuals are more defensive than their higher autonomy counterparts. Additionally, in these studies autonomy was measured as an individual difference variable and also manipulated with priming tasks, indicating a causal relationship between autonomy and less defensive threat responding.

Another study examined the effects of autonomy on the experience of threat in a naturalistic performance setting. Threat was not manipulated in this study, but was assumed from an upcoming rowing competition (Hodgins, Yacko, & Gottlieb, 2006). Prior to the competition, participants' causality orientation was primed as in the above study. Participants who received the autonomous prime engaged in less self-handicapping, and performed better (rowed faster) than participants who received controlled (i.e., being driven by rewards, structure, deadlines, other's expectations, etc.), or impersonal, (i.e., sense that outcomes are controlled by fate or chance) primes. Because threat was not measured or manipulated in this study, there was no way to tell whether participants perceived the competition as exciting or threatening, or, if they were threatened, whether that threat was due to external demands or personal standards. Nonetheless, when external threats are considered, research consistently shows that lower autonomy individuals are more defensive than higher autonomy people.

Internal threats. The above research presents a compelling argument that autonomous people are indeed less threatened by information relevant to performance and concerning other's views of the self (external threats). Although previous research has considered more autonomy-relevant threats, no studies have broken down the effects of threats into those targeting internal versus external contingencies of self-worth, and the resulting effects for defensiveness and threat reactivity. In spite of this, there is some preliminary evidence suggesting that autonomous individuals are threatened when made to feel that behaviour is not reflective of central personal values, and that it is done without intrinsic motivation. In one study, in comparison to people who were less autonomous, more autonomous individuals experienced greater negative affect when placed in a controlling situation, which hindered volition (Halusic, 2011).

In a study that did include threats to internal contingencies, participants were asked to remember four types of threatening experiences, which involved moral transgressions, aggression, sexuality, and negative self-image (Hodgins et al., 2010). An autonomous or controlled orientation was primed prior to the threat. Experienced threat was measured by examining fake smiles, cardiovascular arousal, and performance on a subsequent speech task. They found that autonomously primed participants evidenced lower threat responses, and better performance on the speech task than did participants primed with a controlled orientation. This difference in performance was likely due to the lowered threat reactivity that autonomous individuals experienced. Although this study contained a variety of experiences, results were based on consideration of an aggregate of threat experiences, and examining autonomy-specific differences in personal relevance was beyond the scope of this paper. Thus, the experience of

threat to internal aspects of the self in relation to autonomy is still a relatively unstudied area, to which the present research can contribute new insights and information.

Universal threats. People universally appear to be affected by relational threats (Leary et al., 2003), and by existential threat, which reminds people of their own mortality, thereby eliciting questions about the value of one's life (Schmeichel et al., 2009). The purpose of examining threats that are relevant across the continuum of autonomy was to focus on the variability in reactions that occur in response to these threats. Specifically, my second research question considered whether or not there are specific, autonomy-based threat reactions beginning with the categories outlined by vanDellen and colleagues (2011), but considering as well some positive, growth-oriented categories such as learning and refocusing. To do this, it was necessary to expose participants to universally threatening information (i.e., relational threat and mortality salience).

Relational threats are those that make people feel that their fundamental need to be close to others will go unmet. Although researchers from different theoretical perspectives disagree about the existence of other basic needs, many do converge on the belief that people have a fundamental need for close and meaningful relationships with others (Deci & Ryan, 2000; Leary, Tambor, Terdal & Downs, 1995). For instance, Leary and colleagues (2003) have shown that regardless of whether people claim to be affected by information concerning how others think of them, they react and feel badly about themselves when they receive this type of negative feedback. This reactivity, according to sociometer theory, is adaptive because it forms the basis for self-esteem, which functions as a barometer to alert people when their social acceptance is in jeopardy (Leary et al., 1995). In this manner, self-esteem and sensitivity to relational threat

ensured the survival of our ancestors because it prevented them from being ostracized from the group where their chances of survival would have been severely diminished. Thus, if it is the case that self-esteem has this universal functionality, threats to the basis of self-esteem (i.e., connection with others, long-term relationships) should affect everyone, regardless of their relative autonomy.

In one study about autonomy-based differences in threat responding that may have targeted the relatedness need, participants were threatened with imagined reprimands for interpersonal transgressions (Hodgins & Liebeskind, 2003). The reprimands varied in severity, and when threats were mild or moderate, autonomous individuals did not react defensively. In contrast, autonomous people did become defensive under conditions of severe threat. Hodgins and Liebeskind (2003) suggest that the differences in defensiveness may be due to a higher threshold for threat among more autonomous individuals. Another intriguing possibility is that autonomous people only become defensive when the severity of the reprimand suggests that the relationship itself might be damaged. In other words, rather than just severity, this study may have shifted the focus of the negative feedback from performance to need satisfaction, thereby making it relevant to highly autonomous individuals. More research is needed to uncover autonomous people's reaction to other autonomy-specific threats or to deep threats that are likely to hinder basic need satisfaction and therefore affect all individuals regardless of their dispositional level of autonomy.

Another threat that should be universally relevant is the knowledge of the inevitability of one's own death (i.e., existential anxiety). Terror management theory suggests that people imbue their lives with meaning, and have self-esteem as a way to counteract the overwhelming fear of

death (Pyszczynski, Greenberg, Solomon, Arndt, &, Schimel, 2004). Other research in terror management theory has shown that people can react to existential anxiety by derogating other people, in attempt to support their world-view (See & Petty, 2006). In this manner, worldviews, culture, interests, self-esteem all serve to alleviate some of this anxiety, and when threatened, elicit a sense of unease about existence that must be remedied. Although theorists disagree about the precise reason why death is terrifying for people, no one argues that people are unconcerned or unthreatened by this looming prospect. Leary and colleagues (1995), for instance, have argued that the reason death is so terrifying is because it is the ultimate social exclusion. Thus, existential anxiety may provoke a need to feel connected to other people. In contrast, Ryan and Deci (2004), argue that people can have motives for personal growth that are unrelated to death, and refer specifically to behaviour that satisfies basic needs for competence and autonomy (i.e., people's need to feel effective and free). This argument, about the existence and relevance of basic needs beyond avoiding death anxiety, is beyond the scope of this dissertation. However, all sides of this argument would point to existential anxiety as a universal type of threat, which fundamentally thwarts basic needs and goals alike, and therefore is relevant to everyone regardless of his/her dispositional level of autonomy. In summary, because previous research supports the notion that relational and existential threats are universal in nature, administering them allows for a greater focus on the potential differences in defensive responding that can arise from variations in participants' level of dispositional relative autonomy.

Variations in Defensiveness and Alternative Threat Responses

Defensiveness refers to efforts to restore damaged self-esteem (vanDellen et al., 2011) typically by denying the severity of the threat or by scrutinizing the evidence that it really

occurred. The notion of defensiveness has changed over the past century. Sigmund Freud (as cited in Nevid, Rathus, & Greene, 2011) believed that defense mechanisms were tools of the subconscious that kept painful self-knowledge and/or memories from consciousness. Other theorists have categorized these defense mechanisms according to their potential for maladaptive outcomes, arguing that some (e.g., denial or avoidance) were socially crippling whereas others (i.e., projection, displacement, and rationalization) were distorting but less problematic (Miller & Swanson, 1960). These defense mechanisms were primarily focused on the task of keeping traumatic memories or unacceptable urges buried within the unconscious. In this vein, early conceptualizations of defensiveness considered some self-deceptive strategies as functionally useful, protective for the self, and as essential for adaptive human functioning.

Contemporary research in social/personality psychology, however, focuses less on the relationship between defensiveness and unacceptable parts of the unconscious and more on the variety of behaviours that are possible and on the measurable outcomes associated with these. Many of these more observable types of defensiveness are framed in current work as maladaptive and inauthentic because they are primarily aimed at self-esteem restoration in the immediate wake of a threat (vanDellen et al., 2011; Lakey et al., 2006; Sheldon & Kasser, 2001), or as a distinct refusal to accept and process threatening information. McGregor and Marigold (2006), for instance, describe compensatory conviction, which involves defensively strengthening one's existing beliefs when threatened, and have phrased this reaction as "the cognitive equivalent of putting one's fingers in one's ears and loudly repeating 'not listening!'" (pp. 838). This enhanced certainty in one's beliefs prior to threat has been likened to Freud's notion of reaction formation, in which people attempt to find a more socially acceptable manner

of expressing negative feelings, in this case, the distress and negative affect that arises as a result of feeling threatened.

One type of defensive response is called compensation, which involves minimizing the severity of the threat by attributing it to extenuating, external circumstances or by creating a justification for the event (vanDellen et al., 2011). People can also react defensively toward other people with downward social comparison, with aggression against the source of threatening information, in-group bias, and by derogating the source of evaluation. Compensation reactions can also include increased positive mood or state self-esteem, which may indicate a sense of challenge, or with an increase in attention to success, motivation, persistence or performance.

Examining whether or not compensatory responding occurs in response to specific self-relevant threats is only one focus of this dissertation. As noted above, threat reactions are diverse, meaning that studying a number of them could illuminate important individual differences in relation to autonomy. For instance, one defining quality of autonomy is a greater level of awareness regarding the linkages between these internal structures of values/goals and behaviour. As a result, it may be the case that autonomy relates to a greater level of discernment among possible threat responses, allowing people to choose those that support existing values and goals while also providing a boost to self-esteem. Thus, another important objective was to examine alternative threat reactions that do not appear traditionally defensive in the manner described above. So, what then, are the components of threat reactions that are not fundamentally defensive? Drawing on my own previous work, self-affirmation theory, self-determination theory, mindfulness and coping it is possible to observe and conceptualize some threat responses that may be fundamentally more adaptive, reality-based, and conducive to future goals. I propose

that these alternative reactions are often motivational in nature, moderate as opposed to extreme, reflective of reality (i.e., one's abilities and important values), and often consistent with approach methods of coping.

In my own research, I have examined the link between autonomy and threat and have shown that autonomy predicts greater selectivity in defensive reactions such that these individuals are unlikely to engage in responses that could ultimately undermine important personal goal pursuits (Thacher & Bailis, 2012). Specifically, participants were asked to recall a previous failure with respect to an important personal exercise goal, and to indicate how much they endorsed various excuses for that failure. I found that, whereas autonomous individuals made excuses about a lack of personal control, they were particularly unlikely to use excuses that claimed success was not important in the first place, thereby undermining future motivation for the same pursuit (Thacher & Bailis, 2012). This finding was conceptually replicated by other research in our lab about harmonious passion (Schellenberg, Bailis & Thacher, 2014). Harmonious passion reflects an intrinsic desire to engage in an activity that can thrive alongside other important commitments. This more specific construct correlates positively with autonomy, and also shows the same avoidance of motivation-undermining excuses. A potential implication of these findings is that excuses may have been chosen or avoided because of how they affected participants' relationships with important goals. It could have been the case that higher autonomy individuals avoided motivation-undermining excuses because distancing themselves from a personal goal was more negative and potentially harmful than the immediate consequences. This intriguing possibility informed the present research toward the hypothesis that autonomy could relate to greater awareness about the consequences of different threat responses, and would

therefore predict choosing the response that would yield the best outcomes for future goals. In this case, an alternative and less defensive response to threat potentially involves being able to choose actions that minimize the damage to self-esteem without sacrificing one's existing motivation toward a goal.

Other researchers have looked at whether people engage in behaviours that directly remedy the threatened aspect of the self versus behaviours that are primarily aimed at feeling better about oneself without providing a means to fix the problem that provided the drop in self-esteem in the first place. McGregor and colleagues (2012) have argued that in the relatively rare case, when the threat is clear, people will be more likely to respond in a way that directly addresses the threatened aspect of the self. Choosing the direct path is not always easy and can be influenced by the perspective that people have on the threatened aspect of the self (e.g., viewing one's threatened intelligence as changeable or not (Nussbaum & Dweck, 2008)), and by the emotional regulation capacity to remain focused on something that has already made one feel negatively (i.e., mindful awareness and approach methods of coping). The reaction of attempting to improve on the threatened aspect of the self can be defensive (e.g., vanDellen et al., 2011), when one's mental state is rigid and less attuned to reality, but when grounded in realistic perceptions about one's abilities, this reaction can be considered less defensive and ultimately more adaptive. In this manner, context and individual differences (i.e., in autonomy and mindfulness) are apt to determine whether persistent focus in the face of threat is defensive or not.

With respect to views on the threatened aspect of the self, Nussbaum & Dweck (2008) administered intelligence-related threats to people with differing views of the malleability of

intelligence. They primed participants with either an incremental or entity theory of intelligence, or in other words, the idea that they could improve with practice or that their abilities were essentially fixed (Nussbaum & Dweck, 2008). Believing that one's abilities are fixed (i.e., having an entity theory) produced more defensive reactions to threat including more downward social comparison than direct remedial action that involved wanting to take a tutorial to improve performance. Downward social comparison allows for an immediate boost while shifting attention away from threatening information, but it ultimately will fail to assist individuals in the long run if it prevents them from learning from mistakes. In contrast, taking a tutorial could potentially prevent this negative experience in the future, but it involves extended exposure to the source of the threat and more emotional discomfort. Thus, this study showed that a primed individual difference variable predicted threat responses that varied in their long-term adaptiveness.

Being able to directly address a threat also requires a high level of self-awareness. Greater awareness is a benefit that researchers agree is enjoyed by more autonomous individuals. Hodgins and Knee (2002), for instance, argue that these individuals have a greater focus and interest in the reality of the situation than on their expectations about what is necessary to fulfill ego-driven goals. Additionally, autonomy correlates positively with mindfulness, a trait and state that involves accurate processing and control over attentional resources (Brown & Ryan, 2003). Other researchers have shown that mindfulness predicts reports of less stress after being exposed to threat and more approach as opposed to avoidant coping strategies (Weinstein, Brown & Ryan, 2009). More specifically, avoidant coping strategies converge with more defensive types of behaviour because these strategies involve disengaging from reality or attempting to avoid

thinking about something threatening. In contrast, approach coping strategies are viewed as more adaptive because they involve direct action or acceptance of the threatening experience. As a result, it could be the case that more autonomous individuals are aware of the types of threat reactions that will best remedy their current, negative situation and are able to maintain attention toward events that can provoke negative affect.

Directly addressing a threat can also take the form of enhanced commitment toward goals or values, for which, some awareness is again essential. For instance, awareness of the linkage between values/goals and action could lead to spontaneous endorsement of threatened core values either through thinking about them or by taking action that serves as a reminder of these action-value connections. For instance, Lydon & Zanna (1990) have shown that adversity can strengthen commitment when people value their long-term volunteer projects before facing difficulties. Within the context of the present research, threat could lead autonomous individuals, who are already aware of and feel connected to their intrinsic values, to show greater value endorsement or an enhanced desire to engage in personally important activities, a reaction that is in some ways akin to self-affirmation because of its ability to restore these broader elements of the self-system. This strengthening of commitment is also conceptually similar to extremist beliefs in ideals experienced after threat, which can actually be indicative of defensiveness and rigidity (McGregor & Marigold, 2003). Reactive approach motivation theory (Gregor, Nash, Mann, & Phills, 2011) posits that people engage in a wide array of actions, which are often idealistic in nature as a way of alleviating some form of anxiety, or threat that has been experienced. In this manner, people can experience greater connection and personal meaning as a result of a threatening, anxiety-provoking event. Whether enhanced conviction in the face of

threat can be included in the list of alternative and less defensive threat responding is likely influenced by the strength and basis in reality of those convictions. If people feel more committed, yet are still able to attend to conflicting information, then the reaction is less clearly defensive. Furthermore, I posit that moderate increases in commitment are more likely to be adaptive and reality-based than are extreme boosts.

Another way that people can protect important values, goals, or even relationships is by weeding out alternatives that are less important, or that could harm future pursuits. Lydon and colleagues (2003) have shown that when people are strongly committed to their romantic relationships, they are more likely to derogate attractive alternatives. In the context of the present research, when threatened, more autonomous individuals could respond with greater commitment to existing goals/values/action or with a sense of clarity that helps them disengage from activities that are less essential. This ability to disengage has also been shown to be important for existing goal pursuits and to sustain well-being (Wrosch et al., 2007). This careful regulation of commitment extends beyond the defensive types of reactions that are studied most often because these reactions reflect action that is deeply internalized and connected to larger aspects of the self rather than actions that repair image alone.

Other researchers have also considered how people might be led to engage in threat responses in ways that can serve long-term goals instead of reacting with the primary aim to feel better about oneself. For instance, self-affirmation researchers consider how a broad bolstering of the entire self-system can increase resiliency and lower defensiveness in the face of threat. One way of affirming the self involves the simple task of writing about one's values. In one study, after receiving the above self-affirmation induction or not, Van Koningsbruggen and colleagues

(2009) exposed participants to information about the adverse effects of coffee consumption. Participants not given the chance to self-affirm were likely to resist the threatening information if it was self-relevant (i.e., if they were coffee drinkers), but when participants had previously self-affirmed, they engaged in deeper processing of the threatening information and took greater precautions (e.g., had intentions to reduce coffee drinking) even if the information was self-relevant. Similar findings have also been shown with respect to information about AIDS risk with self-affirmation resulting in increased condom purchase (Sherman et. al., 2000). Self-affirmation is of particular interest to the current research for two reasons: First, writing about one's personal values is directly relevant to both the internal contingencies of self-worth that are proposed by Crocker and colleagues (e.g., Crocker & Wolfe, 2001) and the focus of integration of actions with the self-concept in Deci and Ryan's (2000) self-determination theory. In other words, people's self-worth can be partially based upon important personal values, and affirming these values provides a method to bolster this more internalized component or type of self-esteem. The second reason that self-affirmation research is directly relevant to the current research is that it prevents maladaptive defensive reactions to threat.

Past research has considered self-affirmation before a threat as a preventative antidote for the negative information that will follow. Because self-affirmation before a threat appears to be effective at protecting internal contingencies of self-worth, and other internal aspects of the self, including relationships (Jaremka, et al., 2011), it may be the case that some people use self-affirmation as a restorative response to threat. Previous research illuminating the benefits of self-affirmation has typically asked participants to write about important personal values, which would be bolstering and protecting an aspect of self-esteem that is contingent upon internal

values and goals. It would make sense for autonomous people, who have been shown in my own past work on selective defensiveness (Thacher & Bailis, 2012) to choose reactions to threat that serve their long-term goals perhaps because of greater awareness of the link between behaviour and values.

In summary, this research examined whether autonomy leads to differences in the self-relevance of threatening information and to differences in alternative threat responses that are aimed at restoring broader qualities of the self-system instead of self-esteem recovery alone. Although it may be impossible to draw a sharp categorical line between defensiveness and coping, it is still possible to differentiate various means of preserving self-esteem in terms of degrees of acknowledging the existence and content of threatening information, and preserving goal focus without becoming rigid, which can then be tested and further compared in terms of their relationship to autonomy and use in specific threatening circumstances. These differences are important to understand because they could illuminate additional patterns of threat reactivity that can help people achieve their goals in the long run, while remaining engaged and motivated.

The Present Research

In a series of four studies, I examined two objectives: The first objective was to examine whether the self-relevance of threats is determined by relative autonomy. The second objective was to examine whether, when faced with a universal threat, relative autonomy leads to threat responses that restore the self-system and are useful in the long run, rather than ones that function only to restore self-esteem in the short term.

Studies 1 and 2 focused on the first objective. In these studies I manipulated performance and motivation-related feedback to examine whether the content of motivation- in comparison to

performance-threatening feedback was more distressing for high than low autonomy participants. If higher autonomy individuals do in fact base their self-esteem upon remaining engaged with important goals and values, then feedback threatening this linkage could elicit defensive responding. In order to categorize participants' potential responses in a coherent way, I used vanDellen and colleagues (2011) conceptualization of compensating, resisting, and breaking threat responses. I predicted that if higher autonomy individuals were susceptible to defensiveness when faced with internal threats, their high positive self-regard would make them more likely to use compensating, rather than resisting or breaking responses.

Studies 3 and 4 focused on the second objective, which was to examine whether higher autonomy was more likely than lower autonomy to produce alternative threat reactions that were broadly aimed at restoring the self-system while supporting future intrinsic pursuits. Universally-relevant threats were administered in these studies to focus on the behaviour that followed, rather than the self-relevance of specific threats. People have a basic human need for relatedness (Deci & Ryan, 2000), so thwarting of that need should be painful to everyone, regardless of autonomy. In addition, existential threat also qualifies as a universal threat, because everyone must eventually face death. Thus, I examined how behaviour varies in response to relational and existential threats. Like other researchers who have examined the autonomy-threat relationship, I examined defensiveness as evidenced through affect and derogation of the negative feedback source. This research also examined alternative threat reactions that could potentially bolster internal contingencies of self-worth while serving existing goals. Thus, I aimed to examine alternative threat reactions that specifically restored threatened external (e.g., performance, other's expectations, etc.) or internal foundations of self-esteem (e.g., value-congruent action,

feeling motivated, etc.). These alternative reactions could involve increasing commitment to attainable future goals, and higher endorsement of personal values. Thus, with respect to the first aim of determining whether autonomy predicted differences in threat self-relevance, I expected to find that autonomous individuals would become threatened when faced with information that could potentially undermine their future career *motivation*, and would react defensively, in much the same way as lower autonomy individuals when faced with *performance* threatening information. Additionally, I predicted that given the opportunity for alternative reactions to universal threat, more autonomous individuals would be more likely than less autonomous people to react in ways that restore internal contingencies of self-worth (i.e., bolstering personal values, and increasing commitment toward important personal goals). In summary, people higher in autonomy are fundamentally oriented toward protecting internal contingencies, so they were expected to both react negatively to motivation feedback and to seize on opportunities to support personal values and goals when offered alongside of standard defensive maneuvers to restore self-esteem.

Pilot Study

A pilot study was completed in order to pre-test the threat manipulations to be used in Studies 1 and 2. The aim was to determine whether the two feedback conditions differ on dimensions of feedback believability and valence, which could provide an alternative explanation for results, or that would need to be controlled prior to the analyses in subsequent studies. I also wanted to obtain mean ratings on indices of feedback believability and valence. In order to encourage objective ratings, the feedback was presented as hypothetical and not a real

threat to the self. The experience of threat, and subsequent defensiveness, should only arise if participants believe that the feedback is self-directed.

Participants were randomly assigned to receive feedback that was either threatening to motivation or to performance. After imagining receiving the feedback, participants answered a series of questions about the feedback's believability and about their anticipated feelings if the feedback was really received. Lastly, participants completed a measure of their intrinsic and extrinsic values parallel to the intended procedure of Study 1.

Method

Participants. Participants were those who had provided a measure of their relative autonomy and contact information during a larger survey completed several months prior to this study. Of the 64 participants in the study, 5 participants were dropped because their data were incomplete leaving 59 participants (19 male, 39 female, and 1 unspecified). Participants ranged in age from 17 to 21 with a mean age of 18.

Materials. Pretest measures. As shown in Appendix A, participants completed the Self-determination Scale (Sheldon & Deci, 1996), which is a measure of autonomy. The Self-determination Scale measures general autonomy with respect to aggregated outcomes, instead of focusing on orientation toward specific personal goals. This scale consists of 10 items, with 2 opposing statements (e.g., "A. I choose to do what I have to do." and B. "I do what I have to, but I don't feel like it is really my choice.") For each pair of statements, participants are asked to indicate their response on 5-point Likert-type scale ($1 = \text{Only A feels true}$, $-5 = \text{Only B feels true}$.) Thus, it would be possible for participants to experience both statements as being true some of the time. The scale includes two subscales, which are Awareness of Self ($\alpha = .68$), and

Perceived Choice ($\alpha = .83$). A score for each subscale was computed by averaging responses to the relevant questions. The reliability for this scale is typically between .85 and .93 (Sheldon, Ryan, & Reis, 1996).

Performance/motivation threat. As shown in Appendix B, participants were asked to imagine receiving feedback that was threatening to performance or motivation. This feedback content and paradigm was based on one previously used by Twenge and colleagues (2003). Before reading the feedback, participants read the following statement: “Imagine that you completed a personality test, which asks about your goals, values, and communication style. You receive the following feedback . . .” The performance threat condition communicated that although motivation toward the participants’ career was expected to prevail, their performance would not be recognized and others would receive promotions before they did. In the motivation threat condition, participants were told that their career motivation would eventually disappear, but that they would show higher performance, and receive more recognition than their colleagues. Additionally, in the motivation-threatening condition the feedback contained warnings that participants would have little choice in their daily tasks and would have to do things they did not like (e.g., firing people). By using believable feedback that implies a trade-off between participants’ performance and motivation, I could (in subsequent studies) determine how autonomy influenced participants’ comfort with either end of the continuum.

Feedback survey. This survey can be seen in Appendix C. It included questions about the believability of the feedback (e.g., “How believable is the feedback?”) the familiarity of the concepts (e.g., “How easy is it for you to bring to mind a person who is like what the feedback describes?”), and about how the feedback related to personal expectations (e.g., “How

negative/positive is the feedback?”). I constructed this scale to assess specific aspects of believability and perceptions of feedback valence that I wanted to make sure were consistent across feedback types. I used a principle component analysis with varimax rotation to extract two, 5-item subscales from this measure that represented the feedback valence ($\alpha = .78$) and its believability ($\alpha = .79$). Four items did not load well on either factor and were dropped from the analyses.

The second part of the questionnaire included a list of emotions, and participants were asked to indicate how much they would anticipate experiencing each one, in response to receiving the feedback (e.g., “hostile”, “motivated”). Most of these adjectives were taken from the positive and negative affect schedule (Watson & Clark, 1994), but several others were included to examine emotions that were thought to be autonomy-related emotions (e.g., “free”). For all questions, participants indicated agreement on a 7-point Likert-type scale ($1 = not\ at\ all$, $7 = completely$). Again, I used factor analysis to extract two subscales for expected positive ($\alpha = .88$) and negative affect ($\alpha = .82$), which contained 11 and 7 items, respectively.

Aspiration Index. Participants were asked about their values and goals. The Aspiration Index (Kasser & Ryan, 1996) is shown in Appendix D, and it includes 7 categories of aspirations, most of which are categorized as intrinsic or extrinsic. The scale presents a value (e.g., becoming a wealthy person) and then provides 3 questions to be answered on a 7-point Likert-type scale ($1 = not\ at\ all$, $7 = very$) about how important the value is, how likely it is to be achieved, and how much of it has already been attained. Aspirations for community, relationships, and personal growth are aggregated to form an intrinsic subscale, and aspirations

for fame, wealth, and image are aggregated to form the extrinsic subscale. The health aspiration can overlap with both the extrinsic and intrinsic subscales and as a result, does not fall on either.

Procedure. Participants who had previously agreed to be contacted for other studies were recruited by telephone. The study was completed in a group setting in a classroom. Once participants entered the classroom and sat down, they read and signed an informed consent form. Participants were randomly assigned to receive the performance or motivation threat booklet. All measures were compiled in one booklet in the following order: Feedback Manipulation, Feedback Survey, and Aspirations Index. Once participants completed their survey booklets, they were given a written debriefing and exited the classroom.

Results and Discussion

The first objective of the pilot study was to determine whether there were major differences resulting from the feedback itself that would need to be controlled for in subsequent analyses. One-way ANOVAs were used to compare the effects of the experimental condition on believability, perceived feedback valence, negative emotions, and positive emotions.

None of the differences were significant. Table 1 contains the mean ratings of the valence, believability and expected affect associated with the feedback. Even with a sample large enough to reach statistical significance, particularly for the ratings of feedback believability and valence, the differences shown in Table 1 would not be practically significant. The means were also well-situated in the middle of the scale (ranging from 1-7) with no ceiling or floor effects in evidence, demonstrating that the measures were well-calibrated to observe the range of feedback responses.

Although not significant, and not a potential confound in the same sense as feedback valence and believability, there was a trend for participants to anticipate more negative affect and less positive affect in the motivation-threatening condition than in the performance threatening condition.

Given comparable ratings of the feedback itself, the pilot study afforded an opportunity to take a preliminary look at whether relative autonomy interacted with the feedback type to yield differences in compensatory reactions and value endorsement that were anticipated responses to a hypothetical threatening situation. These analyses were conducted in regression, with threat condition dummy-coded with the performance condition serving as the reference group. I examined the two subscales of the Self-Determination Scale separately (perceived choice and self-awareness). Hierarchical regression was performed with the main effects for relative autonomy and condition entered first, followed by the Condition \times Autonomy interaction term. Significant effects emerged only for the perceived choice subscale. The self-awareness subscale is not discussed further.

Table 1

Participants' estimates of affect, feedback belief and valence by hypothetical threat condition.

Measure	Motivation Threat	Performance Threat	<i>F</i>	<i>p</i>
Believability	4.58(.95)	4.42(1.10)	.37	.54
Valence	4.15(.78)	4.01(1.16)	.31	.58
Positive Affect	3.78(1.06)	4.01(1.04)	.78	.38
Negative Affect	4.11(.91)	3.66(1.16)	2.86	.10

Note. Values in brackets are standard deviations.

These analyses also revealed no significant interaction effects. However, there were two trends of interest in the examination of simple slopes. First, participants with the highest level of perceived choice predicted higher negative affect as an anticipated response to the motivation threatening task ($\beta = .39, p < .05$) but not the performance threatening feedback. Participants with the lowest levels of perceived choice did not show this same anticipated difference in negative affect across conditions ($\beta = .05, p = ns$).

In summary, the pilot study suggested that there were no practical differences between both types of feedback, in terms of believability and valence. It also suggested that motivation-threat was indeed more self-relevant for higher perceived choice individuals. Study 1 then built upon these findings, first and foremost, by making the same feedback personal.

Study 1

The main objective of Study 1 was to examine whether autonomy led to variations in reactions to two types of threats, one to performance (external), and one to motivation (internal). Although both sources of feedback in the study were administered externally, the internal/external distinction comes from the fact that participants received feedback that was either about external recognition (performance) or an internal experience (motivation). If it is the case that autonomous people have unassailable self-esteem, for the reasons previously reviewed, then they should respond nondefensively and similarly to either type of threat, in comparison with less autonomous people. If autonomous people instead have another kind of contingent self-esteem – one that depends on achieving personal goals and values – then they should respond to motivation threats defensively, in much the same way as less autonomous people respond to performance threats.

In contrast to the pilot study, participants in this study believed that the feedback was real and self-directed. Because participants were no longer answering questions about hypothetical feedback, I expected to observe defensiveness that involved less agreement with and belief in the feedback rather than logical assessment. So, instead of objectively evaluating negative, but irrelevant feedback, participants were processing and reacting to ostensible self-relevant information about their futures. Furthermore, participants were asked to report on their emotions and these ratings were compared across conditions.

Because there are many different types of defensiveness, it makes sense to fit those responses within an existing model. As a result, I employed vanDellen and colleagues (2011) model, which postulates three possible threat responses: Compensating involves acknowledging

the threatening information and defending against it (low acceptance of feedback, high positive and low negative affect). Resisting involves a refusal to acknowledge information as threatening (no change in acceptance or affect across conditions). Finally, breaking responses involve acknowledging and agreeing with threatening information (high belief, low affect).

Compensating responses are most common among individuals with high self-esteem (vanDellen et al., 2011). Because autonomous individuals are thought to enjoy true (high) self-esteem, and although it is conceptually different in major ways (e.g., stability) from the high self-esteem referred to in vanDellen and colleagues (2011) work, their positive self-regard still places autonomous individuals closer to high than to low self-esteem people, making them more likely to engage in compensatory responding if they are in fact susceptible to any kind of defensive responding.

One thing that this model does not describe is the more objective responses that people can engage in when faced with threatening information. There are two responses that would be difficult to distinguish from either breaking or resisting if I only looked at one of the dependent variables, instead of the combination of affect and feedback acceptance. Specifically, people may agree with the feedback (typically associated with breaking), but not be bothered by it, because it is truly not self-relevant. Additionally, people could accurately disagree with the feedback (normally a compensatory reaction), a response that could be distinguished from compensating by neutral rather than elevated affect. In summary, I expected that high autonomy individuals would engage in compensatory responses in response to motivation-threatening feedback, and that I could distinguish their disbelief of the feedback from realistic disbelief by also examining

their affect, which should be elevated relative to the control condition only if people were compensating for the threat.

Even though the central aim of this study was to examine defensive responses in reaction to self-relevant threat, I also began to examine alternative threat reactions (the central aim of Studies 3 and 4) that could involve threat-reactive increased endorsement of important personal values, that is, intrinsic values for more autonomous individuals. If higher autonomy individuals do base their self-esteem on feeling connected to their goals/values, then endorsement of intrinsic values might be higher in the motivation- as opposed to performance threatening or control conditions as a way of restoring a threatened aspect of the self-system.

Method

Participants. Participants were 107 (49 male, 57 female) introductory psychology students who provided a measure of their autonomy during pre-testing. Participants ranged in age from 17 – 25, with a mean age of 18.4 years. One participant was dropped on an a priori basis for expressing suspicion about the manipulation leaving 106 participants for the analyses.

Materials. *Relative Autonomy.* In pre-testing, participants completed the Self-Determination Scale (Sheldon & Deci, 1996), which was also used in the pilot study. Reliabilities were $\alpha = .64$ for the self-awareness subscale and $\alpha = .76$ for the perceived choice subscale.

Personality. First, participants completed the Big Five Inventory (John, Donahue, & Kentle, 1991) in order to bolster the cover story that participants were receiving feedback based on a personality test (shown in Appendix E). The Big Five Inventory contains 44 items that could describe “how (they) are like on average.” For example, the extraversion subscale included

the potential description, “is talkative.” Responses were indicated on a 5-point ($1 = Disagree$ strongly, $5 = Agree$ strongly).

Self-esteem. As shown in Appendix F, the Rosenberg (1965) self-esteem scale was included to be used as a covariate in the analyses. This scale includes 10 items, and participants indicated their agreement with each item on a Likert-Type scale (e.g., “sometimes I think I am no good at all”).

Social desirability. In order to control for differences in responding, the Balanced Inventory of Desirable Responding-6 was included (Paulhus, 1991). This scale is shown in Appendix G and it includes 40 items and two subscales, which are self-deceptive positivity (e.g., “I always know why I like things”) ($\alpha = .63$) and impression management (e.g., “I don’t gossip about other people’s business”) ($\alpha = .76$). Responses were indicated on a 7-point scale ($1 = not$ at all true, $7 = very$ true).

Feedback survey. As in the pilot study, participants answered questions about the feedback they received and reported on their emotions. Because the pilot study included feedback that was hypothetical, these items assessed the validity of the feedback. In contrast, because defensiveness should arise when participants believe that the negative feedback is directed at them, these same measures can be interpreted as defensiveness in this study. Items included: “how believable was the feedback?” and “if you took this test again, you would probably get a different result”. These questions were answered on a 7-point Likert-type scale with higher numbers indicating greater belief. The feedback survey also included 2 open-ended questions in which participants were asked to write down everything they could remember about the feedback and to provide any additional comments about how their career outcomes were

assessed. Only 23 participants provided additional comments, so these were not included in the analysis.

Two coders coded the open-ended responses. Specifically, coders noted how many positive and negative statements participants' remembered from the feedback in order to assess attention to the information. Intraclass correlations were $r = .93$ and $.87$, respectively. A word count was also taken, about which coders were in perfect agreement. Finally, coders also noted whether or not participants expressed suspicion about the manipulation and were in perfect agreement. An average of the 2 coder's ratings was used in the analysis.

Aspiration Index. Participants completed the same measure of values as in the pilot study before receiving a copy of the written debriefing.

Mood-boosting task. Lastly, participants were asked to write about their happiest memory in order to make them feel better after receiving negative information (Appendix H).

Procedure. During a pre-test at the beginning of the fall semester, participants completed the Self-Determination Scale. During the mass testing, participants received an arbitrary number that was recorded into the call list from which participants were recruited. This number was recorded and used to link data from the current study to participants' responses in the mass-testing questionnaire. The current study was completed in a computer lab with students seated at every second computer. All materials, except for the informed consent form were presented on the computer, using Qualtrics (2013) software. After providing informed consent participants completed the personality, self-esteem, and social desirability measures. The computer program randomly assigned participants to the control (no feedback), performance- or motivation-feedback condition. As participants read the feedback, the computer program timed how long

they remained on the feedback page before clicking “next” to advance to the feedback evaluation questions. Lastly, participants completed the Aspiration Index and the mood-boosting task before the computer prompted them to raise their hand for an experimenter who then provided participants with a written copy of the debriefing and added participants’ mass-testing number to their survey so that their data could be linked back to their measured autonomy from the pre-test.

Results and Discussion

Similar to the previous study, separate regressions were run for each of the subscales in the Self-Determination Scale. Because the results for the self-awareness scale were typically weaker than those for the perceived choice subscale and because this subscale was of lesser interest, I focused my discussion on the latter. Self-awareness is not discussed further.

My analysis plan consisted of first examining the interactions in multiple regression and examining the simple slopes of significant interactions using a macro for SPSS (O’Connor, 1998). Dependent measures were participants’ level of positive and negative affect, feedback belief/acceptance, and intrinsic/extrinsic value endorsement. Because there were 2 feedback conditions and a control (no-feedback) condition, there were no ratings of feedback agreement and belief in the control condition. As a result, two different regression models were created with either 1 or 2 dummy-coded variables. For the analysis of affect and value endorsement, threat condition (motivation or performance) was dummy-coded into two variables with the control (no feedback) condition serving as the reference group. For analysis of feedback acceptance and belief, which compared only the motivation- and performance-threat conditions, threat was dummy-coded with the performance threat condition serving as the reference group. In both

models, the main effects for Threat and Autonomy were entered first, followed by all 2-way interactions, which were all of primary relevance to the hypotheses.

I planned to conduct additional analyses to rule out alternative explanations based upon socially desirable responding and to ensure that the effects observed were robust (i.e., bootstrapping as a remedy for homogeneity of variance assumption violation). Social desirability correlated $r = .35, p < .001$ with the perceived choice subscale, making it a potential covariate. With social desirability in the model, regressions included 3-way interaction terms, adding an additional step to regression-term entry procedure. Including social desirability in the model did not affect the significance of the 2-way interactions that were relevant to the hypothesis, ruling it out as a potential confound. Because of this, and the added complexity of the model with social desirability in it, the results presented here do not include that variable.

As for the bootstrapping analysis conducted to ensure that the effects were robust in spite of homogeneity of variance violations, I found consistent effects across both methods. This indicated that my results were not due to inflated variance and were indeed robust effects. For the sake of simplicity, the analyses presented here are for the original – not bootstrapped analyses.

Threat and self-relevance by autonomy. The primary objective of this study was to determine whether participants' autonomy (i.e., level of perceived choice) predicted differences in the self-relevance of threats, as would be shown by differences in their defensive responding across conditions. The first stage was to determine whether higher autonomy people did indeed become defensive, and engage in compensatory responding evidenced by low belief/agreement

and high affect when faced with motivation threat, which would be shown by significant interactions in the subsequent analyses.

Table 2

Standardized regression coefficients for feedback measures by perceived choice and threat condition in Study 1.

	<u>Feedback Ratings</u>		<u>Feedback Recall</u>		
	Acceptance	Belief	Word	Positive	Negative
Perceived Choice	-.01	.02	-.02	-.13	.12
Motivation threat	.56***	.31**	.25 [†]	.38**	.38**
Step 1 R ²	.32	.10	.06	.18	.16
Perceived Choice × Motivation threat	-.08	-.14	.07	.15	.08
Step 2 R ²	.33	.11	.07	.19	.16
Step 2 R ² Δ	.00	.01	.00	.01	.00

Note. [†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

It should be noted that feedback agreement and belief were only compared across the two threat conditions, without a baseline in the “no-feedback” control condition. As a result, this regression only included one dummy variable to represent threat conditions. I examined feedback reactions first, and the results can be seen in Table 2. The first items in the table are participants’ ratings of their acceptance of and belief in the feedback. There were no significant interactions for either subscale. Regardless of autonomy, all participants were more likely to accept and believe in the motivation- than performance- threatening information. Analysis of the coded items (columns 3-6 in Table 2), confirmed the lack of interactions, and a tendency to

remember more of both positive and negative statements in the motivation-threatening condition than in the performance-threatening condition. Thus, this section of the analysis revealed that autonomy did not moderate participants' tendency to believe in or accept ostensible feedback of either type. The motivation-threatening feedback seemed to be more salient than the performance-threatening feedback in participants' minds, as evidenced by more writing about both the positive and negative statements. If higher perceived choice individuals were indeed compensating, their ratings of the motivation- compared to the performance threat should have been lower, to display defensiveness. According to vanDellen and colleagues, (2011) model of threat responding, high acceptance of negative feedback is associated with breaking (i.e., agreeing with negative feedback and feeling disheartened by it). As mentioned previously, it should be possible to separate breaking responses from more objective feedback acceptance by also examining affect.

There were significant Perceived Choice \times Motivation Threat interactions for both positive and negative affect, which are displayed in the first two columns of Table 3. Analysis of simple slopes revealed that negative affect was unrelated to autonomy in the control condition ($\beta = .08, p = ns$), but negatively to perceived choice in both the performance-threatening ($\beta = -.37, p < .05$) and motivation-threatening conditions ($\beta = -.38, p < .05$). Analysis of the interaction shows that this is pattern was driven primarily by the affect of low perceived choice participants, who showed higher negative affect in both threat conditions (see *Figure 2*). In contrast, participants higher in perceived choice displayed a similar level of negative affect regardless of whether they were in the control or threat conditions.

Table 3

Standardized regression coefficients for affect and value measures by perceived choice and threat in Study 1.

Predictor	Affect		Value Endorsement	
	Negative	Positive	Intrinsic	Extrinsic
Perceived choice	.08	.50**	.27*	-.06
Motivation dummy	.19 [†]	-.14	.00	-.02
Performance dummy	.19 [†]	-.20 [†]	-.04	.02
Step 1 R ²	.08	.09	.04	.01
Perceived choice × motivation dummy	-.26*	-.26*	-.04	.16
Perceived choice × performance dummy	-.27 [†]	-.15	-.07	.09
Step 2 R ²	.13	.12	-.01	.02
Step 2 R ² Δ	.04 [†]	.04 [†]	.00	.01

Note. [†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, & *** $p \leq .001$.

In contrast, analysis of simple slopes for positive affect (*Figure 3*) showed that autonomy was only significantly positively related to positive affect in the control condition ($\beta = .50$, $p = .001$). The performance-threatening condition weakened this relationship only slightly with a still marginally significant and positive simple slope ($\beta = .30$, $p = .06$), but the relationship between perceived choice and positive affect completely disappeared in the motivation-threatening condition ($\beta = -.01$, $p = .95$). A test for regions of significance found none by using the Johnson-

Neyman technique within Process; a program developed by Hayes (2013) for examining moderated and mediated regression.

Altogether, the results did not confirm my prediction that higher perceived choice would relate to compensatory reactions (low belief/acceptance of feedback, mood boost) in the motivation-, but not performance-threatening condition. Instead, all participants showed significantly greater belief/acceptance in the motivation- than performance-threatening feedback, yet no threat-related rise in negative affect among high as opposed to low perceived choice individuals. Although the motivation threat did not rouse defensiveness in high perceived choice individuals, it did significantly undermine their characteristic advantage over low perceived choice individuals in positive affect, which the performance threat failed to do. This lack of joy was the only sign that the motivation feedback bothered high perceived choice individuals in a specific and self-relevant way.

The final stage of this analysis involved taking a preliminary look at the aim of Studies 3 and 4, which was to examine whether more autonomous individuals would more strongly endorse personal values when threatened (i.e., in the motivation-threat condition). When it came to intrinsic value endorsement, as shown in the third column of Table 3, there were no significant interactions. Higher perceived choice predicted stronger intrinsic endorsement, regardless of threat condition. There were no significant effects of any kind on extrinsic value endorsement. These results failed to support the notion that higher perceived choice individuals would engage in reactive intrinsic value-endorsement following motivation threat.

In summary, I had predicted that higher perceived choice would lead to compensatory responses to motivation threat because this information should be uniquely self-relevant for these

individuals. Although compensating responses were not observed, it did appear to be the case that motivation-threatening feedback was more relevant to the self-worth of high perceived choice individuals than the performance-threatening feedback because their positive affect was lowered only in the former condition relative to the control. In contrast, lower perceived choice individuals showed similar boosts in negative affect in both threat conditions, even though they believed in the motivation-threatening feedback more strongly. This reaction fits with the breaking response as outlined by vanDellen and colleagues (2011). Even though higher perceived choice individuals reacted to motivation threats with lowered positive affect, their response was not consistent with breaking because their negative affect was not elevated. Instead, it seems that motivation-threat neutralized the positive affect advantage of higher perceived choice individuals. This response suggests that high perceived choice individuals are indeed nondefensive – even when threats take aim at the core of their being – internal motivation. Despite being nondefensive here, as in the pilot study, there are signs that these individuals give some special recognition to motivation threat that is different from performance threat – this is seen in the results for positive affect.

These findings are congruent with what the literature suggests on nondefensive processing of individuals high in autonomy. It adds the unique contribution of showing how higher autonomy individuals might also be particularly discerning (i.e., only reacting to feedback that they really believe and agree with) when it comes to interpreting threatening information, a finding that is congruent with past research on selective defensiveness (Thacher & Bailis, 2012). In other words, it may be the case that higher autonomy individuals are better at figuring out which specific threats they need to be concerned with, rather than reacting to all negative

information. If this is a chronic tendency, it may explain why higher autonomy individuals are able to persist with less reactive responding in the face of threat; that is, by weeding out information that is not self-relevant.

Although this implication is intriguing, this study had two important limitations. First, despite the similarity of believability and acceptance ratings across conditions in the pilot study, participants in this study believed in and accepted the motivation-threatening information more than the performance-threatening information. One potential reason for this was that receiving the motivation-threatening information may have been a more novel experience than performance-threatening information, and therefore one that participants were less prepared to argue against. Also, it is possible that the emergence of these differences is related to personalizing the feedback in Study 1, as compared with treating it hypothetically in the pre-study. Regardless of the reason, the issue these findings create for interpretation is that it becomes harder to separate the content of the feedback from its credibility as the variable accounting for significant condition by autonomy effects on participants' affective reactions. For example, why did low perceived choice participants respond similarly to both conditions with heightened negative affect if they believed the motivation feedback more? Why did high perceived choice participants respond selectively to the motivation feedback with lower positive affect – was this due only to the self-relevance or possibly also to the generally higher credibility of the feedback? These questions make replication an important goal of Study 2.

As the names of the subscales imply, it could be the case that the outcomes of Study 1 were most relevant to the perceived choice dimension of self-determination. For instance, feedback about the future implies that participants' own volition is undermined, particularly

when they are reading information that goes against what they might want for themselves, violating their sense of freedom and choice. This directly undermines perceived choice, but may have a lesser effect on self-awareness. In order to address concerns about how autonomy was operationalized, in Study 2 I chose to manipulate autonomy with a priming task and use a different measure of autonomy.

Study 2

The aim of Study 2 was to replicate the findings of Study 1 in an independent sample, using alternate procedures. Specifically, participants were randomly assigned to complete a sentence-completion priming task to induce an autonomous, controlled, or impersonal causality orientation before being randomly assigned to one of the same feedback conditions as in the previous study (performance threat, motivation threat, or no feedback).

Because I wanted to understand more about how an autonomous orientation, in general, affects threat reactions (rather than a smaller dimension such as perceived choice), I measured participants' causality orientations. Individuals' autonomous, controlled, or impersonal orientations are broader constructs, which are closer in scope to personality traits than the individual difference variables measured with the Self-Determination Scale.

Consistent with Study 1, I expected to find that participants who received the autonomous, instead of controlled or neutral primes would show similar rates of agreement across feedback conditions as well as declines in positive affect (only in the motivation-threat condition) without boosts in negative affect. Overall, this would continue to support the notion that greater discernment under threat is a benefit of an autonomous as compared to the other causality orientations.

Similar to Study 1, I continued with my preliminary examination of the central aim of Studies 3 and 4, which was to ascertain whether people primed with an autonomous orientation would bolster more general aspects of the threatened self. Therefore, I asked participants about their preferences for activities that were relevant to intrinsic or extrinsic values.

Method

Participants. One hundred-sixty-seven undergraduates completed the procedures in exchange for credits toward their research participation grade in introductory psychology. Participants viewed the study online and were able to sign themselves up. Prior to analysis, 2 participants were dropped for failing to complete the procedures or for expressing suspicion. This left 165 participants in the final analysis (32 men, 129 women, 4 unspecified). Participants ranged in age from 17 to 47 with a mean age of 19.58. Ninety-six participants reported English as their first language and 66 reported another language as their first, and 3 did not specify.

Materials and procedure. As in Study 1, participants completed procedures in a group in a computer lab setting. Participants completed the General Causality Orientation Scale (GCOS) in the lab (Hodgins, Koestner, & Duncan, 1996).

General causality orientation scale. This scale, shown in Appendix I, contained 17-vignettes about achievement (e.g., “Recently a position opened up at your place of work that could have meant a promotion for you. However, a person you work with was offered the job rather than you. In evaluating the situation, you're likely to think:”), and social interactions (e.g., “You feel that your friend is being inconsiderate. You would probably:”). For each vignette, participants used a 7-point Likert-type scale to indicate how likely they would be to take 3 different actions. With respect to the friend vignette presented above, the choices included:

explaining why the friend's behaviour was bothersome (autonomous, $\alpha = .82$), saying nothing (impersonal, $\alpha = .76$), or demanding more consideration (controlled, $\alpha = .73$). Each vignette contained an option that reflected one of the three causality orientations, so the alphas reflect the aggregated numbers of all items measuring each causality orientation. Impersonal causality orientations reflect a state of reduced personal control and motivation, whereas a controlled orientation involves feeling driven by external rewards or punishment. During this stage of the procedure, participants also completed the Big Five Personality Inventory (John et al., 1991) and the Balanced Inventory of Desirable Responding, as in Study 1 (Paulhus, 1991).

Autonomy prime. Participants were presented with 30 sets of words and were asked to unscramble the sentences (Appendix J). There were 3 conditions, which were neutral, controlled and autonomous. The task was created by Hodgins and colleagues (2007). In the neutral condition, all sentences were neutral. In the controlled and autonomous groups half the word groups were relevant to the manipulation and half were neutral. This task was completed on pencil and paper and was placed inside an envelope. When it was time for participants to complete the task, they were prompted by the computer to do so before advancing. This page timed how long participants spent on the task. Five participants spent less than 10 seconds on the page and were dropped from the analyses that examined the priming task, but included in all other analyses. The remaining participants spent an average of 604.10 seconds on the page.

Threat. Participants were randomly assigned to 1 of the 3 feedback conditions as in the previous study.

Affect and recall. Next, participants completed the Positive and Negative Affective Schedule (PANAS; Watson & Clark, 1994), shown in Appendix K, and the same feedback

evaluation questions as in Study 1. Participants were asked to write down as much of the feedback as they could remember. Two coders counted the number of words participants used and the specific positive and negative statements. Interrater reliability was high, with high intraclass correlations (all $\alpha \geq .90$), and an average of the scores was used in the analysis.

Activity questionnaire. Participants were asked to indicate on a 7-point Likert-type scale how much they would like to engage in each of 27 activities (Appendix L). These activities were defined by their consequences, which varied across the spectrum of autonomy. For example, “Do something that makes me feel free,” reflects higher autonomy and, “Do something to show other people what I’m made of,” reflects lower autonomy. Participants were also asked to indicate why they gave the answers they did to the two example items shown above. These responses were then coded based on choice, total number of words, and statements about each topic. Items that were relevant to basic needs were taken from a basic need satisfaction scale (Johnston & Finney, 2010). Activities were also included that satisfied specific contingencies of worth such as appearance and receiving approval from others. These items were adapted from Crocker and colleagues Contingencies of Self-Worth Scale (Crocker, Luhtanen, Cooper, & Bouvrette, 2003). Five subscales were included in the analysis. The autonomous preference subscale included 5 items (e.g., “Do something that makes me feel free, $\alpha = .82$), the relatedness preference subscale included 3 items (e.g., “Spend time with someone I love,” $\alpha = .80$), the competence subscale included 5 items (e.g., “Do something personally challenging,” $\alpha = .84$), the skill demonstration subscale included 3 items (e.g., “Do something that shows other people what I’m made of,” $\alpha = .84$) and the attractiveness activities subscale included 3 items (e.g., “Do something that makes me feel attractive,” $\alpha = .85$).

Finally, as in the previous study, participants wrote about their happiest moment to boost their mood and they provided demographic information. Once participants raised their hands, an experimenter handed them a copy of the debriefing.

Results & Discussion

In this study, there were two ways to examine the Autonomy \times Threat interaction. The first set of analyses considered the priming manipulation of autonomy, and the second set, the general causality orientation (GCOS) measure.

Autonomy prime. Measures of feedback belief and acceptance as well as positive and negative affect were subjected to 2-way univariate ANOVAs. The final model included Threat and Priming Condition as independent variables and social desirability, and the autonomous and controlled subscales from the GCOS entered as covariates. This method mirrors the analysis consistently used by Hodgins and colleagues (e.g., Hodgins & Liebeskind, 2003). This analysis also included a measure of participants' memory of both positive and negative statements from the feedback to determine whether they selectively remembered only the positive statements (which would be indicative of defensiveness).

I consistently found that the priming condition, alone or as part of an interaction, did not significantly affect participants' level of positive and negative affect, belief/acceptance of feedback, memory of the feedback, or activity preferences. The lack of significant effects due to priming of causality orientation did not depend on limiting the sample of participants with English as their first language or on dropping covariates from the model. Therefore, I turned to the GCOS and analytic methods similar to Study 1 to examine possible Autonomy \times Threat interactions on each dependent variable.

Threat and compensatory responding by autonomy. Similar to Study 1, these next analyses were conducted in regression and autonomy was examined as a continuous, dispositional variable. Again, threat was dummy coded into two variables with the control condition serving as the reference group. The final model included the main effects for autonomous and controlled orientations and the two dummy variables for threat condition entered first, followed by all 2-way interaction terms. Again, the simple slopes of all significant interactions were examined to probe the interaction further. Because there was some overlap with the autonomous and controlled subscales ($r = .25, p = .01$) and I wanted to ensure that my effects were unique to an autonomous orientation, I included participants' scores on the controlled subscale in the regression. However, because these two variables are related, multicollinearity became a growing issue with each addition to the model. The full regression model could have included 3-way terms with scores on both these orientations interacting with the two dummy-coded threat conditions, but because of the potential for regression coefficient inflation due to multicollinearity, and because the 3-way interactions were irrelevant to the hypotheses, they were not included in the final model.

As in the previous study, when examining participants' responses to the feedback, the model only included one dummy variable because these items could not be included in the "no feedback" control condition. Finally, all analyses also examined social desirability, neuroticism and openness as potential covariates, but did not significantly influence the interpretation of the results and thus were not included in the final model to ensure the highest level of parsimony. Additionally, all analyses were also conducted with bootstrapping, but this did not significantly influence the results or their interpretation.

If participants with a more autonomous orientation were indeed compensating in response to motivation-threat, then they should agree with and believe the motivation- less than the performance-threatening feedback, and should show a corresponding mood boost. Table 4 shows participants' agreement and belief in the feedback, as well as their recall of positive and negative statements.

As in Study 1, there were no significant Autonomy \times Threat interactions for feedback agreement and belief. Instead, regardless of autonomy, participants generally believed and agreed with the motivation-threatening feedback more than the performance threatening feedback (see Table 4). Analysis of the recall data, however, showed a significant Autonomy \times Threat interaction for participants' recall of positive statements. Figure 4 shows the results of the analysis of the interaction. Using Process (Hayes, 2013), a program that can examine more specialized patterns within regression in SPSS, I examined the regions of significance for the interaction. Process calculates these values using the Johnson-Neyman technique. The effect of condition on recall of positive statements was significant at $p < .05$ when autonomy was below the mean ($M = 5.59$) and between 3.76 and 5.39. Specifically, as shown in Figure 4, lower autonomy individuals showed better recall for the positive statements in the motivation-threatening condition (i.e., those referring to performance) than they did in the performance-threatening condition. Higher autonomy individuals, in contrast showed similar recall for positive statements regardless of condition. Thus, it appears that lower autonomy individuals were so focused on the negative aspects of the performance-threat that they paid little attention to the positive feedback that accompanied it, whereas the attention of higher autonomy individuals did not vary, indicating similar levels of attention across condition. According to vanDellen and

colleagues (2011), attention to failure or the negative information is a response that is consistent with breaking. Thus, this finding provides additional evidence for maladaptive reactions of lower autonomy individuals when faced with threats to performance.

Table 4

Standardized regression coefficients for ratings of believability, agreement and feedback memory by autonomous orientation and threat condition.

Predictor	Ratings		Memory of feedback	
	Agree	Believe	Positive	Negative
Autonomous	.07	.16	.26 [†]	.20
Controlled	.08	.07	-.06	-.25*
Motivation threat	.53***	.26**	.13	.07
Step 1 R ²	.33	.20	.04	.10
Autonomy × Motivation threat	.10	.18	-.29*	-.08
Controlled × Motivation threat	-.04	.06	-.12	-.04
Step 2 R ²	.30	.21	.09	.11
Step 2 R ² Δ	.00	.02	.05 [†]	.00

Note. [†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

The next set of analyses examined affect and activity preferences. There were no significant effects of any predictor on either positive or negative affect. The strongest trends suggested that positive affect was directly related to an autonomous orientation and that negative

affect was directly related to a controlled orientation, but there was no sign of either trend being moderated by the type of feedback that participants received.

Table 5

Standardized regression coefficients for differences in emotions and preferred activities by autonomous orientation.

Predictor	Affect		Activity Preferences				
	Negative	Positive	Autonomous	Competence	Relate	Skills	Attractive
Autonomous	-.10	.20 [†]	.53***	.55**	.39*	.57**	.43**
Controlled	.20	.02	-.31 [†]	-.11	-.36*	-.15	-.23
Motivation	.02	.12	.02	.11	-.06	.03	-.04
Performance	-.07	.08	-.03	.02	-.06	-.07	-.14
Step 1 R ²	.13	.07	.13	.12	.13	.06	.03
Autonomy × Motivation	-.02	-.10	-.12	-.19	-.02	-.37**	-.26 [†]
Autonomy × Performance	-.06	-.02	-.14	-.16	-.04	-.29*	-.17
Controlled × Motivation	.11	-.06	.19 [†]	.10	.12	.29*	.24 [†]
Controlled × Performance	.16	.17	.11	.05	.09	.14	.09
Step 2 R ²	.14	.11	.14	.14	.14	.12	.07
Step 2 R ² Δ	.01	.03	.02	.02	.01	.08*	.02

Note. [†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Next, I examined whether autonomy and threat condition interacted to affect preferences for intrinsic and extrinsic activities (see *Table 5*). As shown in the first row, autonomy strongly and positively predicted preferences for every type of activity in the control condition. In the absence of threat, autonomy did not predict discernment between activities that satisfied internal aspects of the self or that served more external types of goals. As can be seen from the nonsignificant interactions for the intrinsic activities (i.e., those that promote feelings of autonomy, competence and relatedness), the positive relationship with autonomy did not change significantly under threat (of either kind).

Preferences for extrinsic activities, however, did change relative to autonomy under threat, and consistently so across skill-demonstration and wanting to feel attractive, although the effect was only significant for the former. As can be seen in *Figure 5*, the positive relationship between autonomy and the desire to demonstrate skills to others was only significantly positive in the control condition ($\beta = .40, p < .001$), and the relationship disappears completely in the motivation ($\beta = .01, p = .ns$), and performance threatening conditions ($\beta = .09, p = .ns$).

Interestingly, there was a significant Controlled \times Motivation Threat interaction for this measure, such that a higher controlled orientation predicted a greater desire to display skills to others only in the motivation threatening condition ($\beta = .36, p < .01$). The effect was similar for activities that made participants feel attractive (*Figure 6*), with a positive relationship between autonomy and preferences for these activities in the control condition ($\beta = .28, p < .05$) that disappeared in both threat conditions. There were no regions of significance for the above interactions.

Together, these results suggest that threat of any kind promotes a turning away from extrinsic pursuits among higher, but not lower autonomy individuals, effectively focusing higher

autonomy individuals on the values and preferences that are truly important to them. In contrast, a more controlled orientation predicts turning toward these extrinsic pursuits, a finding that suggests reactance to the motivation feedback in their case. When compared with the reactive increases in extrinsic preferences among more controlled individuals, being able to utilize threatening experiences as a way of refocusing one's priorities reflects an adaptive process that can ultimately help people achieve their long-term goals. People have limited time and resources to carry out important goals, so it is adaptive to be able to cut out the things that take up valuable time without serving the goals and values that are most central to a person's identity.

One limitation of this study was the failure of the priming task. Other researchers (e.g., Hodgins et al., 2006) have used this particular task successfully with similar methods (i.e., administering the GCOS before the priming task). One possibility is that the types of threat used in this study were a reminder of participants' causality orientations and counteracted the primes. Because consistent effects emerged based on dispositional causality orientations, it appears that something in the methods removed the priming effect before it could influence threat responding.

Another limitation of this study was that providing prospective feedback still allows for the possibility that participants can do something to avoid that experience. Feeling able to intervene may be particularly characteristic of individuals higher in autonomy. This possibility, that threat reactions were less extreme among higher than lower autonomy individuals because of differing perceptions of the possibility of avoiding the outcomes predicted by the feedback is addressed in the following study with a mortality salience induction administered as the threat.

This aim of this study, like Study 1, was to examine autonomous individuals' reactions to a self-relevant threat to their motivation, and compare these reactions both with negative

performance feedback and with controlled individuals' reactions. Contrary to predictions, the results showed no evidence of threat among autonomous individuals, in response to either type of feedback. The one indication of this effect in Study 1 – a dampening of positive affect by these individuals in the motivation threat condition – was not replicated here. The present results instead followed an overall pattern that is consistent with adaptively responding to threats of either kind. Under neutral conditions, an autonomous disposition related to a desire for all activities, regardless of their intrinsic or extrinsic characteristics. Under threat, however, an autonomous disposition continued to predict intrinsic activity-preferences but no longer predicted extrinsic activity-preferences, which were aimed at proving the self to others or feeling attractive. Thus, highly autonomous individuals appeared to have responded to either type of threat by disengaging from nonessential activities, and possibly thereby conserving resources to focus on the things that are truly important and inherently rewarding to them. This finding is consistent with a nondefensive threat reaction, which involves accurately processing a threat and using the information in a constructive manner. This research adds to that perspective with evidence that one of those more adaptive response tendencies is a refocusing of priorities and being more discerning in the face of threat.

By using the GCOS, this study also allowed me to examine response tendencies related to a controlled orientation separately from an autonomous orientation. More controlled individuals responded to either type of negative feedback with defensive forgetting; they recalled fewer negative statements regardless of feedback type. Furthermore, these individuals reacted to motivation-threat by wanting to demonstrate their skills to other people. For more controlled individuals, threats to motivation could be interpreted as targeting their drive to pursue external

goals (such as demonstrating their skills to others). Seen from this perspective, their resulting increased desire to demonstrate skills could be a reactive response to the motivation-threatening feedback. Reactance theory (for a review, see Wright & Brehm, 1982) claims that when freedom to engage in a certain action is threatened, people often will respond with an enhanced desire to do that very thing. It is also important to note that the motivation-threatening message conveyed positive feedback about participants' performance or skills. From that perspective, the resulting increased desire to demonstrate skills could indicate yielding to the feedback by more controlled individuals, or focusing attention and resources not where their personal interests lie, but where the feedback says they already excel. Together, these results for more controlled individuals provide a counterpart to the results for more autonomous individuals. Whereas the latter orientation predicted nondefensive and adaptive narrowing of attention on essential activities, the former predicted defensive and possibly maladaptive narrowing of attention.

Study 3

The main objective of Study 3 was to examine additional threat responses, including some that are adaptive for future goal pursuit alongside traditional defensive measures that are good for restoring state self-esteem. Greater engagement and readiness for action with respect to important personal goals, and enhanced positivity are potentially helpful for future goal pursuits, and were examined as alternative and adaptive threat responses. In this study, a universal threat that is equally relevant and unavoidable for all participants was induced with a mortality salience task that asked participants to consider their eventual deaths.

In Study 3, participants were randomly assigned to a mortality salience induction (threat), a dental pain (negative) control or a television (neutral) control condition as in previous terror

management research (for a review, see Schmeichel et al., 2009). This study tested two alternative control conditions. The first (dental pain) control condition was to rule out the notion that the effects were due to just thinking about something negative, rather than about a deep threat. The second control condition (television) was supposed to put participants in a neutral mindset.

In addition to examining conventional threat responses, I included two alternative threat responses: (a) readiness to act on important personal goals and (b) positivity ratings of memories varying in autonomy. The rationale for including each of these measures can be understood within the context of some existing research. Mortality salience could induce a focus on improving the future or on the past, depending on perceptions about the time that one has left to achieve goals or engage in new action. For instance, as people age, they have fewer opportunities to pursue new goals or to remedy regrets, and as a result, disengaging from future goals can be an adaptive response (Wrosch, Bauer & Scheier, 2005).

People are generally motivated to think that current versions of themselves will be better than past selves and they typically feel closer in time to versions of the self that are more positive than negative (Wilson & Ross, 2001; Ross & Wilson, 2002). I expected that threat would amplify this tendency, leading autonomous individuals in particular to report greater progress toward personal goals in the mortality salience condition. Additionally, motivation for an important goal increases when completion is near (e.g., Touré-Tillery & Fishbach, 2011). As a result, greater engagement in personal goals can be indicated by both the determination and distance from personal goals that participants report. I predicted that because autonomous individuals are expected to define themselves based upon their important personal goals,

engagement (i.e., perceived goal distance and determination) would be highest in the mortality salience condition. Lower autonomy individuals are typically less focused on personally important pursuits and as a result, may not turn to these efforts in times of threat as a way of bolstering the self-system. Goal pursuit also involves the specific plans that people put in place with respect to important personal goals. Implementation intentions are indicative of a mindset in which people are prepared to act on goals (Gollwitzer & Kinney, 1989) and are positively predictive of success (Gollwitzer & Brandstätter, 1997). Thus, I intended to examine whether autonomy moderated differences in implementation intentions in response to threat.

Another alternative reaction to mortality salience may involve enhancement of past life experiences when people feel that they have a limited amount of time to achieve future goals. Thus, mortality salience could lead people to reflect upon the positive events that one has already experienced. Rather than attempting to pursue new goals, people might gain comfort from events that have already occurred. Research in socioemotional selectivity theory (e.g., Carstensen, 1992) supports this notion within the context of personal relationships, showing that as people grow older, they have fewer significant others in their lives, but that these connections are deeper, more satisfying, and an ample source of positive well-being. In other words, whereas the number of relationships and the number of new experiences decreases, the quality and emotional satisfaction of existing relationships increases. In this manner, well-being may be sustained as long as people are able to make the most of the positive experiences that they have already had by remembering these events even more positively.

Method

Participants. Participants were 120 (54 men, 66 women) introductory psychology students who received course credit in exchange. Eligible participants were those who completed the General Causality Orientation Scale during an online pretest. Participants ranged in age from 17 to 54, with a mean age of 19.52. Ninety-nine participants reported English as their first language, 20 reported a different language, and 1 did not specify.

Materials and procedures. All materials, including the consent form were presented online in the form of a Qualtrics survey. Upon entering the lab, participants provided informed consent, and completed the social desirability and self-esteem measures as in Study 1. The Big Five Inventory was dropped from this study because it was no longer needed to bolster a cover story about bogus personality feedback. Participants were then randomly assigned to 1 of 3 conditions.

Mortality salience induction. In a task adapted from Schmeichel and colleagues (2009), participants were asked to write about the emotions that arise when they think about their death and about what they expect to happen when they die (see Appendix M). In the negative control condition, participants were asked to write about emotions that arise when they imagine themselves having dental pain, and what they would expect to happen to them, should they experience dental pain. This condition was also adapted from Schmeichel and colleagues (2009) and was included as a control because although imagining dental pain might be anxiety-provoking, it has not been shown to elicit the same types of defensive behaviours as mortality salience and it does not threaten core aspects of the self such as self-esteem, motivation, or existence, which are expected to link most strongly to threat reactions. There was a question at

the end of the study asking whether participants had actually experienced dental pain in order to control for potential experiential differences. Other researchers have used manipulations in which participants thought about other health issues, but because many of these (e.g., arthritis, hip pain, etc.) are associated with older age, they can also serve as a subtle reminder about one's mortality. In contrast, dental pain can happen at any age and is not necessarily associated with decay of the body, and it has also been effectively used over many other studies (for a review see Pyszczynski et al., 2004). The third condition was a neutral condition. Participants were asked to imagine themselves watching television and to write about the emotions that would arise in this situation (Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992). The effects of mortality salience are strongest when there is a short break between the manipulation and the next task (Schmeichel, et al., 2009). Researchers have often used the Positive and Negative Affect Schedule (PANAS: Watson & Clark, 1994; Pyszczynski et al., 2004) for this task, so this was completed before the other dependent measures.

Implemental/deliberative mindset. In this measure, shown in Appendix N, participants described a “personal project that (they) intended to accomplish in the next 3 months”. They were then asked to indicate on a 7-point Likert-type scale, the point that best represented their distance from taking a first step toward the goal, how determined they felt, whether or not they felt committed to a certain plan of action and a certain occasion on which to act (Gollwitzer & Kinney, 1989). Gollwitzer and Kinney (1989) used the above items as manipulation check to determine whether an experimental procedure was effective to induce either an implemental (action-ready) or deliberative (contemplative) mindset. For the purpose of this research, I wanted

to determine whether an implemental mindset might spontaneously occur in response to threat, particularly among higher autonomy individuals.

Because I wanted to assess participants' goal engagement and readiness to act, I formed two indices based upon the above measures. The first two items (distance and determination) formed an index of participants' goal engagement. Reliability was low ($\alpha = .54$), but I kept the index because conceptually, distance toward goal achievement and determination toward a goal both represent engagement (i.e., less distance and greater determination). The second two items (i.e., commitment to a certain plan of action & time to act) formed a second index, representing implementation intentions and had an acceptable reliability, ($\alpha = .78$). Two coders also provided a word count on the project with perfect agreement, and counted the number of specific goal-related plans ($\alpha = .92$). Again, the average of the coders' ratings was used in the analysis. The goal-directed behaviours are consistent with a future-focus, which was more likely to be relevant to the participants in this study, because although they were contemplating their eventual death, they would likely be reminding themselves that the event is still far away, thus leaving them time to achieve important goals.

Memories. Participants then wrote about 4 memories, which the program Qualtrics (2012) presented in a random order for each subject (Appendix O). Two memories were relevant to intrinsic (e.g., "think about a time in which you felt free to do whatever you pleased") or extrinsic values (e.g., "think about a time in which you were able to show other people that you were intelligent"). With respect to each memory, participants then wrote about what they did at the time, and about how the memory made them feel. Participants also provided positivity ratings on a Likert-type scale. Two coders also counted, with perfect agreement, how many words

participants wrote for each memory. These measures were included to account for the possibility that mortality salience induces a focus on the past when the future seems uncertain or if it feels unlikely that more will be achieved. In order to make memories relevant to both high and low autonomy individuals I asked participants to recall events that were more internal (i.e., feeling free or motivated) and more external (i.e., demonstrating success or intelligence to other people).

Belief in the afterlife. In Study 3, as shown in Appendix P, participants completed a 10-item measure about beliefs in the afterlife (Osarchuk & Tatz, 1973). The effects of the mortality salience manipulation could be influenced by whether participants believe in life after death. Therefore, participants indicated agreement with statements such as, “humans die in the sense of ‘no longer existing.’”

Participants were then fully debriefed after completing the same mood-boosting task as in Studies 1 and 2, in which they wrote about their happiest memory.

Results and Discussion

Analysis. For this study, I predicted that under mortality salience, higher autonomy individuals would be more likely than their lower autonomy counterparts to display either alternative reaction (greater engagement with personal goals and/or enhanced positivity shown through higher positive affect and more positive ratings of past memories). In order to test this prediction, threat condition was dummy-coded into two variables with the television condition serving as the reference group. The regression was the same as in the previous study, and also included participants’ scores on the controlled orientation subscale of the GCOS. The final model contained two steps, with autonomy, controlled orientation, and each dummy variable entered first, followed by the 2-way Autonomous and Controlled Orientation \times Condition

interaction terms. Preliminary analyses were also run with covariates in the model, including the Belief in the Afterlife Scale and social desirability, but the pattern of results for the relevant predictors was the same, so the covariates were not retained in the final analysis. Again, analysis of simple slopes was conducted to examine significant Autonomy \times Threat interactions. The simple slopes of some Controlled \times Threat interactions were also examined post hoc to determine if the variation by controlled orientation was similar to, or different from that observed along the continuum of participants' autonomous orientation. These regressions were first conducted with goal engagement, implementation intentions, and goal-related plans that participants generated in an open-ended task. These results are presented in Table 6.

Readiness to act on personal goals. Table 6 displays the results from this analysis. Significant interactions with either causality orientation involved only the mortality-salience condition, not dental pain, and these significant interactions of causality orientation and mortality salience occurred on 2 of the 3 dependent variables. As shown in the first 3 columns of Table 6, although there were no significant Autonomy \times Mortality Salience interactions for goal engagement or for implementation intentions, there was a significant Autonomy \times Mortality Salience interaction for the number of specific goal-related plans that participants wrote in the open-ended measure. As shown in Figure 7, analysis of simple slopes revealed a positive relationship between autonomy and number of plans generated only in the mortality salience condition ($\beta = .26, p < .05$). This relationship was negative or neutral in the television ($\beta = -.20, p = ns$) and dental pain conditions ($\beta = .08, p = ns$). This interaction was examined further with the Johnson-Neyman technique to highlight regions of significance. This analysis revealed that it was only in the high range of autonomy that differences between the mortality salience and other

two conditions were significant. The mean for autonomy was 5.48 ($SD = .75$), and the range of significance was from 6.02 to 6.94 (the highest score). No regions of significance emerged when comparing the dental pain to the mortality salience and control conditions.

Table 6

Results of regressions for implemental/deliberative mindset, and goal planning by autonomous and controlled orientation.

Predictor	Engagement	Implementation Intentions	Goal-related plans
Autonomous	.15	.09	-.24
Controlled	.10	.33*	.11
Mortality	-.04	-.07	.09
Dental	.03	.03	-.02
Step 1 R^2	.07	.11	.02
Autonomy \times Mortality	-.01	-.01	.34*
Autonomy \times Dental	.09	.14	.19
Controlled \times Mortality	-.23*	-.07	-.09
Controlled \times Dental	-.21 [†]	-.05	.01
Step 2 R^2	.11	.13	.06
Step 2 $R^2\Delta$.04	.02	.05

Note. [†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

A comparison finding to this was the significant Mortality Salience \times Controlled Orientation interaction for goal engagement shown in Table 6. Examination of simple slopes revealed that although not significant, unlike in the neutral (television) condition ($\beta = .16, p = ns$), goal engagement decreased relative to a controlled orientation in the mortality salience ($\beta = -.25, p = ns$) and dental pain conditions.¹ Although this interaction was significant, there were no regions of significance. In sum, only the mortality salience condition led to orientation-dependent differences in motivation, whereby participants with a more autonomous orientation generated more goal-related plans, and those with a more controlled orientation showed correspondingly lower goal-engagement.

Autonomy, threat and positivity. My next set of analyses was aimed at determining whether higher autonomy predicted greater positivity in the face of mortality salience, shown through greater positive/lower negative affect, and through higher positivity ratings of memories. Table 7 includes the results of these analyses, which included positive and negative affect and participants ratings of self-selected memories that were either intrinsic (i.e., feeling free or motivated) or extrinsic (i.e., demonstrating success or intelligence). Again, only the mortality salience condition produced orientation-dependent differences in positivity, and only positive, not negative, affective responses varied with orientation or threat conditions.

Table 7 shows that significant interactions emerged only with the mortality salience condition in relation to both autonomous and controlled orientations. Significant Mortality Salience \times Causality Orientation interactions emerged for positive affect. As can be seen in

¹ The engagement measure was lower in reliability, which could explain the lack of significance of the simple slopes. These slopes have similar betas to significant simple slopes observed above, with no change in the N.

Figure 8, positive affect was only significantly positively related to autonomy in the mortality salience condition, ($\beta = .46, p = .001$) and was not significantly related to autonomy in both the dental pain ($\beta = .16, p = ns$) and television (neutral) conditions ($\beta = .13, p = ns$). As in the above analysis for engagement, I examined the Controlled \times Mortality Salience interaction and found that a controlled orientation was unrelated to positive affect in both the dental pain ($\beta = .00, p = ns$) and mortality salience ($\beta = .06, p = ns$) conditions; it predicted more positive affect in the television condition ($\beta = .42, p < .01$). No regions of significance emerged for these interactions.

Next, I examined participants' ratings of past memories of feeling free and motivated, and of demonstrating success and intelligence. Initially, I had intended to classify the first two memories as intrinsic and the latter two as extrinsic, but the intended subscales had low reliabilities and were not adequately related to one another. Instead, the memories were considered independently. Table 7 shows the results of the regression. Again, significant interactions emerged only with the mortality salience condition for both autonomous and controlled orientations. Specifically, there was a significant Controlled \times Mortality Salience interaction for memories of freedom and a significant Autonomy \times Mortality Salience interaction for memories of feeling successful.

Overall, mortality salience produced lower ratings of memories of freedom, but this effect was qualified by the interaction, which drove ratings even lower for participants with a controlled orientation ($\beta = -.35, p < .01$). A similar, but non-significant trend emerged in the dental pain condition ($\beta = -.25, p = .09$). For the significant Autonomy \times Mortality Salience interaction for memories of displaying success to others (see *Figure 9*), none of the simple slopes were significant, but whereas autonomy was negatively related to positivity of these memories in

the neutral condition, a positive relationship emerged in both the dental pain and mortality salience conditions. In other words, in contrast to the neutral television condition, both negative conditions weakened the expected negative relationship between autonomy and ratings of positivity toward memories of success. No regions of significance emerged for these interactions.

Table 7

Results of regressions for affect and memory ratings by autonomous and controlled orientation.

Predictor	Affect		Intrinsic Memories		Extrinsic Memories	
	Negative	Positive	Free	Motivated	Success	Intelligence
Autonomous	-.11	.02	-.05	-.03	-.23	.42*
Controlled	.21	.38**	.05	.00	.13	-.01
Mortality	-.01	-.01	-.25**	.05	-.07	.12
Dental	.13	.01	-.17 [†]	-.09	.00	.12
Step 1 R ²	.06	.10	.10	.06	.03	.04
Autonomy × Mortality	-.01	.28*	.13	.08	.30*	-.15
Autonomy × Dental	.04	.09	.10	.22 [†]	.26 [†]	-.29 [†]
Controlled × Mortality	-.02	-.22*	-.27*	-.18 [†]	-.04	.07
Controlled × Dental	.04	-.21 [†]	-.17	-.13	-.09	.06
Step 2 R ²	.06	.15	.14	.10	.07	.07
Step 2 R ² Δ	.00	.06 [†]	.04	.04	.04	.03

Note. [†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Together, the results of this study reveal that causality orientation is related to individuals' readiness to act on personal goals, and positivity of affect and memories in the face of existential threat. Under no circumstances did a more autonomous orientation predict a negative threat-response, whereas a higher controlled orientation did so consistently. With respect to readiness to act on personal goals, an autonomous orientation did not predict greater engagement or implementation intentions, but it did predict more written goal-related plans, which are an important behavioural manifestation of the underlying concept. Thus, whereas autonomy was directly related to positive affect only in the mortality salience condition, a controlled orientation was positively related to positive affect in the imagined unthreatening (but perhaps also boring/deactivated) circumstance of watching TV. Among controlled individuals, this trend reversed significantly in the face of mortality threat. More controlled individuals showed correspondingly lower positive affect in the mortality salience condition and lower evaluations of memories pertaining to freedom. This contrasts with more autonomous individuals who showed higher ratings of particular memories (i.e., about displaying success to others) when faced with mortality salience.

Although my prediction that greater autonomy would predict a greater readiness to act on important personal goals was only partially confirmed, it does seem clear that causality orientation in general, interacts with mortality salience to influence this variable. In this context, mortality salience is a reminder that people have a limited amount of time to achieve future goals, and leaves people with a chance to determine whether they are satisfied with whatever has been achieved previously. Mortality salience also involves an ultimate separation of the self from the set of needs and interests that have guided one all along. The mortality salience manipulation

is a reminder that although this deadline to achieve important goals has not yet passed, it still looms in the future. This study suggests that autonomy uniquely and consistently, over several measures, predicts a positive response to the looming prospect, which involves feeling contentment with the past and present and excitement for the future.

In contrast with the observed effects of having a more autonomous orientation, having a more controlled orientation predicted several negative responses to existential threat, including lower positive affect, reduced goal engagement, and less positive memories of feeling free. Considering the threat-responses associated with both orientations together, having a relatively autonomous orientation predicted more positivity and goal-related planning, and less distancing from personal memories or goals. The net effect of higher relative autonomy would seem to be making participants feel better, but not at the expense of future effort, which replicates what I have found in previous research (Thacher & Bailis, 2012). One point that requires further consideration is the relationship between conditions. Initially, I predicted a linear response with threat reactions increasing from the television (neutral) to dental pain (negative control) to mortality (threat) conditions. This did not appear to be the case, however, and the way that participants perceived the neutral condition could have been influenced by their causality orientation. Specifically, it could have been the case that people who were higher in autonomy viewed the television condition as boring (because they were energized toward greater planning and felt more positive affect in the mortality salience than television condition), whereas people with a more controlled orientation viewed this condition as relaxing (i.e., due to their greater positive affect in this condition). When the foregoing analyses were repeated using dental pain as the reference condition, several interaction effects were reduced to nonsignificance, suggesting

that the mortality salience condition was the most different from the neutral television condition. In the future, it will be useful to examine how neutral and negative conditions are psychologically similar and different with respect to goal-related planning and memory-satisfaction.

Another limitation of this study was that the manipulation of mortality salience was explicit in this study, such that participants were being asked to consider, in detail, what will happen to them when they die. As people age, their reactions to this manipulation may change. Compared with older adults, young adults may be more reactive to the threat if they are less likely to have thought about it in such detail before. Alternatively, older adults could be more reactive than younger adults due to perceiving death as nearer in time. Thus, further research is needed to examine whether the relationship between autonomy and reactions to mortality salience might be either stronger or weaker in older populations.

In summary, this study indicated that a deep universal threat elicits different responses from individuals, depending on their causality orientation. Specifically, a more autonomous orientation predicts more goal-relevant planning, and greater positivity of affect and memory-ratings when faced with mortality salience. In contrast, a more controlled orientation predicts goal-disengagement, derogation of memories of freedom, and lower positive affect in the mortality salience condition. Part of the aim of this study was to move beyond defensive attributions for negative feedback, broadening the set of outcomes that could be considered as a threat-response. That case is bolstered by the difference between mortality salience and the control conditions. I continued to examine this aim with additional control conditions in Study 4, which returned to administering ostensible feedback and included a positive feedback condition.

Study 4

A consensus exists in the literature that relatedness or belongingness is a fundamental need, and that satisfaction of this need is essential for well-being (Deci & Ryan, 2000; Leary et al., 1995). The aim of Study 4 was to examine variations in responding to a universal threat to this relational need, by individuals with lower and higher levels of autonomy. Past research has shown that this need can be threatened by means of a feedback manipulation, in which participants are led to expect loneliness and loss of relationships that they presently have (Twenge et al., 2003). The present study contrasted such feedback with positive relational feedback, or a standard misfortune control condition, in which participants were led to expect to be accident-prone and have a number of broken bones (Twenge et al., 2003). Similar to Studies 1 and 2, participants' affect and feedback evaluations were assessed together to measure compensatory reactions or defensive attributions for the feedback. Based on the Study 3 findings, I expected less autonomous people to show more defensive responses, which in this case meant being less likely to believe and accept negative relational feedback. Regarding affect and activity preferences, in line with Study 3, I expected to observe an alternative type of threat reaction in this study whereby highly autonomous individuals would express more desire to engage in intrinsic activities. Such activities would have potential to restore threatened aspects of the self and sustain positive affect in the face of relational threat.

Method

Participants. Participants were 124 introductory psychology students (57 men, 67 women) who received credit toward their research participation grade. Eligible participants were those who completed the General Causality Orientation Scale during an online pretest.

Participants ranged in age from 17 to 54, with a mean age of 19.69. Two participants were dropped from the final analyses for suspicion, leaving 122.

Materials and procedures. As noted above, participants in this study completed the General Causality Scale during an online pre-test. The remaining procedures were completed in a computer lab with other students. All materials were online in the form of a Qualtrics (2013) survey. As in Studies 1 and 2, participants completed the Balanced Inventory of Desirable Responding and the Big Five Inventory. They then received a similar message informing them that the computer was tabulating their survey scores to provide them with feedback about what to expect from their futures.

At this time, participants were randomly assigned to 1 of 3 feedback conditions in a procedure similar to that of Twenge and colleagues (2003; see Appendix Q). In the negative experimental (relational threat) condition, participants received the following feedback: *“You’re the type who will end up alone later in life. You may have friends and relationships now, but by your mid-20s most of these will have drifted away. You may even marry or have several marriages, but these are likely to be short-lived and not continue into your 30s. Relationships don’t last, and when you’re past the age where people are constantly forming new relationships, the odds are you’ll end up being alone more and more.”* As a negative control condition, the feedback was reworded to lead participants to expect future accident proneness. In the positive control condition, it was reworded to lead participants to expect rewarding and long-term relationships. Next, participants completed the PANAS (Watson & Clark, 1994), the same feedback evaluation questionnaire as in the above studies, and the activity preferences survey from Study 2.

Results & Discussion

Analyses were conducted in regression with feedback condition coded into 2 dummy variables with the positive relational feedback condition serving as the reference group. Again, the main effects were entered hierarchically on the first step, followed by the Condition \times Orientation interaction terms on the second step. With the 2 dummy variables and both the autonomous and controlled subscales of the General Causality Orientation Scale, this model could have included 3-way interactions. Due to correlation between the autonomous and controlled subscales ($r = .23, p < .01$) and because the 3-way interactions were irrelevant to my hypotheses, they were not included in the final model. Social desirability was examined as a potential covariate and did not alter the results, in a set of preliminary analyses not reported here. Bootstrapped analyses also showed the same results, indicating that the reported findings were not affected by assumption violation.

Threat reactive activity preferences. First, I examined whether higher autonomy individuals would react to relational threat with an increased desire to engage in intrinsic activities. The results of this regression analysis are shown in Table 8.

Table 8

Standardized regression coefficients for differences in activity preferences by autonomous orientation.

Predictor	Intrinsic Activity Preferences			Extrinsic Activity Preferences	
	Autonomy	Competence	Relatedness	Show success	Feel attractive
Autonomous	.50**	.57***	.34 [†]	.28 [†]	-.18
Controlled	-.01	.09	.16	.06	.27*
Threat	-.08	-.20*	-.07	-.07	.05
Accident	.06	-.07	-.04	-.02	.10
Step 1 R ²	.13	.23	.12	.15	.12
Autonomy × Threat	-.09	-.07	.00	-.05	.27 [†]
Autonomy × Accident	-.16	-.13	.03	-.06	.21
Controlled × Threat	-.07	-.05	-.14	.22*	.10
Controlled × Accident	.03	.01	-.16	.17	-.04
Step 2 R ²	.14	.24	.14	.18	.16
Step 2 R ² Δ	.01	.01	.02	.03	.04

Note. [†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

The results show no support for the hypothesized Autonomy × Threat interaction for intrinsic aspirations. Instead, there was an unexpectedly strong positive relationship between autonomy and intrinsic activity preferences in the positive relational feedback (reference) condition. Although unexpected, the lack of a significant Autonomy × Threat effect means that

the same relationships described the effects of autonomy in the relational threat condition as in the positive relational feedback condition. In other words, the threat did not reactively undermine desire for intrinsic activities by highly autonomous individuals. The only instance of significant threat-reactivity was the increased desire of highly controlled individuals to show success in the wake of relational threat, as compared with positive relational feedback. Specifically, analysis of simple slopes revealed that a greater controlled orientation predicted greater preferences for this type of activity in both the relational threat ($\beta = .46, p < .01$), and accident prone conditions ($\beta = .44, p < .01$), but not in the positive condition ($\beta = .11, p = ns$), suggesting that individuals high in a controlled orientation reacted to negative feedback with a desire to prove themselves to other people. This analysis was also supported by a regions of significance test, which revealed a significant difference at $p < .05$ between the positive relational feedback condition and the others when participants' controlled orientation was highest, from 6.16 to 6.70 out of a possible 7 ($M = 4.02, SD = .73$).

Additionally, I asked participants to write about why they made their specific ratings for an intrinsic (feeling free) or extrinsic (showing success to others) item. I used logistic regression to analyze whether more autonomous individuals would be more likely to choose the intrinsic item to explain, but did not find a significant effect.

Feedback assessment and affect by autonomy. Next, I examined whether lower autonomy individuals were more likely than higher autonomy individuals to disbelieve and avoid accepting relational threatening feedback. As can be seen in Table 9, there were large condition effects such that participants agreed with and believed more in the positive feedback relative to the accident prone and negative relational feedback. In addition, autonomy was positively related

to agreement in the positive feedback condition, but a significant Autonomy \times Threat interaction effect served to reverse this trend in the relational threat condition. As shown in Figure 10, analysis of simple slopes revealed that autonomy predicted agreement significantly in the positive condition only, ($\beta = .35, p = .01$),² that there was an opposite trend in the relational threat condition ($\beta = -.24, p = .14$) and no relationship in the accident-prone condition. Figure 10 also shows that agreement is estimated to be at the floor of absolute disagreement by high autonomy individuals in the relational threat condition. The difference is nearly the full scale range between the positive and negative feedback conditions among high autonomy individuals. Furthermore, the effect was significant between 3.39 and 6.88 ($p < .05$), suggesting that it was only the participants who were lowest in autonomy ($M = 5.59, SD = .73$), who did not make this distinction in agreement across conditions. As can be seen in the Table 9, there was also a significant Autonomy \times Threat interaction for feedback belief, and analysis of simple slopes revealed the same trend as for agreement. A similar range, from 4.16 to 6.88 of significant values was also observed for belief. Thus, having more autonomy predicted an even greater likelihood of believing and agreeing with positive than negative feedback.

² Simple slopes show different betas from the initial interaction because they were computed using a macro for SPSS, which does not allow for inclusion of more than one moderator. The omnibus analysis also included participants' controlled orientation.

Table 9

Standardized regression coefficients for differences in relational feedback reactions and emotions by autonomous orientation.

Predictor	Feedback		Affect	
	Agree	Believe	Positive	Negative
Autonomous	.24*	.21 [†]	.34 [†]	-.35 [†]
Controlled	.07	.00	.18	-.08
Threat	-.89***	-.75***	-.21*	.12
Accident	-.74***	-.58***	-.11	-.03
Step 1 R ²	.70	.48	.20	.04
Autonomy × Threat	-.22**	-.23*	-.01	.09
Autonomy × Accident	-.17 [†]	.21 [†]	.08	.28 [†]
Controlled × Threat	-.05	.11	-.03	.20 [†]
Controlled × Accident	-.01	-.01	-.13	.12
Step 2 R ²	.72	.51	.21	.10
Step 2 R ² Δ	.02 [†]	.03 [†]	.01	.06 [†]

Note. [†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, & *** $p \leq .001$.

Next, I examined affect to determine whether higher autonomy individuals were more likely than their lower autonomy counterparts to maintain their buffer of positive affect across conditions. As shown in Table 9, there was a marginally significant positive relationship between autonomy and positive affect in the positive feedback condition, and a lack of interactions that

suggested that the trend continued across conditions. Similar trends in the opposite direction were observed for negative affect. Taken together, the results of this study suggest that autonomy predicts a tendency to make the most of positive and the least of negative information. The significant driver of this effect, however, was a highly positive relationship between autonomy and agreement with and belief in, the positive feedback, instead of with disagreement or disbelief in the negative feedback, which is the hallmark of defensive social cognition in past research. In other words, more autonomous individuals may be able to derive more psychological nourishment from their positive experiences. Additionally, considering the trends for both positive and negative affect, higher autonomy individuals retained a more positive mood across conditions.

Although the findings above could be indicative of a positivity bias, an important alternative explanation is that positive relational feedback is truer for high than low autonomy individuals. Higher autonomy predicts behaviour that is in line with basic needs for relatedness, which in turn is apt to increase the likelihood of need satisfaction. Thus, future research could examine whether this is true across all types of positive feedback, even information that does not satisfy basic needs for autonomy, competence, or relatedness. Here, it appears that feedback related to basic needs differentiated responding by high and low autonomy individuals to a greater extent than did feedback unrelated to basic needs (i.e., accident-prone feedback).

With respect to activity preferences, the findings essentially replicated those of Study 2, showing that higher autonomy was positively related to intrinsic activity-preferences, and this relationship was not significantly undermined by relational threat. Notably, the other subscale of causality orientation did predict differences in extrinsic activity preferences, such that a

controlled orientation predicted a desire to demonstrate one's skills to others when faced with either type of negative feedback. The findings for the autonomy subscale and activity preferences, coupled with the above finding about a potentially greater propensity among higher autonomy individuals to accept positive information, suggests that future research should focus more on the differences in responses to positive, versus negative information among high and low autonomy individuals at least when that information is relevant to basic human needs.

General Discussion

This research examined two major aims. The first was to determine if, when faced with self-relevant negative information, even high autonomy people would show compensatory defensive reactions whereby they discredited negative feedback. This prediction was based on the notion that both high and low autonomy people might have contingencies of self-worth in different areas, and that performance threats tested in previous work were most relevant to lower autonomy individuals. To provide a comparable threat to higher autonomy individuals, I administered negative motivation-related feedback in the first 2 studies. My prediction, however, was not confirmed. Higher autonomy individuals showed no evidence of feedback derogation when faced with motivation- rather than performance- threatening information.

The second aim was to determine whether higher autonomy might relate to other, more positive threat reactions than derogating negative feedback. Such reactions could involve bolstering important values, increasing goal-directed activity, making the most of positive memories when the future seems uncertain, or taking positive feedback especially to heart. These reactions are consistent with lower defensiveness because of a greater basis in reality, greater integration with broader self-structures and their more moderate than extreme nature. These positive reactions were the focus of Studies 3 and 4, which applied manipulations that were expected to be universally threatening. All of these reactions were shown to be positively associated with autonomy under mortality salience or relationship-threatening conditions. Altogether, then, the picture of high autonomy to emerge from this research is one of relatively unassailable self-esteem, combined with a tendency to respond in a selectively positive and adaptive way to threatening information.

Autonomy and Defensive, Compensatory Reactions

Research on the relationships between autonomy and threat or defensiveness has indicated that autonomous people both feel less threatened by negative feedback and react less defensively (Hodgins & Liebeskind, 2003; Hodgins, et al., 2010). This has been used as support for the argument that these individuals might enjoy non-contingent or true self-esteem, and this argument seems further supported by the present investigation. Using pilot-tested ostensible feedback about participants' future careers, I examined whether autonomy would predict compensatory reactions when participants received information warning them of poor career motivation and low interest in the day-to-day tasks tied to their jobs. A contingency view would predict that higher autonomy should relate to more positive affect and lower acceptance of, and belief in the motivation- than performance threatening feedback. In Studies 1 and 2, I randomly assigned participants to motivation- or performance- threatening conditions, or to a no-feedback control group. The results showed no evidence to suggest that higher autonomy individuals engaged in these compensatory reactions when faced with motivation-threat. In Study 1, the motivation-threatening feedback uniquely undermined the positive relationship between perceived choice (a facet of autonomy) and positive affect, but this finding was not replicated in Study 2, which examined the same predictions with a different measure of autonomy.

Studies 1 and 2 were primarily aimed at finding a threat that was indeed self-relevant to participants who were higher in autonomy. The notion that everyone might have contingent self-esteem, and that appearances otherwise are solely a matter of the self-relevance of particular feedback, is contentious in the literature on autonomy and self-esteem. Researchers in self-determination theory argue against this notion (e.g., Deci & Ryan, 1995), but proponents of the

theory of contingencies of self-worth have identified no category of individuals who might be free of contingent self-esteem (Crocker & Wolfe, 2001). The present results do not settle this debate, but they do add that if autonomous individuals have contingent self-esteem, it is not easily threatened by moving the domain of the threat inward to personal goals.

In their initial conceptualization of contingencies of self-worth, Crocker and Wolfe (2001) argued that when self-esteem is based upon broad values or personal qualities, it is less assailable to threat. Perhaps then, instead of a motivation-relevant threat, a broader threat would serve to provoke autonomous individuals into defensiveness. Hodgins and Liebeskind (2003) found that high interpersonal threats (i.e., receiving a strong reprimand) could elicit defensiveness from high autonomy individuals. In this work, I examined mortality salience and negative relational feedback as broader threats that were relevant to all participants regardless of autonomy. These threats did not elicit any sort of defensiveness among participants who were higher rather than lower in autonomy. It was only people with a more controlled orientation that showed defensiveness or potentially negative responding to threat. In Study 3 a more controlled orientation predicted distancing from personal goals and lower positivity in both affect and recall of memories about freedom specifically in the mortality salience condition. In Study 4 (relational threat), having a more controlled orientation predicted a greater desire to demonstrate skills to other people. So, even when threats were similarly relevant, autonomy predicted less defensive responding.

Does Autonomy Predict Alternative Goal/Value Threat Reactions?

My second major research question involved examining whether autonomous individuals, when faced with a universally self-relevant threat would respond by reasserting intrinsic values,

by showing a greater desire to engage in intrinsic activities, with enhanced goal-directed motivation and planning, or by reflecting positively on past accomplishments or events. Much as previous research on self-affirmation has shown, endorsing these aspects of the self can provide relief from threatening situations by restoring global aspects of the self-system, and facilitating future action while compensating for the threat.

This prediction was examined in detail in Studies 3 and 4. In Study 3, after being exposed to the universal threat of mortality salience, I expected that autonomous individuals would take opportunities to restore the self-system in an internal manner. In this study, I provided two alternative reactions, one future-focused that involved future planning and enhanced motivation toward important personal goals, and the other past-focused that involved recounting past memories and rating how positive these experiences were. A past and present focus was included in this study because mortality salience could elicit either. If participants still felt that they had a lot of time to accomplish what they would like to before dying, then mortality salience should be more likely to produce this future focus. In contrast, if time seemed more finite, mortality salience could provoke this more contemplative, past-directed mindset. Although no effects were found on measures of implementation intentions and engagement, higher autonomy predicted writing a greater number of specific plans in the mortality salience than control conditions. Thus, it did seem that mortality salience focused the minds of more rather than less autonomous individuals on how to achieve their important personal goals.

Study 4 set out to replicate Study 3's findings with another universal threat, this time to relatedness needs. This study also returned to the ostensible feedback paradigm, and included ratings of feedback agreement and belief, along with activity preferences. This study also

included a positive feedback condition, in order to understand more about reactions across the full spectrum of feedback valence. In this study, although autonomy did not differentially predict activity preferences in the relational threat condition, it did predict significantly higher intrinsic value endorsement in the positive feedback condition. The lack of interaction showed that threat did not significantly undermine this positive relationship. Additionally, autonomy was only significantly and positively related to agreement with, and belief in the feedback in the positive condition. This study suggested that higher autonomy people were more likely than lower autonomy people to make the most of positive feedback.

Discernment and Positive Focus Under Threat as an Alternative Reaction

The differences that did emerge in relation to autonomy and threat condition can be organized along two themes. The first theme is a greater level of discernment and focus that is shown by higher than lower autonomy individuals, and the second theme involves a greater preservation of positivity among higher than lower autonomy people.

Discernment and focus. Greater discernment was shown in Study 1, which measured the perceived choice dimension of autonomy. Higher perceived choice individuals showed a constant, and moderately low, level of negative affect regardless of the condition, with the only effects appearing for positive affect. These individuals only experienced a drop in positive affect in the motivation-threatening condition, which was supposed to be more self-relevant and was also rated as more believable by most participants, regardless of their level of perceived choice. In Study 1, although participants consistently viewed the motivation threat as more believable and agreed with it more than the performance threat, it was only the higher autonomy (perceived choice) participants whose emotional reactions mirrored this. Whereas lower perceived choice

participants experienced greater negative affect in both threat conditions, regardless of their belief, higher perceived choice participants only felt decrements in positive affect in the condition that they felt was most believable. This suggests that lower perceived choice relates to blanket reactivity under any type of negative feedback, and that these individuals are reacting based on the valence, not on whether they actually believe the feedback. Higher perceived choice individuals, however, were more discerning as to the relevance and credibility of potentially threatening information, which could be why they are chronically less reactive to negative feedback. By being more discerning, these individuals may be able to conserve resources for when they are faced with negative feedback that is credible and self-relevant.

Study 2 used a broader measure of autonomy and allowed me to compare participants with autonomous versus controlled causality orientations. It also illustrated discernment by higher autonomy individuals, albeit in the choice of available threat-responses rather than which threats deserved a response. In the neutral control condition of Study 2, autonomy correlated positively with both intrinsic and extrinsic activity preferences, but when faced with performance- or motivation-threat, more autonomous individuals moved away from extrinsic preferences while sustaining their desire to engage in intrinsic pursuits. In effect, exposure to either type of threatening feedback caused them to focus their activities, such that they allocated their time and energy in the future to the most personally rewarding available pursuits. Conversely, a more controlled orientation predicted defensiveness in both feedback conditions. This defensiveness took the form of lower recall for negative information and reacting to motivation threat with a desire demonstrate their skills to other people. Thus, this study supported the notion of greater discernment by higher autonomy individuals, by showing their

tendency to make adaptive activity-choices under threat, rather than resisting or compensating for negative feedback.

This pattern of behaviour by highly autonomous individuals is conceptually consistent with existing research on commitment, which shows that people will derogate attractive alternatives when they are committed to their romantic relationships (Lydon et al., 2003). In the context of this research, threat may have served as a warning for more autonomous individuals that pursuing all activities could thwart achievement of the ones that were most personally important. Threat could aid commitment to intrinsic activities by helping more autonomous individuals disengage from less important pursuits, thereby enhancing commitment to the activities that are left after this process of paring down alternatives. Thus, threat could have served as a reminder of commitment that helped more autonomous individuals sort out their priorities. Controlled participants did not show this pattern of results, if anything showing a tendency toward breaking (i.e., forgetting positive statements) or defensiveness (i.e., forgetting negative information). In other words, participants with a more controlled orientation responded to threat in ways that fit the categories proposed by vanDellen (2011) and colleagues, whereas more autonomous participants did not.

Study 3 continued to show this tendency toward greater discernment and focus. This study administered a broad, universally relevant threat (mortality salience) and compared alternative threat reactions of high and low autonomy participants. This finding, combined with a tendency toward writing more plans to pursue important personal goals supports the notion that these individuals were able to benefit from what is often perceived as a threatening experience by showing greater goal-directed planning.

Study 4 continued to illustrate discernment, in this case with respect to positive and negative relational feedback. Higher autonomy individuals were most accepting and believing of positive feedback relative to negative feedback on future satisfaction of relational needs. In other words, as autonomy increased, the difference in agreement and belief between the positive and negative relational feedback conditions increased. Disbelief of negative- combined with an enhanced belief in positive- feedback is traditionally considered to be a defensive response, and viewing the results in this manner was an interpretation that was consistent with my initial prediction that when threats targeted basic needs, autonomous individuals would also show defensiveness. In spite of this, based on the definition of alternative threat reactions being reflective of reality, I ultimately concluded that this reaction of more, but not less autonomous individuals was less likely to be a defensive response. Specifically, because more autonomous people are more connected to basic needs such as relatedness by definition, it likely renders the feedback as less likely to be true, and as such, potentially more grounded in reality. High autonomy individuals typically act in ways that satisfy their basic human needs, one of which is relatedness. Therefore, the negative feedback is likely to have been discrepant (just as the positive feedback was consistent) with their past behaviour. High autonomy individuals appear to have discerned this consistency or inconsistency with their past behaviour and rated their acceptance and belief of the feedback accordingly. However, because this research did not specifically control for past experiences, it is impossible to tell if highly autonomous participants were being realistic or not in questioning the validity of negative relational feedback. Future research perhaps could tease apart reality and defensiveness by manipulating participants' recall

of past behaviours. Additionally, more autonomous individuals showed consistent preferences for their intrinsic activities regardless of condition, evidencing consistent goal engagement.

Controlled individuals reacted to threat with the desire to demonstrate their skills to other people, which could reflect an alternative pathway toward gaining social approval. If it is not possible to be accepted, one might settle for being respected instead. This reaction may reflect aggression in the face of social exclusion. For instance, Twenge and colleagues (2001) administered the same type of feedback as in Study 4, and found that people reacted to social exclusion with aggression, administering higher levels of aversive noise to other people and giving others poorer evaluations. In other words, fitting with Twenge and colleagues' (2001) title of the manuscript, people reacted to social exclusion with the mentality of, "If you can't join them, beat them." In the context of Study 4, demonstrating one's skills to others allows for a chance to prove that one is "better" than other people, which could be categorized as another type of aggression. Again, this desire to prove oneself was characteristic of more controlled, but not more autonomous individuals. Fitting with Twenge and colleagues (2001) work, this tendency of controlled individuals is more reactive and less discerning. Proving that one is "better," can have the same result of administering aversive noise, that is, by eliciting respect from others, which could make people feel better when faced with exclusion. In other words, this tendency of more controlled individuals toward skill demonstration when faced with social exclusion, likely represents compensation for negative emotions. Although showing off could make people feel more positively in the short-term, this behaviour may have negative consequences for the future, by reducing the likelihood of inclusion in the long-term.

Together these studies show that greater discernment is unique to high autonomy individuals, with the tendency to show affect decrements only when threatening information is self-relevant, and to respond in an efficient manner by focusing on personally meaningful and intrinsically rewarding pursuits. Initially, based upon research in mindfulness (e.g., Brown & Ryan, 2003) showing that autonomy correlates positively with a greater state of awareness, I expected this process to be fairly conscious and to be directly influenced by participants' self-awareness. However, the results were typically weaker for the self-awareness subscale of the self-determination scale, suggesting that this tendency toward discerning threat-responses is automatic or, at least, not enhanced by conscious deliberation. This is an intriguing avenue for future research.

Alternatively, this ability to disengage from inessential pursuits reflects a flexible and adaptive mindset that allows people to conserve important resources by limiting negative reactions and energy spent on pursuits that are less important. This fits well with literature on goal pursuit that has demonstrated benefits involved with being able to disengage from unattainable goals. For instance Wrosch and colleagues (2003) showed that the well-being of adults and children is predicted by the ability to let go of goals that one cannot attain and refocus attention on the ones that are attainable. Furthermore, the greater sense of well-being that accompanies this ability likely also prevents unhealthy levels of cortisol secretion (Wrosch, Miller, Scheier, & de Pontet, 2007). Regret in older adulthood is also less likely among those who are able to disengage from these unattainable goals (Wrosch, Bauer, & Scheier, 2005). Although there is work on autonomy and the relationship between the likelihood of goal attainment (Hortop, Wrosch & Gagne, 2013), the link between autonomy and adaptive

disengagement is relatively unstudied. The ability to disengage (i.e., from unsolvable tasks) appropriately has also been shown by individuals who are higher in dispositional optimism (Aspinwall & Richter, 1999) and among individuals who are harmoniously passionate (i.e., a dispositional variable that correlates positively with autonomy) toward their exercise goals (Schellenberg, et al., 2014). This is not to say that harmoniously passionate or autonomous individuals will not revisit those goals, but it does suggest that they will only do so when it makes sense in light of feedback. Thus, the selective disengagement shown by more autonomous individuals in this research has been shown by others to be an adaptive strategy with respect to goal pursuit.

Positivity. This research also suggested that people higher in autonomy maintain a greater level of positivity that can be protective in the face of threat. In Study 1, whereas low autonomy individuals showed poorer affect to begin with, and even worse affect under threat, higher autonomy individuals maintained a buffer of positive affect. Although motivation-threat uniquely dampened positive affect among higher, as compared with lower autonomy individuals, the former individuals had a larger store of positive affect to begin with, and the end result was a more neutral, rather than negative affective state. Study 2 did not replicate this dampened positive affect, instead showing a marginally positive relationship between autonomy and positive affect, and with greater memory for positive statements in general. Furthermore, in the absence of threat, more autonomous people were interested in all activities, suggesting a generally more open attitude.

The strongest evidence for greater positivity in the face of threat among more than less autonomous people came from Studies 3 and 4. Study 3, which used the universal threat of

mortality salience, examined two alternative threat reactions, which included ratings of memories and measures of future goal engagement in addition to affect. In the case of university students who typically have many years ahead of them, it makes sense to react to mortality salience by thinking about how they can still achieve important goals. At the same time, it can also be adaptive to reflect positively on the things one has already achieved. The results for memories showed this enhanced positivity of higher autonomy individuals, in a surprising way, with memories of displaying success seeming more positive in both negative conditions (i.e., mortality salience and dental pain). At first glance, this appears to conflict with the findings of Study 2 showing a reduced desire to engage in activities that are not clearly intrinsic. The main difference is that reminiscing positively does not require additional resources of time to pursue activities. In contrast, controlled participants showed no positive tendencies in the face of mortality salience, but rather showed enhanced negativity toward memories of feeling free. Again, any positive responses to threat were unique to high autonomy individuals. With respect to affect, autonomous individuals displayed their highest level of positive affect when they were asked to think about what would happen when they died, in comparison with what would happen when they watched television or experienced dental pain. Thus, mortality salience brought this positive response selectively out of highly autonomous individuals, as if they were energized by the prospect of limited time. Lastly, Study 4 illustrated the tendency of highly autonomous individuals toward greater positivity under threat, through the finding that more autonomous individuals were more likely to accept positive than negative feedback in the relational need-satisfaction domain. For more autonomous individuals, being particularly open or closed to negative feedback could be indicative of either biased processing or unbiased comparison of the

feedback with past behaviours/experiences in this domain. Either way, however, the effect in Study 4 was carried as much, or more so by elaborating on the positive feedback as by discrediting the negative. To interpret this reaction as traditionally defensive, the interaction would have had to be most strongly influenced by rejection of the negative- rather than acceptance of the positive feedback. In other words, it is the seizing of positive information that illustrates this greater tendency toward positivity among more autonomous individuals.

Autonomy-specific Threat Reactions Other Than Compensation/Defensiveness

In the broad context of understanding how autonomy contributes to well-being, nondefensiveness already is strongly suggested to play an important role. The two themes of discernment and positivity illustrated by the present studies are important because they shed further light on what it means to be nondefensive. Consistent with other work, I found that even self-relevant threats did not elicit defensive responding from more autonomous individuals, such as derogating the source of feedback or by becoming emotionally reactive (Hodgins & Liebeskind, 2003; Hodgins et al., 2006, Hodgins et al., 2010; Ryan & Deci, 1995). Previous research has identified a number of poor responses to threat, such as self-handicapping (Hodgins et al., 2006), that are avoided by higher autonomy individuals. Researchers are now turning, however, to the possibility of positive responses to threat, such as a sense of challenge (Hodgins et al., 2010), and the present findings extend further support in this direction. This research complements the existing literature on autonomy, threat and nondefensiveness by beginning to examine how higher autonomy individuals may substitute adaptive responses. Specifically, this work extends the existing literature by showing that nondefensiveness can involve greater discernment of information that is or is not self-relevant and using any negative information to

focus on pursuits that are most important while avoiding expending effort on things that are less so. The greater discernment of high autonomy individuals fits with my existing research demonstrating the selective excuse-making of more autonomous individuals when recounting past personal goal failures (Thacher & Bailis, 2012). More autonomous individuals avoid excuses that are harmful to future pursuits, but will endorse those that alleviate negative feelings while protecting long-term goal pursuits, allowing them to process these negative experiences in an adaptive manner.

This research also extends the understanding of nondefensiveness by showing that it can involve a more positive, and potentially optimistic mindset in the face of situations that would normally be considered highly threatening (i.e., mortality salience) or by having a general buffer of positive affect to dip into when faced with information that is truly self-relevant and threatening. This positivity also involves a greater readiness to accept positive feedback that is likely to be accurate. This is a more positive, reality-based approach to threatening information because it does not fit with compensatory, breaking, or resisting responses to threat. Whereas the threat reactions above appear to be characteristic of people with a controlled orientation, the present work reveals that the reactions of more autonomous people often do not fit with the existing categorization. Specifically, vanDellen and colleagues (2011) categorize recognizing a threat as valid as a breaking response, inherently casting it in a negative light and posing only the possible result that people will lose motivation under threat, rather than using this information adaptively to disengage from nonessential activities. Re-prioritizing also does not fit with a compensatory reaction in which people deny the importance of threat, or with a resisting reaction in which people deny the self-relevance of a threat. Autonomous individuals instead appear to be

able to process and make use of negative information without experiencing motivational decrements.

Limitations and Future Directions

One finding that was particularly surprising, given the results of the pilot study, was that participants in the first two studies generally agreed with and believed in the motivation-threatening feedback more than the performance-threatening feedback. It is important to note that although credibility of the feedback did not vary across conditions in the pilot study, it did so when the information was self-directed. As a result, it is not possible to discern whether participants' different reactions were entirely due to defensiveness or to being more discerning about the credibility of feedback when experienced in real-time. Additionally, this feedback from Studies 1 and 2 was intended to be orthogonal to participants' autonomy level, but instead of undermining more or less autonomous motives, it could have primed them. Specifically, negative performance information could have primed less autonomous motives, leading to the greater defensiveness that typically accompanies lower autonomy. Conversely, motivation-threat could have primed more autonomous responding – that is, by eliciting a less defensive reaction in the face of negative feedback that involved a greater level of acceptance and belief in the motivation- than performance- threatening feedback.

Not only could this potential priming of the feedback lead to different responses, it could have also been the reason that the priming task in Study 2 did not have the expected effects on threat responses. Specifically, if it did remind participants of more or less autonomous aspects of themselves, then the feedback could have overridden the effects of the priming task that participants completed earlier. It should be noted that this priming task has been used in previous

research to show autonomy-based differences in threat and defensiveness, and even changes in implicit self-esteem (Hodgins, et al., 2006; Hodgins et al., 2007). Additionally, the way this task was administered followed the same procedure as previous researchers (i.e., following completion of the General Causality Orientation Scale). Although there was no manipulation check to determine whether participants were experiencing a different motivational state as a result of the priming task, there was considerable existing research to suggest that the priming task would temporarily alter participants' level of autonomous or controlled motivation.

Another limitation and area for future research was the lack of congruence over the two measures of autonomy, the Self-Determination scale (Sheldon & Deci, 1996) and the General Causality Orientation Scale (Hodgins et al., 1996). Concerns about the scale were first illuminated in the pilot study that showed consistent threat responses only for differences in perceived choice, not the self-awareness subscale of the Self-Determination Scale. Although the findings from either did not directly contradict one another, the fact that they did differ suggests that more research is necessary to understand the differences between these two measures and underlying constructs that they measure.

Not all specific findings were replicated across studies. For instance, the significance of differences in positive and negative affect was not consistent across studies. These differences could have reflected some changes in measurement, from using the Self-Determination Scale to the General Causality Orientation Scale. The overall pattern was similar across studies, nonetheless, such that autonomy predicted reacting to threat with positivity and greater discernment, and a controlled orientation predicted traditionally defensive reactions.

Another limitation was that all feedback presented in this research contained prospective outcomes about the future, which participants might perceive as changeable or as being very far in the future. For instance, because introductory psychology students are not yet established in their careers, it would make sense that they would be willing to see alternative pathways toward reaching these future goals, part of which could involve disengaging from activities that do not serve those higher order goals. In this manner, once people's life goals become clearer, people could react in an even more nuanced manner to threat. For instance, Carstensen (1992) has shown that age predicts adoption of more emotionally satisfying goals in the short-term, which are typically social or relational and an appreciation of positive things that one already has. This behaviour pattern, of selecting goals that are more satisfying, is a strong predictor of well-being in older adulthood. Thus, people know what is good for them, and are quick to engage in those activities. Because the general conclusion that autonomy was predictive of greater discernment about which threats are actually self-relevant and to greater focusing of important priorities remained true across various types of threats, it does appear that these findings generalize to a number of prospective threats that vary in their potential to be avoided. Future research could examine more immediate sources of threat such as controlling situations (i.e., as a threat to autonomy), personal goal failures in real-time with a diary study, or failure feedback based on a test that was just completed. It would be important to examine whether the amount of time between the present and the threat actually occurring alters the positivity and focus shown by more autonomous individuals. Immediate threats could increase the difficulty of reacting positively, or the enhanced reactivity of those low on the spectrum of autonomy could lead to

even greater variation along the continuum. Either way, this is an intriguing avenue for future work.

One other limitation concerns the ad hoc development of measurement tools to assess threat reactions. Whenever possible, established measures were used (i.e., affect, values), but the measures of activity preferences and memory ratings did not exist in the literature, and thus had to be created for this research. At this point, it is not possible to say whether these new measures are valid representations of the constructs that they were intended to measure. Although these measures clearly showed relationships with participants' causality orientations, it will be important to validate them with future work.

Implications

Future research could examine whether my findings on greater positivity and discernment under threat could strengthen existing interventions by providing ways that less autonomous people could benefit by adopting threat reactions used by their more autonomous counterparts. Existing work has shown that providing explanations and rationale for why something is important, positive affect, adding a degree of choice to a situation, and opportunities for satisfaction of basic needs for autonomy, competence, and relatedness can strengthen intrinsic motivation, an aspect of autonomy (Deci et al., 1994; Isen & Reeve, 2005; Patall, Cooper, & Robinson, 2008; Rawsthorne & Elliot, 1999). Furthermore, other researchers have argued for the benefits of positive affect and for its link with autonomy as part of the subjective vitality that is enjoyed by more autonomous individuals (Fredrickson, 1998; Fredrickson & Jonier, 2002; Ryan & Deci, 2008). The finding from the present research regarding the tendency of more

autonomous people to seize upon positive feedback suggests an action that could, in future research, be shown to enhance or precede this sense of vitality.

Additionally, encouraging discernment and focus in the face of setbacks could strengthen mindfulness interventions by giving people a concrete way of thinking about threatening experiences. A component of mindfulness is the ability to step back from emotional situations to process information more clearly (Brown & Ryan, 2003). When threatened, mindfulness also predicts lowered stress responses and approach- rather than avoidance- coping strategies (Weinstein et al., 2009). In a recent review, Weinstein and colleagues (2013) highlighted the entwined nature of mindful awareness and autonomy, arguing that awareness is a necessary precursor to being able to enjoy integration of values and goals with behaviour, which partially defines autonomy. The greater focus and discernment observed in the present research among more autonomous individuals in the face of threat can fit with this increasingly synthesized model of awareness, autonomy and nondefensiveness.

Interventions that strive to increase mindfulness have also been shown to increase self-compassion, which involves an attitude of kindness and acceptance toward the self (Barnard & Curry, 2011; Dunn et al., 2012; Neff, 2003). Within the context of the present work, it is important to consider whether the positivity and discernment shown by more autonomous individuals is similar to or different from self-compassion, and to understand how these constructs are inter-related. With respect to discernment, perhaps future interventions could be combined with mindfulness to help individuals construe threats or negative information as new opportunities to focus on what is truly important, while allowing for disengagement from inessential pursuits.

Conclusions

The goal of this research was to challenge and extend the prevailing views of autonomy as a nondefensive orientation to threat. I sought to do this by presenting individuals across the continuum of autonomy with threats, not only of the traditionally studied kind to individuals' performance prospects, but also their motivation, basic need satisfaction, and existence as an individual being. Moreover, I sought to extend our understanding of the repertoire of threat responses beyond traditional measures of denial or derogation of negative feedback, to include goal-refocusing and positive affect-generating experiences that are grounded in reality and that do not reflect traditional definitions of defensiveness. These studies were designed in such a way as to be able to show if people higher in autonomy were in fact people whose self-esteem contingencies and defensive propensities had gone undiscovered in previous research. Yet the results of these 4 studies, extended as they were on both the threat and possible reaction side, showed no evidence at all to support this reduction of autonomous functioning to another variety of contingent self-esteem. Instead, I consistently found that autonomy predicted more discernment and positivity in processing of threatening information, a pattern that was unshared by people with a more controlled orientation. The present studies further illuminate what it means to react nondefensively to threatening information, and they suggest new process-oriented targets of intervention to extend this adaptive propensity to individuals who do not currently benefit from an autonomous causality orientation.

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Figure 1.

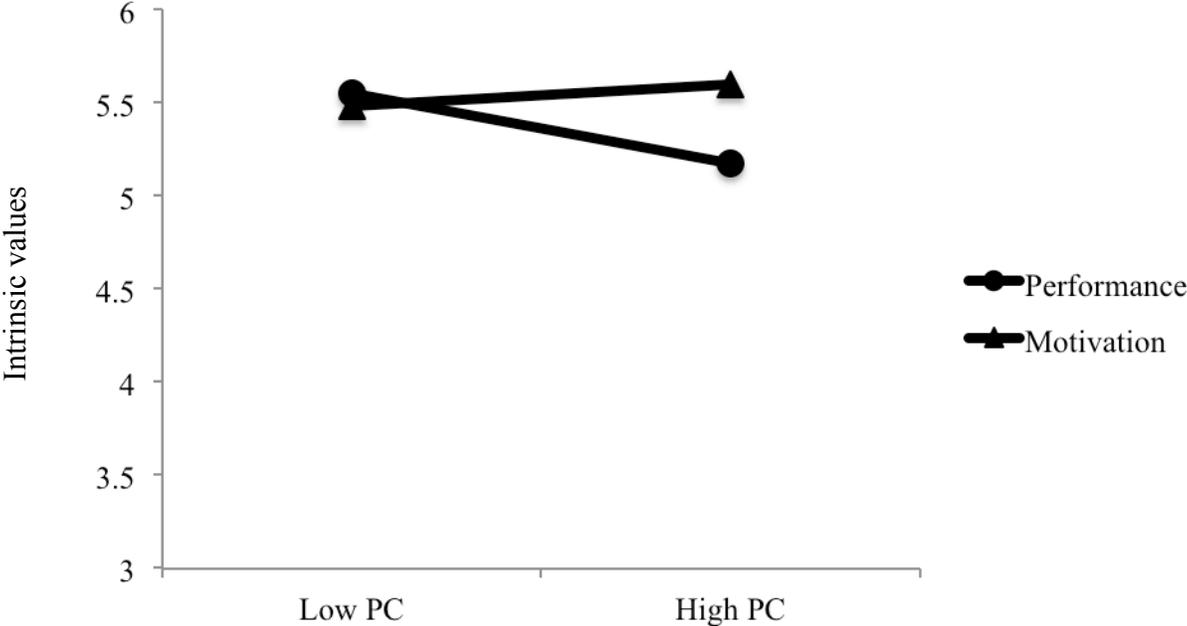


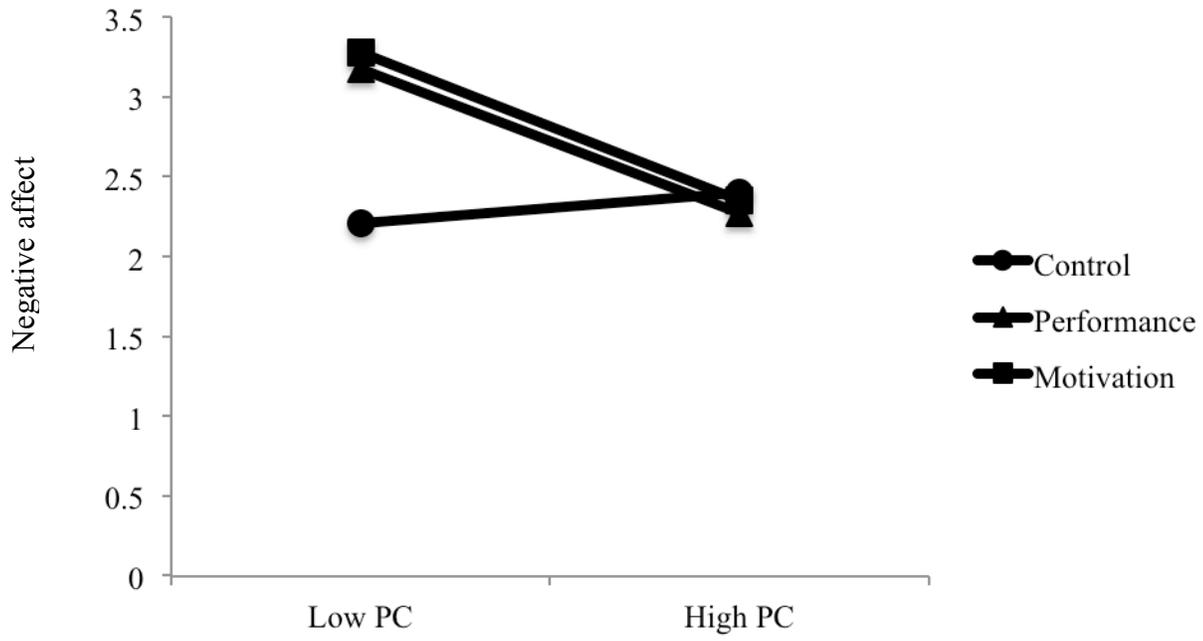
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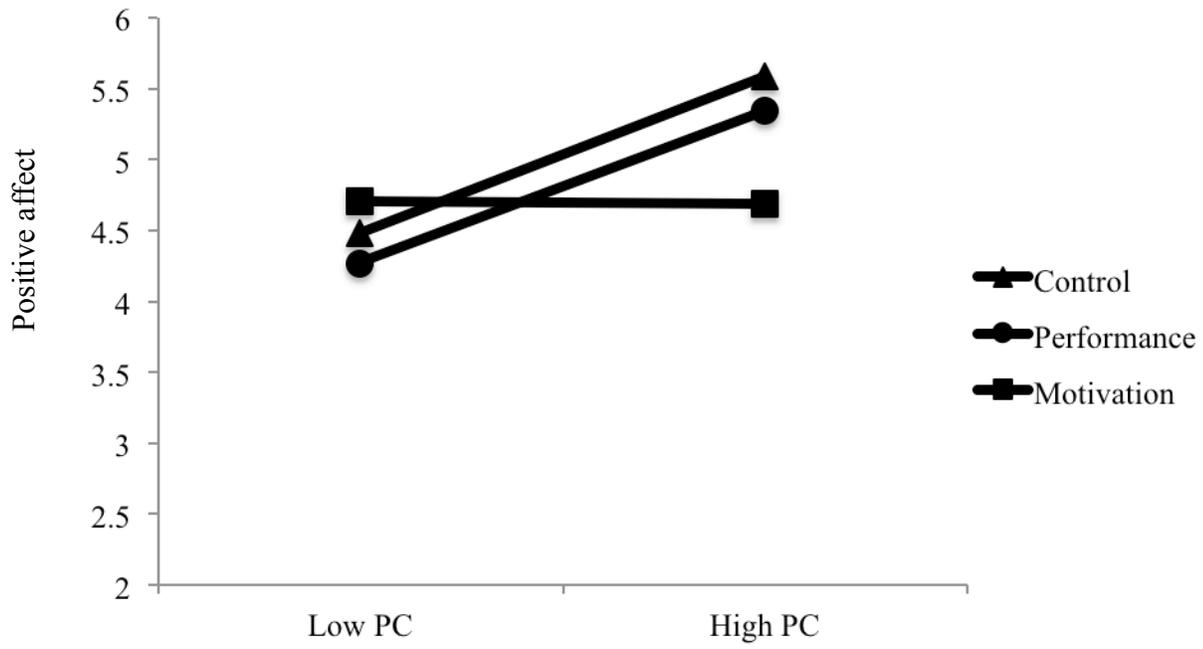
Figure 3.

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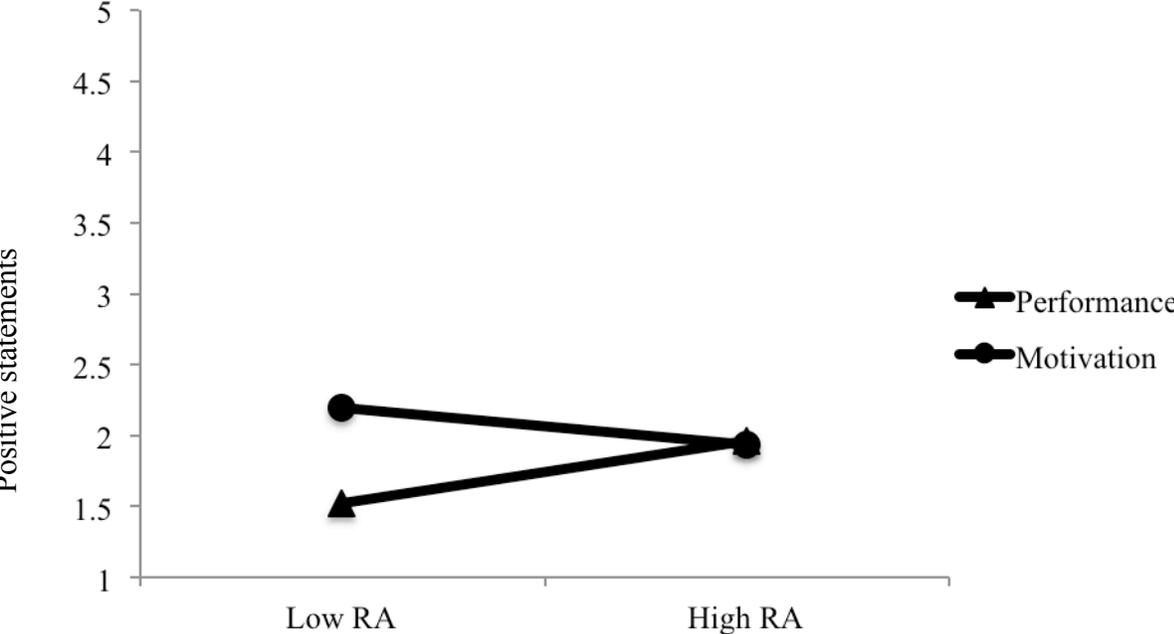


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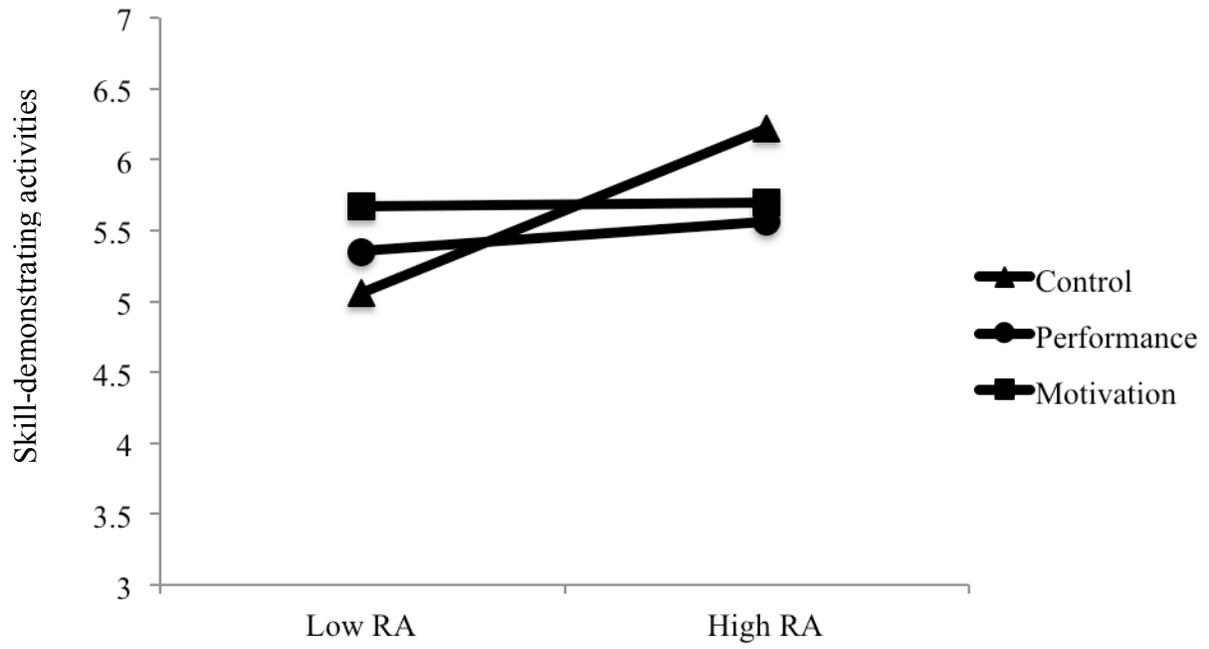


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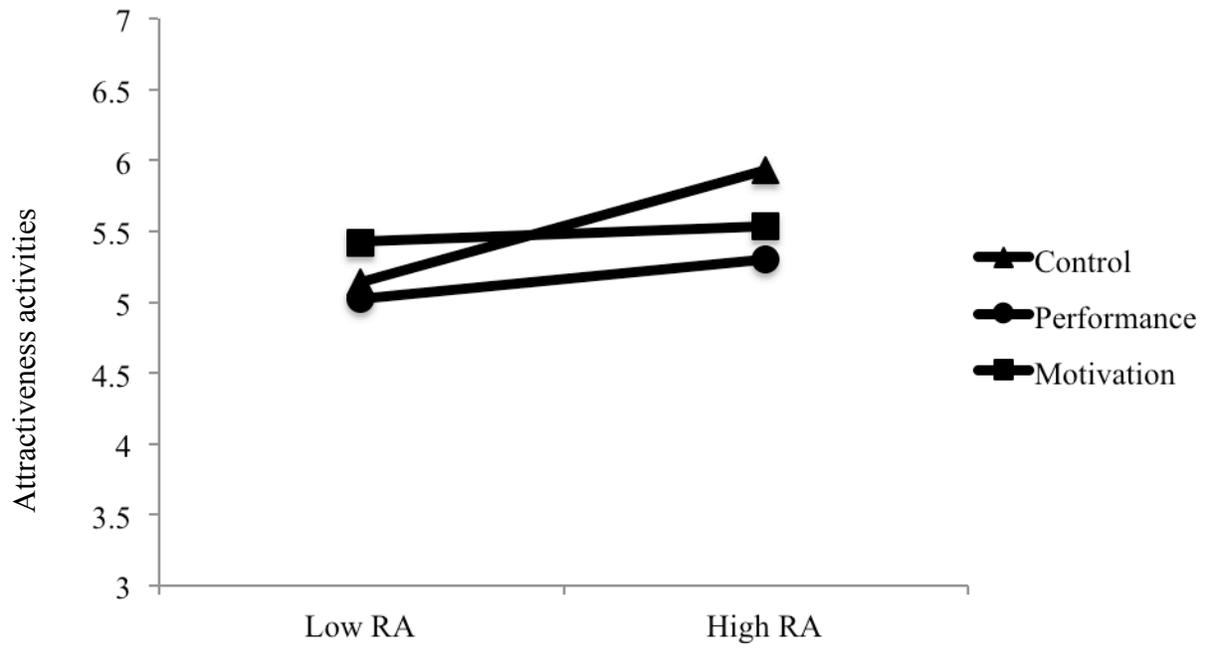


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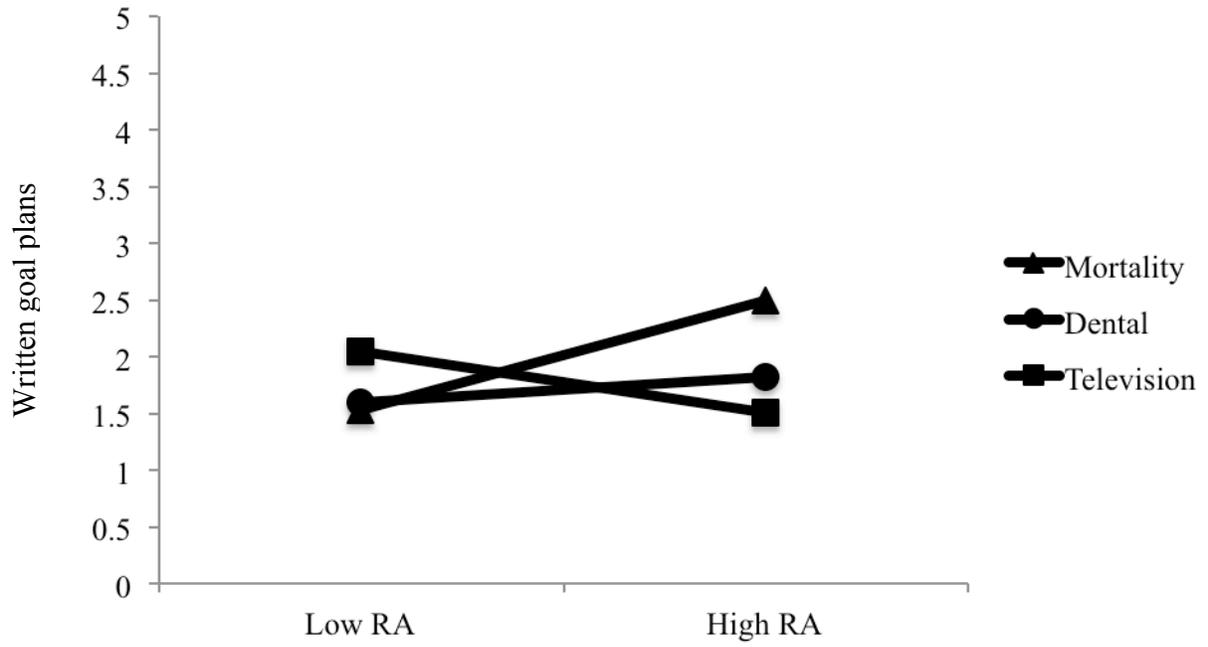


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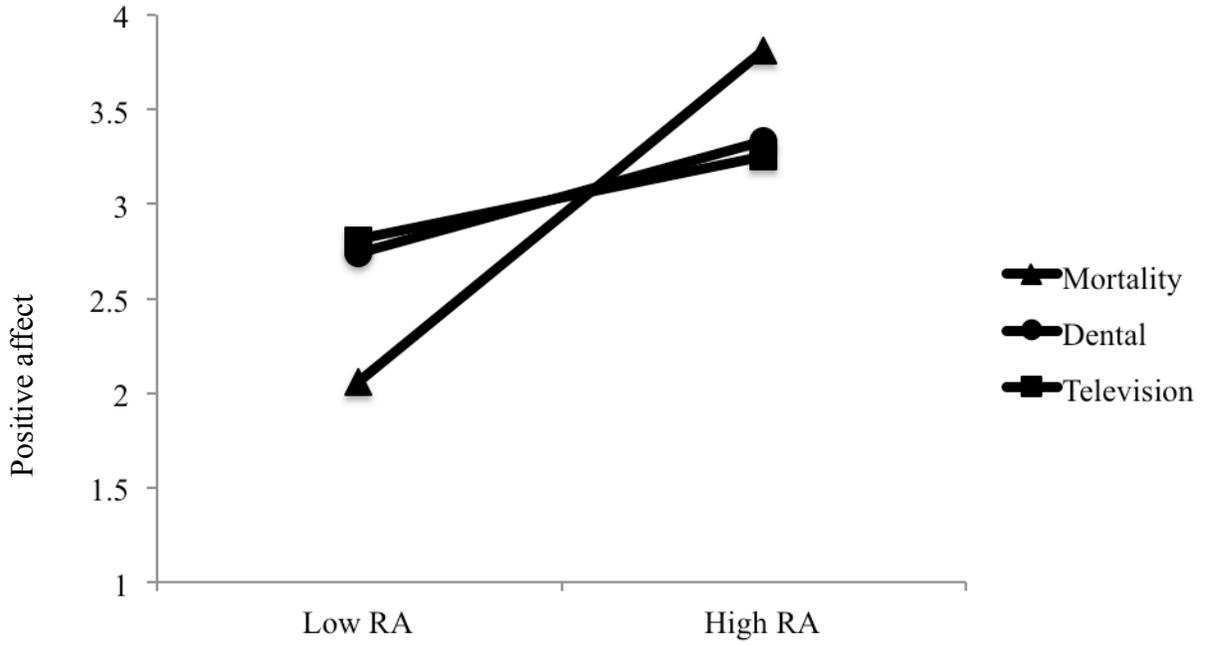


Figure 9

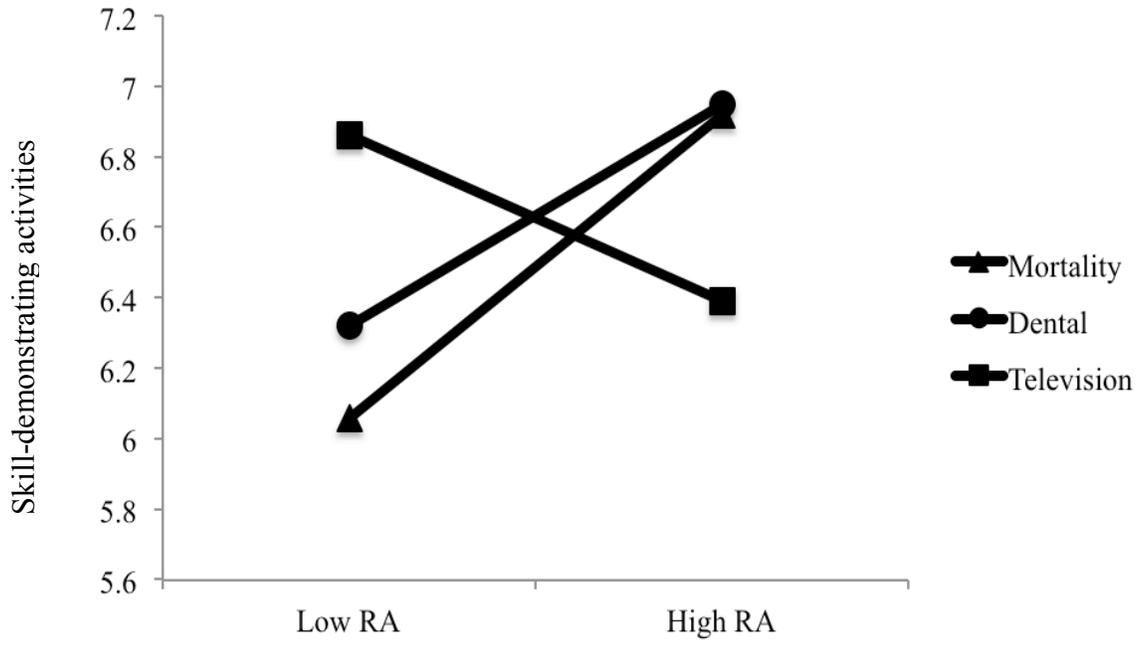


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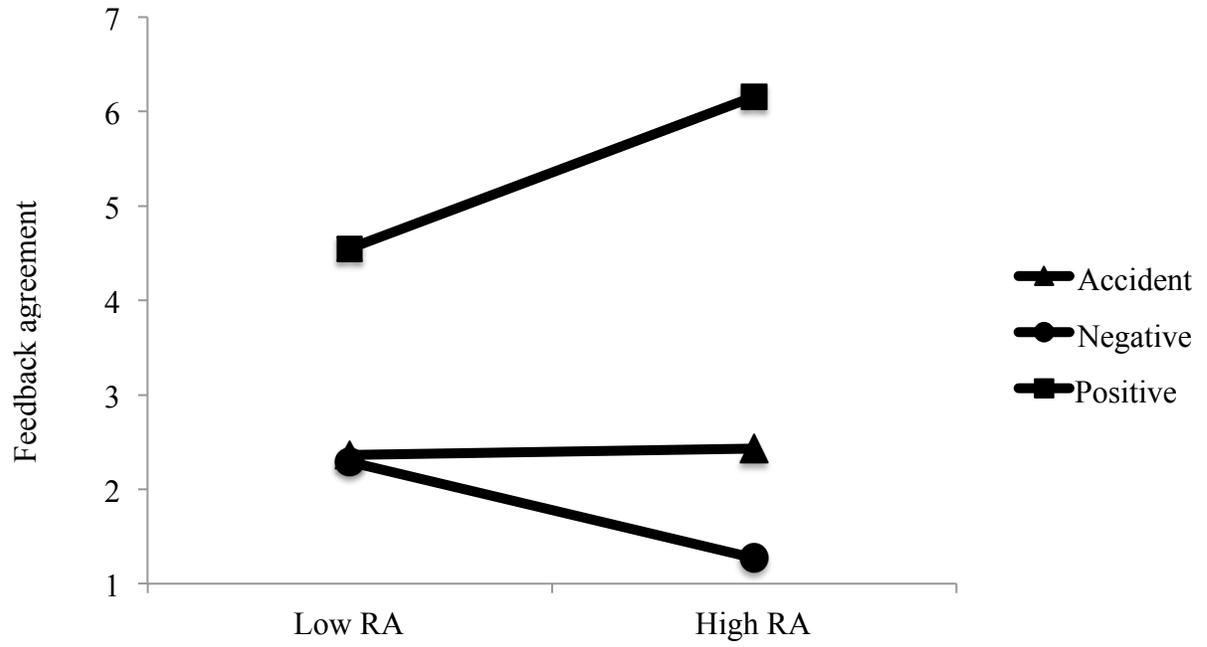


Figure Captions

Figure 1. Effects of perceived choice and hypothetical threat condition on intrinsic value endorsement in the pilot study.

Figure 2. Effects of perceived choice and condition on negative affect in Study 1.

Figure 3. Effects of perceived choice and threat condition on positive affect in Study 1.

Figure 4. Effects of autonomy and threat on recall of positive statements in Study 2.

Figure 5. Effects of autonomy and threat on preferences for activities that display worth to others in Study 2.

Figure 6. Effects of autonomy and threat on preferences for activities that make participants feel attractive in Study 2.

Figure 8. Effects of autonomy and threat on number of plans written about personal goals in Study 3.

Figure 9. Effects of autonomy and threat on positive affect in Study 3.

Figure 7. Effects of autonomy and threat on ratings of positivity of memories of demonstrating success to others in Study 3.

Figure 10. Effects of autonomy and threat on ratings of feedback acceptance in Study 4.

Appendix A

Instructions: Please read the pairs of statements, one pair at a time, and think about which statement within the pair seems more true to you at this point in your life. Using the bubble sheet, please indicate the degree to which statement A feels true, relative to the degree that Statement B feels true, on the 5-point scale shown after each pair of statements. If statement A feels completely true and statement B feels completely untrue, the appropriate response would be 1. If the two statements are equally true, the appropriate response would be a 3. If only statement B feels true and so on.

1. A. I always feel like I choose the things I do.
B. I sometimes feel that it's not really me choosing the things I do.
Only A feels true 1 2 3 4 5 **Only B feels true**

2. A. My emotions sometimes seem alien to me.
B. My emotions always seem to belong to me.
Only A feels true 1 2 3 4 5 **Only B feels true**

3. A. I choose to do what I have to do.
B. I do what I have to, but I don't feel like it is really my choice.
Only A feels true 1 2 3 4 5 **Only B feels true**

4. A. I feel that I am rarely myself.
B. I feel like I am always completely myself.
Only A feels true 1 2 3 4 5 **Only B feels true**

5. A. I do what I do because it interests me.
B. I do what I do because I have to.
Only A feels true 1 2 3 4 5 **Only B feels true**

6. A. When I accomplish something, I often feel it wasn't really me who did it.
B. When I accomplish something, I always feel it's me who did it.
Only A feels true 1 2 3 4 5 **Only B feels true**

7. A. I am free to do whatever I decide to do.
B. What I do is often not what I'd choose to do.
Only A feels true 1 2 3 4 5 **Only B feels true**

8. A. My body sometimes feels like a stranger to me.
B. My body always feels like me.

Only A feels true 1 2 3 4 5 **Only B feels true**

9. A. I feel pretty free to do whatever I choose to.
B. I often do things that I don't choose to do.

Only A feels true 1 2 3 4 5 **Only B feels true**

10. A. Sometimes I look into the mirror and see a stranger.
B. When I look into the mirror I see myself.

Only A feels true 1 2 3 4 5 **Only B feels true**

Appendix B

Motivation Threat

You are likely to become a “high flyer.” You are the type of person who knows how to set goals, and who is likely to receive recognition for achievements. Your goals, values, and communication style make it likely that you will have an impressive career and receive promotions earlier than most people would. People like you typically successful, but his or her enjoyment of career tasks is often low. Although you may be enjoying things now, this will fade over time as responsibilities increase. Additionally, you’ll find that career tasks do not challenge you and end up becoming boring. Your position will likely be one of power, but compared to your colleagues, you will probably have little choice in the tasks that you undertake. You will often feel forced into doing things that you don’t want to do, like firing people or taking on projects that simply need to be completed. Although you’re not fully enjoying yourself, you will be able to consider yourself successful.

Performance Threat

You are likely to become “high on life.” You are the type of person who knows how to remain motivated, and who is likely to enjoy their career. Your goals, values, and communication style make it likely that you will enjoy your job and spending time with the people that you work with. People like you typically enjoy their careers, but their success is often low. Although you may be successful now, this will fade over time as responsibilities increase. Additionally, you’ll find that your career tasks do not earn you recognition or praise. Your position will likely be one of freedom, but compared to your colleagues, you will probably have little power. You will notice others at similar levels receiving promotions before you do, and being asked to take charge of projects or situations that you would like to lead. Although you’re not fully experiencing success, you will be able to enjoy in your career.

10. What is the certainty that this feedback applies to you?

1	2	3	4	5	6	7
None			Neutral		Complete	

11. To what extent is this feedback uplifting?

1	2	3	4	5	6	7
None			Neutral		Complete	

12. To what extent is this feedback discouraging?

1	2	3	4	5	6	7
Not at all			Neutral			Completely

13. If you took this test again, you'd probably get a different result.

1	2	3	4	5	6	7
Strongly disagree			Neutral		Strongly agree	

Please rate the degree to which you are feeling the following emotions:**1. Angry**

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

2. Frustrated

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

3. Hostile

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

4. Ashamed

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

5. Guilty

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

6. Embarrassed

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

7. Excited

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

8. Free

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

9. Competent

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

10. Motivated

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

11. Incompetent

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

12. Bored

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

13. Proud

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

14. Successful

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

15. Interested

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

16. Scared

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

17. Distressed

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

18. Anxious

1	2	3	4	5	6	7
Not at all			Neutral		Completely	

19. Nervous

1	2	3	4	5	6	7
None			Neutral		Complete	

Appendix D

Aspirations

Everyone has long-term Goals or Aspirations. These are the things that individuals hope to accomplish over the course of their lives. In this section, you will find a number of life goals, presented one at a time, and we ask you three questions about each goal. (a) How important is this goal to you? (b) How likely is it that you will attain this goal in your future? and (c) How much have you already achieved this goal thus far? Please use the following scale in answering each of the three questions about each life goal.

not at all			moderately			very
1	2	3	4	5	6	7

Life-goal: To be a very wealthy person.

1. How important is this to you?
2. How likely is it that this will happen in your future?
3. How much have you already attained this goal?

Life-goal: To grow and learn new things.

4. How important is this to you?
5. How likely is it that this will happen in your future?
6. How much have you already attained this goal?

Life-goal: To have my name known by many people.

7. How important is this to you?
8. How likely is it that this will happen in your future?
9. How much have you already attained this goal?

Life-goal: To have good friends that I can count on.

10. How important is this to you?
11. How likely is it that this will happen in your future?
12. How much have you already attained this goal?

Life-goal: To successfully hide the signs of aging.

13. How important is this to you?
14. How likely is it that this will happen in your future?
15. How much have you already attained this goal?

Life-goal: To work for the betterment of society.

16. How important is this to you?
17. How likely is it that this will happen in your future?
18. How much have you already attained this goal?

Life-goal: To be physically healthy.

19. How important is this to you?
20. How likely is it that this will happen in your future?
21. How much have you already attained this goal?

Life-goal: To have many expensive possessions.

22. How important is this to you?
23. How likely is it that this will happen in your future?
24. How much have you already attained this goal?

Life-goal: At the end of my life, to be able to look back on my life as meaningful and complete.

25. How important is this to you?
26. How likely is it that this will happen in your future?
27. How much have you already attained this goal?

Life-goal: To be admired by many people.

28. How important is this to you?
29. How likely is it that this will happen in your future?
30. How much have you already attained this goal?

Life-goal: To share my life with someone I love.

31. How important is this to you?
32. How likely is it that this will happen in your future?
33. How much have you already attained this goal?

Life-goal: To have people comment often about how attractive I look.

34. How important is this to you?
35. How likely is it that this will happen in your future?
36. How much have you already attained this goal?

Life-goal: To assist people who need it, asking nothing in return.

37. How important is this to you?
38. How likely is it that this will happen in your future?
39. How much have you already attained this goal?

Life-goal: To feel good about my level of physical fitness.

40. How important is this to you?
41. How likely is it that this will happen in your future?
42. How much have you already attained this goal?

Life-goal: To be financially successful.

43. How important is this to you?
44. How likely is it that this will happen in your future?

45. How much is this satisfied currently?

Life-goal: To choose what I do, instead of being pushed along by life.

46. How important is this to you?

47. How likely is it that this will happen in your future?

48. How much is this satisfied currently?

Life-goal: To be famous.

49. How important is this to you?

50. How likely is it that this will happen in your future?

51. How much have you already attained this goal?

Life-goal: To have committed, intimate relationships.

52. How important is this to you?

53. How likely is it that this will happen in your future?

54. How much have you already attained this goal?

Life-goal: To keep up with fashions in hair and clothing.

55. How important is this to you?

56. How likely is it that this will happen in your future?

57. How much have you already attained this goal?

Life-goal: To work to make the world a better place.

58. How important is this to you?

59. How likely is it that this will happen in your future?

60. How much have you already attained this goal?

Life-goal: To keep myself healthy and well.

61. How important is this to you?

62. How likely is it that this will happen in your future?

63. How much have you already attained this goal?

Life-goal: To be rich.

64. How important is this to you?

65. How likely is it that this will happen in your future?

66. How much have you already attained this goal?

Life-goal: To know and accept who I really am.

67. How important is this to you?

68. How likely is it that this will happen in your future?

69. How much have you already attained this goal?

Life-goal: To have my name appear frequently in the media.

70. How important is this to you?

71. How likely is it that this will happen in your future?

72. How much have you already attained this goal?

Life-goal: To feel that there are people who really love me, and whom I love.

73. How important is this to you?

74. How likely is it that this will happen in your future?

75. How much have you already attained this goal?

Life-goal: To achieve the "look" I've been after.

76. How important is this to you?

77. How likely is it that this will happen in your future?

78. How much have you already attained this goal?

Life-goal: To help others improve their lives.

79. How important is this to you?

80. How likely is it that this will happen in your future?

81. How much have you already attained this goal?

Life-goal: To be relatively free from sickness.

82. How important is this to you?

83. How likely is it that this will happen in your future?

84. How much have you already attained this goal?

Life-goal: To have enough money to buy everything I want.

85. How important is this to you?

86. How likely is it that this will happen in your future?

87. How much have you already attained this goal?

Life-goal: To gain increasing insight into why I do the things I do.

88. How important is this to you?

89. How likely is it that this will happen in your future?

90. How much have you already attained this goal?

Life-goal: To be admired by lots of different people.

91. How important is this to you?

92. How likely is it that this will happen in your future?

93. How much have you already attained this goal?

Life-goal: To have deep enduring relationships.

94. How important is this to you?

95. How likely is it that this will happen in your future?

96. How much have you already attained this goal?

Life-goal: To have an image that others find appealing.

97. How important is this to you?

98. How likely is it that this will happen in your future?

99. How much have you already attained this goal?

Life-goal: To help people in need.

100. How important is this to you?

101. How likely is it that this will happen in your future?

102. How much have you already attained this goal?

Life-goal: To have a physically healthy life style.

103. How important is this to you?

104. How likely is it that this will happen in your future?

105. How much have you already attained this goal?

Appendix E

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. Tell us how you are like *in general; that is, how you are like on average*. Please use the following scale.

Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree Strongly
1	2	3	4	5

I see myself as someone who...

1. _____ is talkative
2. _____ tends to find fault with others
3. _____ does a thorough job
4. _____ is depressed, blue
5. _____ is original, comes up with new ideas
6. _____ is reserved
7. _____ is helpful and unselfish with others
8. _____ can be somewhat careless
9. _____ is relaxed, handles stress well
10. _____ is curious about many different things
11. _____ is full of energy
12. _____ starts quarrels with others
13. _____ is a reliable worker
14. _____ can be tense
15. _____ is ingenious, a quick thinker
16. _____ generates a lot of enthusiasm
17. _____ has a forgiving nature
18. _____ tends to be disorganized
19. _____ worries a lot
20. _____ has an active imagination
21. _____ tends to be quiet
22. _____ is generally trusting
23. _____ tends to be lazy

24. _____ is emotionally stable, not easily upset
25. _____ is inventive
26. _____ is not very assertive
27. _____ can be cold and aloof
28. _____ perseveres until the task is finished
29. _____ can be moody
30. _____ values artistic, aesthetic experiences
31. _____ is sometimes shy, inhibited
32. _____ is considerate and kind to almost everyone
33. _____ does things efficiently
34. _____ remains calm in tense situations
35. _____ prefers work that is routine
36. _____ is outgoing, sociable
37. _____ is sometimes rude to others
38. _____ makes plans and follows through with them
39. _____ gets nervous easily
40. _____ likes to reflect, play with ideas
41. _____ has few artistic interests
42. _____ likes to cooperate with others
43. _____ is easily distracted
44. _____ is sophisticated in art, music, or literature

Please read each of the following statements carefully and indicate how strongly you agree or disagree by blackening the appropriate number on the bubble sheet.

1 2 3 4 5 6 7 8 9 10

Strongly Disagree

Strongly Agree

1. On the whole, I am satisfied with myself.
2. At times I think I am no good at all.
3. I feel that I have a number of good qualities.
4. I can do things as well as most other people.
5. I do not have much to be proud of.
6. I certainly feel useless at times.
7. I feel that I'm a person of worth.
8. I wish I could have more respect for myself.
9. All in all, I think I am a failure.
10. I take a positive attitude toward myself.

Appendix G

Using the scale below as a guide, write a number beside each statement to indicate how much you agree with it.

1-----2-----3-----4-----5-----6-----7

NOT TRUE SOMEWHAT TRUE VERY TRUE

- ____ 1. My first impressions of people usually turn out to be right.
- ____ 2. It would be hard for me to break any of my bad habits.
- ____ 3. I don't care to know what other people really think of me.
- ____ 4. I have not always been honest with myself.
- ____ 5. I always know why I like things.
- ____ 6. When my emotions are aroused, it biases my thinking.
- ____ 7. Once I've made up my mind, other people can seldom change my opinion.
- ____ 8. I am not a safe driver when I exceed the speed limit.
- ____ 9. I am fully in control of my own fate.
- ____ 10. It's hard for me to shut off a disturbing thought.
- ____ 11. I never regret my decisions.
- ____ 12. I sometimes lose out on things because I can't make up my mind soon enough.
- ____ 13. The reason I vote is because my vote can make a difference.
- ____ 14. My parents were not always fair when they punished me.
- ____ 15. I am a completely rational person.
- ____ 16. I rarely appreciate criticism.
- ____ 17. I am very confident of my judgments.
- ____ 18. I have sometimes doubted my ability as a lover.

- ____ 19. It's all right with me if some people happen to dislike me.
- ____ 20. I don't always know the reasons why I do the things I do.
- ____ 21. I sometimes tell lies if I have to.
- ____ 22. I never cover up my mistakes.
- ____ 23. There have been occasions when I have taken advantage of someone.
- ____ 24. I never swear.
- ____ 25. I sometimes try to get even rather than forgive and forget.
- ____ 26. I always obey laws, even if I'm unlikely to get caught.
- ____ 27. I have said something bad about a friend behind his or her back.
- ____ 28. When I hear people talking privately, I avoid listening.
- ____ 29. I have received too much change from a salesperson without telling him or her.
- ____ 30. I always declare everything at customs.
- ____ 31. When I was young I sometimes stole things.
- ____ 32. I have never dropped litter on the street.
- ____ 33. I sometimes drive faster than the speed limit.
- ____ 34. I never read sexy books or magazines.
- ____ 35. I have done things that I don't tell other people about.
- ____ 36. I never take things that don't belong to me.
- ____ 37. I have taken sick-leave from work or school even though I wasn't really sick.
- ____ 38. I have never damaged a library book or store merchandise without reporting it.
- ____ 39. I have some pretty awful habits.
- ____ 40. I don't gossip about other people's business.

Appendix H

Please write a few sentences about your happiest moment in the space below:

Appendix I

On these pages you will find a series of vignettes. Each one describes an incident and lists three ways of responding to it. Please read each vignette and then consider the responses in turn. Think of each response option in terms of how likely it is that you would respond in that way. We all respond in a variety of ways to situations, and probably each response is at least slightly likely for you. If it is very unlikely that you would respond in the way described in a given response, you would select numbers 1 or 2. If it is moderately likely, you would respond in the midrange of numbers; and if it is very likely that you would respond as described, you would select the 6 or 7. Please select one number for each of the three responses on the answer sheet for each vignette. The actual items begin on the next page.

1. You have been offered a new position in a company where you have worked for some time. The first question that is likely to come to mind is:

a) What if I can't live up to the new responsibility?

1	2	3	4	5	6	7
very unlikely		moderately likely			very likely	

b) Will I make more at this position?

1	2	3	4	5	6	7
very unlikely		moderately likely			very likely	

c) I wonder if the new work will be interesting

1	2	3	4	5	6	7
very unlikely		moderately likely			very likely	

2. You had a job interview several weeks ago. In the mail you received a form letter which states that the position has been filled. It is likely that you might think:

a) It's not what you know, but who you know.

1	2	3	4	5	6	7
very unlikely		moderately likely			very likely	

b) I'm probably not good enough for the job.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Somehow they didn't see my qualifications as matching their needs.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

3. You are a plant supervisor and have been charged with the task of allotting coffee breaks to three workers who cannot all break at once. You would likely handle this by:

a) Telling the three workers the situation and having them work with you on the schedule.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Simply assigning times that each can break to avoid any problems.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Find out from someone in authority what to do or do what was done in the past.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

4. You have just received the results of a test you took, and you discovered that you did very poorly. Your initial reaction is likely to be:

a) "I can't do anything right," and feel sad.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) "I wonder how it is I did so poorly," and feel disappointed.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) "That stupid test doesn't show anything," and feel angry.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

b) How interested you are in that kind of work.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Whether there are good possibilities for advancement.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

10. A woman who works for you has generally done an adequate job. However, for the past two weeks her work has not been up to par and she appears to be less actively interested in her work. Your reaction is likely to be:

a) Tell her that her work is below what is expected and that she should start working harder.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Ask her about the problem and let her know you are available to help work it out.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) It's hard to know what to do to get her straightened out.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

11. Your company has promoted you to a position in a city far from your present location. As you think about the move you would probably:

a) Feel interested in the new challenge and a little nervous at the same time.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Feel excited about the higher status and salary that is involved.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Feel stressed and anxious about the upcoming changes.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

12. Within your circle of friends, the one with whom you choose to spend the most time is:

a) The one with whom you spend the most time exchanging ideas and feelings.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) The one who is the most popular of them.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) The one who needs you the most as a friend.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

13. You have a school-age daughter. On parents' night the teacher tells you that your daughter is doing poorly and doesn't seem involved in the work. You are likely to:

a) Talk it over with your daughter to understand further what the problem is.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Scold her and hope she does better.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Make sure she does the assignments, because she should be working harder.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

14. Your friend has a habit that annoys you to the point of making you angry. It is likely that you would:

a) Point it out each time you notice it, that way maybe he/she will stop doing it.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Try to ignore the habit because talking about it won't do any good anyway.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Try to understand why your partner does it and why it is so upsetting for you.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

15. A close (same-sex) friend of yours has been moody lately, and a couple of times has become very angry with you over "nothing." You might:

a) Share your observations with him/her and try to find out what is going on for him/her.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Ignore it because there's not much you can do about it anyway.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Tell him/her that you're willing to spend time together if and only if he/she makes more effort to control him/herself.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

16. Your friend's younger sister is a freshman in college. Your friend tells you that she has been doing badly and asks you what he (she) should do about it. You advise him (her) to:

a) Talk it over with her and try to see what is going on for her.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Not mention it; there's nothing he (she) could do about it anyway.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Tell her it's important for her to do well, so she should be working harder.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

17. You feel that your friend is being inconsiderate. You would probably:

a) Find an opportunity to explain why it bothers you; he (she) may not even realize how much it is bothering you.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Say nothing; if your friend really cares about you he (she) would understand how you feel.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Demand that your friend start being more considerate; otherwise you'll respond in kind.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

Appendix J

Autonomous Motivation Condition

As quickly as possible, please construct 4 word sentences from each of the following lists of 5 words. Many people find the task enjoyable and interesting. We need your responses in order to obtain norms for the measure.

1. options have I two and
2. feel are choiceful I usually
3. is to this opportunity my
4. I to we choose so leave
5. enjoy I freedom my he
6. in we autonomous often are
7. have by preference a we
8. to go and I decided
9. to our we classes selected
10. on choice we a have
11. we today unconstrained were our
12. can self-regulate to usually I
13. actions and my are independent
14. Now to I unrestricted am
15. am I still for self-determined

Controlled Motivation Condition

As quickly as possible, please construct 4 word sentences from each of the following lists of 5 words. The measure correlates with verbal intelligence in adults. Most college students should be able to complete it.

1. do we to this must
2. do I should to homework
3. to I smile ought and

4. for required to I'm study
5. work to with obligated I'm
6. meet we on deadlines must
7. for boss coerced my me
8. was obey we're compelled to
9. compulsory to attendance is our
10. giving in to necessary is
11. manipulates my to me boss
12. so behaviour my they restrict
13. forced by to study I'm
14. the by limits constrained us
15. very are we pressured that

Control Condition

As quickly as possible, please construct 4 word sentences from each of the following lists of 5 words. This task has not been used in college students, therefore, we need to obtain norms.'

1. by people walk some
2. books they be often read
3. the shall brown was dog
4. fence they but saw the
5. two was had he hats
6. plant I like obvious that
7. was sign a there too
8. porch the she white was
9. soft indirect is light to
10. the walk fish swims slowly
11. tall is Julia quite but
12. pictures is our good were

13. I student am a how
14. are pencils hers the it
15. am citizen from a I

Filler items included in all conditions (alternate between filler and motivation prime).

1. book we the read top
2. sale for by sweatshirts are
3. dollars salad on costs two
4. often soda but drink I
5. on bookmark used the she
6. tablecloth and blue
7. bright is the yes lamp the is
8. is to here served lunch
9. is the now desk wooden
10. apple was to the delicious
11. here the by telephone is
12. the her to fits shoe
13. you coffee the is hot
14. at the new computer is
15. he now are wears glasses

Appendix K

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now (that is, at the present moment). Use the following scale to record your answers:

1	2	3	4	5	
very slightly or not at all	a little	moderately	quite a bit	extremely	
<input type="checkbox"/> cheerful		<input type="checkbox"/> sad		<input type="checkbox"/> active	<input type="checkbox"/> angry at self
<input type="checkbox"/> disgusted		<input type="checkbox"/> calm		<input type="checkbox"/> guilty	<input type="checkbox"/> enthusiastic
<input type="checkbox"/> attentive		<input type="checkbox"/> afraid		<input type="checkbox"/> joyful	<input type="checkbox"/> downhearted
<input type="checkbox"/> bashful		<input type="checkbox"/> tired		<input type="checkbox"/> nervous	<input type="checkbox"/> sheepish
<input type="checkbox"/> sluggish		<input type="checkbox"/> amazed		<input type="checkbox"/> lonely	<input type="checkbox"/> distressed
<input type="checkbox"/> daring		<input type="checkbox"/> shaky		<input type="checkbox"/> sleepy	<input type="checkbox"/> blameworthy
<input type="checkbox"/> surprised		<input type="checkbox"/> happy		<input type="checkbox"/> excited	<input type="checkbox"/> determined
<input type="checkbox"/> strong		<input type="checkbox"/> timid		<input type="checkbox"/> hostile	<input type="checkbox"/> frightened
<input type="checkbox"/> scornful		<input type="checkbox"/> alone		<input type="checkbox"/> proud	<input type="checkbox"/> astonished
<input type="checkbox"/> relaxed		<input type="checkbox"/> alert		<input type="checkbox"/> jittery	<input type="checkbox"/> interested
<input type="checkbox"/> irritable		<input type="checkbox"/> upset		<input type="checkbox"/> lively	<input type="checkbox"/> loathing
<input type="checkbox"/> delighted		<input type="checkbox"/> angry		<input type="checkbox"/> ashamed	<input type="checkbox"/> confident
<input type="checkbox"/> inspired		<input type="checkbox"/> bold		<input type="checkbox"/> at ease	<input type="checkbox"/> energetic
<input type="checkbox"/> fearless		<input type="checkbox"/> blue		<input type="checkbox"/> scared	<input type="checkbox"/> concentrating
<input type="checkbox"/> disgusted with self		<input type="checkbox"/> shy		<input type="checkbox"/> drowsy	<input type="checkbox"/> dissatisfied with self

Appendix M

Mortality Salience Induction:

Briefly describe the emotions that the thought of your own death arouses in you and jot down, as specifically as you can, what you think will happen to you physically as you die and once you are physically dead.

Dental Pain/Negative Control Condition:

Briefly describe the emotions that the thought of your own dental pain arouses in you and jot down, as specifically as you can, what you think will happen to you physically as you experience dental pain and once you have dental pain.

Television/Neutral Control Condition:

Briefly describe the emotions that the thought of watching television arouses in you and jot down, as specifically as you can, what you think will happen to you physically as you watch television and once you have watched television.

Appendix O

1. Think about a time in which you were able to show other people that you were successful. Please answer the following questions with that event in mind.

- a. Describe what you did.
- b. Describe how this event made you feel.

Using the following scale, please indicate how negative/positive this event was.

1	2	3	4	5	6	7
Completely negative			Neutral			Completely positive

2. Think about a time in which you felt free to do whatever you pleased. Please answer the following questions with that event in mind.

- a. Describe what you did.
- b. Describe how this event made you feel.

Using the following scale, please indicate how negative/positive this event was.

1	2	3	4	5	6	7
Completely negative			Neutral			Completely positive

3. Think about a time in which you were able to show other people that you were intelligent. Please answer the following questions with that event in mind.

- a. Describe what you did.
- b. Describe how this event made you feel.

Using the following scale, please indicate how negative/positive this event was.

1	2	3	4	5	6	7
Completely negative			Neutral			Completely positive

4. Think about a time in which you felt motivated. Please answer the following questions with that event in mind.

- a. Describe what you did.
- b. Describe how this event made you feel.

Using the following scale, please indicate how negative/positive this event was.

1	2	3	4	5	6	7
Completely negative			Neutral			Completely positive

Appendix P

Belief in Afterlife Survey

1. Earthly existence is the only existence we have.
2. In the premature death of someone close some comfort may be found in knowing that in some way the deceased is still existing.
3. Humans die in the sense of "ceasing to exist."
4. The idea of there existing somewhere some sort of afterlife is beyond my comprehension.
5. We will never be united with those deceased whom we knew and loved.
6. There must be an afterlife of some sort.
7. Some existentialists claim that when man dies he ceases to exist: I agree
8. The following statement is true: "There is no such thing as a life after death."
9. Millions of people believe in a life after death: they are correct in so believing.
10. Enjoy yourself on earth, for death signals the end of all existence.

Appendix Q

Negative Relational Feedback

You're the type who will end up alone later in life. You may have friends and relationships now, but by your mid-20s most of these will have drifted away. You may even marry or have several marriages, but these are likely to be short-lived and not continue into your 30s. Relationships don't last, and when you're past the age where people are constantly forming new relationships, the odds are you'll end up being alone more and more.

Positive Relational Feedback

You're the type who has rewarding relationships throughout life. You're likely to have a long and stable marriage and have friendships that will last into your later years. The odds are that you'll always have friends and people who care about you.

Accident Proneness Feedback

You are likely to be accident prone later in life—you might break an arm or a leg a few times, or maybe be injured in car accidents. Even if you haven't been accident prone before, these things will show up later in life, and the odds are you will have a lot of accidents.