Effect of Message Framing on Reactions to Feedback Messages, Moderated by Regulatory Focus

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(ABSTRACT)

This study sought to better understand the impact of feedback on performance by examining how regulatory focus and message framing potentially interact to influence recipient's attitudes towards and recall of performance feedback recommendations. Participants were 221 undergraduates. Participant's chronic regulatory focus orientation was measured in phase 1. In phase 2, regulatory focus orientation was manipulated prior having participants complete a puzzle task. After completing the task, they were given performance feedback recommendations that were framed to highlight either promotion or prevention concerns. Their attitudes towards and recall of the recommendations they received were then measured. Though not all of the predictions of the study were supported, results indicated a significant three-way interaction between chronic promotion, the manipulation of regulatory focus, and the framing of the performance feedback recommendations that qualified the relationship between chronic promotion and attitudes. This finding supports the notion that a better understanding of how feedback impacts subsequent performance is possible by studying the interaction between regulatory focus and message framing. Implications and recommendations for future research are discussed.

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Chapter 1

Introduction

Information helps people regulate behavior. Information assists decision making, directing and/or motivating behavior and correction of errors. Consider learning simple arithmetic operations in the absence of information. When learning the fundamentals of arithmetic, children are first provided the basic rules of addition and subtraction. Though obviously essential to the task at hand, this information alone is insufficient to ensure proper mastery. Students also rely on others to correct their mistakes in order to achieve proficiency.

The process is similar for employees in organizations. Information provided by the organization not only defines employee responsibilities, but it also provides feedback as to what is or is not being done correctly and/or what needs to be changed (Ashford & Tsui, 1991; Morrison, 1993). Such performance feedback is essential to both the individual and the organization (Ilgen & Moore, 1987; Greve, 1998) because it allows for both to assess and, if necessary, to alter behaviors. Whether it is used to reinforce performance, to provide motivation, or to distribute information to employees, organizations and individuals use feedback to help create a desired pattern of behaviors (Nalder, 1977).

While performance feedback has been shown in many cases to improve performance in organizations (Ashford & Cummings, 1983; Podskoff & Farh, 1989; Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988; Walker & Smither, 1999), it has also been demonstrated to have a negative impact on performance (Pearce & Porter, 1986; Reilly, Smither, & Vasilopoulos 1996). Since the intent of providing feedback information in organizations is assumedly to improve performance, understanding why

performance feedback is capable of enhancing or reducing subsequent performance is critically important. Many contemporary approaches to performance feedback adopt a cognitive framework wherein recipients are portrayed as active processors of rather than impassive reactants to performance feedback information. Characterizing recipients as active processors rather than passive reactants grants them some level of agency to either accept or reject performance feedback information. While approaches that emphasize the importance of information processing have made significant contributions to the field by focusing on how basic feedback characteristics influence information processing (Goodman, Wood, & Hendrickx, 2004;Vancouver & Tischner, 2004; Van-Dijk & Kluger, 2004; Zhou, 1998), a comprehensive understanding of how and when feedback is likely to improve or decrease performance has yet to be achieved. A more complete understanding of the relationship between feedback and performance may be possible by studying how individual factors interact with certain aspects of performance feedback to impact the processing of performance feedback information. This may be possible via the lens of regulatory focus theory and message framing. Regulatory focus theory posits that individuals differ in how they approach pleasure and avoid pain, their way of self-regulation, and distinguishes between adopting a *promotion* focus orientation or a *prevention* focus orientation when deciding strategies for goal attainment (Higgins, 1999). A promotion focus orientation is concerned with accomplishments, hopes and aspirations (ideals). Success and failure in a promotion focus orientation are experienced as the presence of positive outcomes (gains) and the absence of positive outcomes (non-gains). A prevention focus orientation is concerned with safety, responsibilities, and obligations (oughts). Success and failure in prevention focus are experienced as the absence of negative outcomes (non-losses) and the presence of negative outcomes

(losses). Striving to attain a goal in a promotion focus is associated with eagerness, whereas striving to attain the same goal in a prevention focus is associated with vigilance (Crowe & Higgins, 1997). Regulatory focus, though specified at the abstract level here, can induce an individual's penchant towards approach or avoidance at the strategic level (Higgins, 1999). For example, employees can vary in their orientation to work. Some are interested in receiving promotions or raises (promotion focus orientation), while others are interested in not getting fired or not being demoted (prevention focus orientation). These goals can impact the way that employees set about the tasks they are given.

Regulatory focus orientation has been found to interact with message framing such that messages framed to highlight the regulatory focus concerns of an individual have been shown to be processed more fluently and are more effective in persuading recipients (Lee & Aaker, 2004; Keller, 2006). A message frame is considered to be "matched" to the extent it successfully emphasizes the concerns of an individual's regulatory focus orientation. Messages frames that match the concerns of a promotion orientation highlight approach goals such as obtaining a raise at work or doing well on an exam in school, while message frames that match the concerns of a prevention orientation highlight avoidance goals such as not getting demoted at work or not doing poorly on an exam in school.

The purpose of the current study is to gain a better understanding of how performance feedback information impacts subsequent performance by building upon the cognitive approach and its emphasis on how performance feedback information is processed by recipients. It will do so by exploring how message framing, an aspect of performance feedback information, and regulatory focus, an individual factor, potentially interact to affect the manner in which recipients actively process a specific aspect of

performance feedback information: recommendations for future behavior that stem from an individual's past performance. Prior work with regulatory focus and message framing (Lee & Aaker, 2004) suggests that properly matching performance feedback recommendation frames to the regulatory focus orientation adopted by an individual should affect the manner in which they process recommendation messages such that their attitudes towards and motivation to use performance feedback recommendations will be enhanced. By understanding how the interactive nature of message framing and regulatory focus potentially affects recipient's attitudes towards and motivations to use performance feedback recommendations, the current study may explain why feedback is capable of both enhancing and diminishing subsequent performance in certain circumstances.

Literature Review

Performance feedback can be conceptualized as a type of message to an individual that contains information about their functioning on a particular task (Ilgen, Fisher, & Taylor, 1979). DeNisi & Kluger (2000) specify three possible sources of performance feedback: a) self-generation (internally generated cognitions/emotions regarding performance), b) actual task performance (physical cues), and c) an outside source attempting to influence behavior and performance (supervisor ratings). Though all three sources of performance feedback are important, the current discussion focuses on performance feedback provided by outside sources, namely, organizations. An organization's goal for using performance feedback is that employees will assess their actions and possibly make changes to behaviors that do not align with the company's set standards (Nadler, 1977).

Contrary to the widely the held assumption that performance feedback enhances subsequent performance (Ashford & Cummings, 1983; Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988), the effects of performance feedback in organizations have been shown to be relatively inconsistent (Pearce & Porter, 1986; Podskoff & Farh, 1989; Reilley et al., 1996; Walker & Smither, 1999). Provided below is a brief account of how the performance feedback literature has evolved from its behaviorist roots to an emphasis on cognitions, leading to the important revelation that individuals are more than just passive reactants to performance feedback.

Thorndike's Law of Effect and Behaviorism. To understand the current state of affairs in the performance feedback literature, some perspective is necessary. Most early hypotheses related to performance feedback were based on Thorndike's Law of Effect (Thorndike, 1927) and were driven by the supposition that the feedback process teaches behavioral change, equating positive feedback with reinforcement and negative feedback with punishment. Note the similarity of this approach the basic tenants of Behaviorism (Skinner, 1963) in its failure to consider the role of individual volition in recipients' reactions to feedback as important. The underlying assumption is that feedback, regardless of whether it is positive or negative, will increase subsequent performance. Though the Behaviorist approach to performance feedback generated a considerable amount of empirical research, it proved inconsistent in accounting for the empirical complexities associated with the feedback-performance relationship (Kluger & DeNisi, 1996). Subsequent research often ignored the conflicting findings produced by the Behaviorist approach regarding the feedback-performance relationship, though it was noted by some (Adams, 1978). It was not until results from several meta-analyses in the 1980's concluded that feedback had a weak relationship to performance that the validity

of the Behaviorist approach and its conceptualization of recipients as passive reactants to feedback began to be seriously questioned and new theories began to emerge (Fried & Ferris, 1987; Harris & Rosenthal, 1985).

Cognitive Theories and the Role of Goal-Feedback Discrepancy. In reaction to the inability of behaviorally based theories to adequately account for the variation in the feedback literature regarding the feedback-performance relationship, cognitive based theories began to appear more frequently. Goal setting theory (Locke & Lathem, 1990) and control theory (Podsakoff & Farh, 1989) are two of more prominent cognitive theories to emerge, each of which share similar assumptions regarding the role of feedback in self regulation. Both theories view behavior as goal directed and emphasize that the achievement of goals is reliant in part on feedback information to evaluate individual performance relative to goal standards held by the individual (Kluger & DeNisi, 1996). This process of comparison produces a *feedback sign*, which can be either positive or negative, depending on the individual's performance relative to the goal in question. A positive feedback sign would be produced if the comparison process revealed that the individual's performance either met or exceeded their goal, whereas a negative feedback sign would be the result of an individual's performance failing to meet their goal. A negative feedback sign results if feedback indicates that performance has failed to meet expectations. Though theories of goal setting and control theory are in agreement regarding the existence of a goal-feedback comparison process and the discrepancies it often produces, they vary in their predictions of how people react to and try to eliminate such discrepancies (see Kluger & DeNisi, 1996, for a complete discussion of these discrepancies).

Despite differences in predicting how people react to and try to eliminate feedback-goal discrepancies, it is important to note that common to both cognitive approaches is an emphasis on the processing of feedback information and the notion that individuals are more than simple, passive reactants bound to specific outcomes upon receiving feedback. Rather, individuals are conceptualized as active processors of feedback information, with the ability to incorporate and adhere to the feedback message or dismiss it. Such a notion suggests that feedback serves to enable, rather than guarantee, change.

Focus on Information Processing

Understanding why individuals may or may not agree with received feedback and the reasons behind their reaction to it is thought to be an essential link to their motivation to utilize feedback information and has emerged as an important avenue of inquiry (Fletcher, Taylor, & Glanfield, 1996; Malmsjo & Ovelius, 2003). Motivation, in turn, could potentially be the primary determinant of whether or not recipients adhere to performance feedback recommendations. Consequently, understanding what promotes motivation to use feedback information has become a dominate theme in the literature (Larson, Glynn, Fleenor, & Scrontrino, 1986) and has produced numerous explanations. Cognitive approaches have subsequently focused on how characteristics of the feedback itself affect how feedback information is processed by recipients. The manner in which feedback information is processed affects individual attitudes toward and motivation to use performance feedback information. Some of these characteristics include but are not limited to the level of feedback specificity (Goodman, Wood, & Hendrickx, 2004), external source of feedback, (Brett & Atwater, 2001; Steelman & Rutkowski, 2004) and whether feedback is positive or negative (Vancouver & Tischner, 2004; Zhou, 1998).

Summarized below is research examining how these various types of performance feedback characteristics affect the manner in which recipients actively process and react to performance feedback.

Feedback Specificity. Feedback specificity, which refers to the level of information presented in feedback messages (Annett, 1969), is one of the more popular topics of research in the domain of performance feedback. The general idea behind feedback specificity is that the more specific and timely the feedback, the more effective it will be (Goodman, Wood, & Hendrickx, 2004). Though a clear body of evidence demonstrates that specific, objective feedback that is correctly matched to relative performance criterion increases performance more so than less specific and more subjective feedback (Kopelman, 1986), Goodman et al. (2004) note that increasing levels of feedback specificity may not be as uniformly beneficial to individual performance as is often assumed. They argue that while increasing levels of feedback specificity may increase performance, such gains are likely to be short-lived. This is because increasing levels of specificity "may also discourage the exploration processes that lead to learning and development of the staff member's capability to perform without the continuing support of the manager… Essentially, the feedback does the work for the performers." (Goodman et al., 2004, p. 249). Indeed, the results of their study indicated that increasing levels of feedback specificity served to undermine exploration behaviors in feedback recipients. While not entirely condemning the provision of specific feedback, Goodman et al.'s study does call into question the typical textbook prescription that highly specific feedback is universally beneficial to performance. Their study demonstrates the complexities inherent to the provision of performance feedback and the need for theories to go beyond the intuitive axioms that often pervade in applied settings.

Feedback Source. Feedback source is another topic that has garnered empirical interest. Also referred to as feedback source credibility, research in this area involves the feedback source's expertise and trustworthiness (Giffin, 1967). Source expertise encompasses knowledge of the recipient's job requirements, knowledge of the recipient's actual job performance and the ability to evaluate that performance in an accurate manner. Trustworthiness represents whether or not the individual trusts the feedback source to provide accurate performance information (Ilgen et al., 1979). Steelman and Rutkowski (2004) found that feedback source expertise was a significant moderator of the relationship between unfavorable performance feedback and the recipient's motivations to use the feedback in their sample. The results of their study indicated that recipients were more motivated to use feedback when it came from a source perceived as credible, though their study only examined reactions to negative feedback.

Within the realm of feedback source, the increased popularity of 360^0 evaluations in organizations presents an interesting scenario for performance feedback recipients because they are faced with multiple sources of feedback information. Empirical work on 360^0 feedback has examined potential differences among recipient's reactions to performance feedback provided by the various sources that typically participate in 360^0 evaluations, including supervisors, subordinates, and peers (Brett & Atwater, 2001). Though it was not the focus their study, Brett & Atwater (2001) did analyze the effects of feedback source on recipient's reactions, albeit in an entirely exploratory nature. They found two interesting patterns. First, high feedback ratings from peers were not seen as more accurate than low feedback ratings, whereas feedback from supervisors and subordinates were seen as more accurate. Second, participants in the study did not report negative reactions to low or discrepant ratings from their direct reports. Feedback from

bosses and peers appeared to have more of an influence on participant's reactions than did feedback from subordinates. Additional implications for performance feedback from this study are discussed in the next section dealing with feedback valence.

Feedback Valence. The issue of feedback message valance or feedback sign concerns whether or not the feedback message is positive or negative (i.e. "you did very well" vs. "you did very poorly"), and is one of the most heavily researched sub-topics in the realm of performance feedback (Ilgen et al., 1979; Vancouver & Tischner, 2004; Zhou, 1998). Indeed, the amount of uncertainty surrounding the feedback-performance relationship has often been attributed to the role of message valance and was one of the primary variables of interest in Kluger & DeNisi's (1996) influential meta-analysis of the relationship between feedback and subsequent performance. The authors included feedback valence (or, as they labeled it, 'feedback sign') as a potential moderator in their meta-analysis and found that it was conspicuously non-significant (Kluger & DeNisi, 1996). However, they note that the absence of a moderating effect does not necessarily mean that feedback valence is inconsequential; rather, they state that no current theory of feedback "can predict a priori the effects of all the important moderators that determine how feedback sign affects performance" (p. 276). Consequently, research has persisted in attempting to address the issue of how feedback valence affects subsequent performance.

An interesting study by Zhou (1998) investigated the interactive effects of three contextual variables (feedback valence, feedback style, and task autonomy) on creative performance. Creativity in this case refers to "employees' generation of novel and useful ideas" (Zhou, 1998, p.261). Feedback style was defined as the manner in which competence feedback is delivered and was broken into two categories: informational and controlling. Feedback delivered in an informational style refrains from imposing the

feedback provider's demands or restrictions on the recipient. It communicates that the feedback recipient is in control and helps maintain their sense of internal causality. In contrast, feedback delivered in a controlling style places external constraints at the forefront of the feedback message by emphasizing certain types of outcomes that the individual must obtain. As such, it creates and enhances feelings of external causality and that the feedback recipient's behaviors are in the control of someone else. Task autonomy "refers to the extent to which an individual has control over how to carry out a task" (Zhou, 1998, p.264). The results of Zhou indicated that both feedback valence and feedback style produced independent main effects on creativity levels, such that positive feedback and informational feedback style were both associated with higher levels of creativity. Furthermore, feedback valence and feedback style were found to produce an interaction effect such that participants exhibited higher levels of creativity when they received positive feedback delivered in an informational style; conversely, participants who received negative feedback in a controlling style exhibited lower levels of creativity. Although task autonomy did not produce a main effect on creativity, it did interact with feedback valence and feedback style to affect creativity such that the highest levels of creativity came from participants who simultaneously received positive feedback delivered in an informational style and who were allowed to work in a high autonomous environment. Zhou's examination of how feedback valence combined with other factors to impact levels of creativity is unique and revealing in its implications for practitioners concerned with facilitating creativity in organizational settings. However, it should be cautioned that the extent to which these results generalize to feedback situations where creativity is not a central component of the performance criterion is questionable and awaits empirical validation.

Vancouver & Tischner (2004) also examined the effects of feedback valence on how recipients process performance feedback information and subsequent task motivation. Vancouver & Tischner (2004) stressed the importance of the recipient's self-concept as well as the availability of cognitive resources in mediating recipient's reactions to positive and negative feedback. To test these assumptions, the authors manipulated performance feedback valence, the availability of cognitive resources and participant's opportunity to re-affirm their general self-concepts in a controlled laboratory setting. Participants performed two sets of tasks that were either more or less cognitively demanding. Subsequently, they found evidence of a three-way interaction between feedback valence, cognitive demands of the task, and opportunity to reaffirm overall self-concept. Specifically, participants assigned to the more cognitively demanding condition that were provided negative feedback and the opportunity reaffirm their sense of self-worth subsequently performed better on the second iteration of the task than did participants in the cognitively demanding condition that received negative feedback and were not afforded the opportunity to reaffirm their sense of self-worth. The underlying assumption is that the presence of negative feedback caused participants to reallocate cognitive resources to the level of the self and that the opportunity to reaffirm their sense of self-worth allowed them to exit what the authors term the "vicious positive feedback loop". This "vicious positive feedback loop" is described as a mental state wherein participants are unable to repair their overall sense of self-worth because their focus on the self prevents them from focusing on how to improve performance on the task at hand. Exiting the "vicious positive feedback loop" allowed participants to focus on how to improve task performance rather than focusing on themselves, thus increasing performance. In all other conditions of the study, feedback valence had an effect such that

positive feedback reduced and negative feedback increased subsequent performance, albeit weakly in both cases.

Feedback valence has also been considered in the 360^0 feedback literature. The primary inquiry in the previously mentioned study by Brett & Atwater (2001) centered on the effects of self-other rating discrepancies related to feedback recipients' reactions to feedback, perceptions of feedback accuracy, perceived usefulness of the feedback, and receptivity to development. Though the study did not focus on valence per se, higher levels of self-other rating discrepancies resulting from participants rating themselves higher than the ratings they received are generally viewed as being more negative in valence than discrepancies produced by participant's under-rating themselves in comparison to other rating sources associated with 360^0 feedback (Brett & Atwater, 2001). In this regard, they found that less favorable feedback ratings were associated with several undesirable consequences, including negative reactions by the recipient, beliefs that feedback was less accurate and, consequently, beliefs that the feedback was less useful. Participants who received more negative feedback were also measured as less development-focused (i.e. they were more defensive and less open to discussing how to use their feedback for developmental purposes). These results serve to question previous findings that self-other rating discrepancies produced by self over-rating produce positive outcomes (Johnson & Ferstl, 1999).

Moving Beyond Feedback Characteristics. Common to each of the aforementioned performance feedback studies is a focus on feedback characteristics and how they impact individual attitudes toward and motivation to use feedback information. Though undoubtedly important, empirical work that focuses only on basic feedback characteristics provides a limited explanation as to why individuals differ in the way they

process and react to performance feedback information. The field of performance feedback needs to go beyond such basic feedback characteristics by seeking to understand how individual factors potentially interact with certain aspects of feedback to help determine subsequent performance. It can do so by examining how performance feedback information can most effectively be presented to match individual factors to insure that the manner in which recipient's process performance feedback information results in improved performance. It is suggested that such research should begin by examining how a specific aspect of performance feedback information is presented to recipients: performance feedback recommendations.

Performance Feedback Recommendations. Performance feedback recommendations consist of feedback information that provides prescriptions for behavior that will improve performance based on an individual's prior behavior on the task in question. In this sense, performance feedback recommendations are person specific; that is, they do not necessarily refer to broad level strategies that apply to everyone who performs the task in question. Rather, performance feedback recommendations relate to a specific aspect of an individual's performance that could benefit from a change in behavior. For example, consider two quarterbacks whose performance could benefit from performance feedback recommendations, but for different reasons. A coach may provide feedback to one struggling quarterback that recommends working on his throwing motion because it is limiting his strength and thus, his ability to throw a football long distances down field. Conversely, the same coach may counsel another struggling quarterback, whose throwing strength is adequate but whose throwing accuracy is suffering because of improper footwork, to focus on properly positioning his feet when throwing the ball. Though both quarterbacks are struggling, it is

for different reasons. Consequently, the performance feedback recommendations provided are person-specific because they address the precise reasons behind each quarterback's sub-optimal performance, as indicated by their past behavior.

Performance Feedback Recommendations, Message Framing, & Regulatory Focus. It is again proposed that understanding the feedback-performance relationship requires studying how individual factors interact with aspects of feedback to affect subsequent performance. This may be accomplished by studying how message framing, an aspect of performance feedback, in conjunction with regulatory focus orientation, an individual factor, impacts the manner in which recipients process and form attitudes towards and motivations to use performance feedback recommendations. It is assumed that when the messages contained in performance feedback recommendations are properly framed to match the regulatory focus orientation of the recipient, the recipient will be more likely to process such messages in a manner that results in them reacting positively to and agreeing with the feedback recommendations they receive. This will increase motivation to use performance feedback recommendations, thereby increasing future performance, provided the prescriptions for future behavior contained in the recommendations actually have the capacity to improve performance. Establishing the existence of an interaction between performance feedback recommendation framing and regulatory focus orientation and understanding how this interaction impacts adherence to performance feedback recommendations will inform the field of performance feedback. It will specify conditions in which performance feedback is more likely to increase subsequent performance as well as conditions in which it is more likely to decrease performance, based on matching performance recommendation frames to regulatory focus orientation.

Regulatory Focus Theory

Before discussing in detail the concept of message framing in the context of performance feedback recommendations, a review of regulatory focus theory and its relevance to performance feedback is in order. Within the realm of personality psychology, regulatory focus theory has had a sizable impact on self-regulation. Broadly speaking, regulatory focus theory proposes that people adopt one of two orientations in regulating the self towards pleasure and pain: either a *promotion* or a *prevention* focus (Higgins, 1999). A *Promotion* focused orientation is characterized by the seeking of opportunities for advancement, accomplishment, and goal attainment. Individuals who adopt a promotion focus orientation are primarily concerned with allocating opportunities that allow them to accomplish their goals. Individuals who adopt a promotion focus orientation are more likely to employ an approach strategy, monitor errors of omission, and experience emotions characterized as positive in affectivity. A promotion focus orientation is also characterized by a concern for ideals (i.e. hopes, wishes, aspirations, etc…) of either the self or others. Success and failure in a promotion-focus orientation are experienced as the presence of positive outcomes (gains) and the absence of positive outcomes (non-gains), respectively.

A *Prevention* focused orientation is characterized by the seeking of protection and attempts not to lose goals. Individuals adopting a prevention-focus orientation are primarily concerned with protection and safety through fulfilling their responsibilities and avoiding potential threats to their goals. Individuals adopting a prevention focus are more likely to use avoidance as a strategy, experience negative emotions, and monitor errors of commission. A prevention focus orientation is also characterized as by a concern for oughts (i.e. duties, obligations, responsibilities, etc…) regarding either the self or others.

Success and failure in a prevention-focus orientation are experienced as the absence of negative outcomes (non-losses) and the presence of negative outcomes (losses). Thus, the regulatory foci, promotion and prevention, are distinct states and result in divergent strategic inclinations for achieving the desired end states of nurturance and security, respectively. Promotion and prevention focus orientations are not dichotomous; that is they do not represent the opposite ends of a regulatory focus orientation scale. Rather, promotion and prevention regulatory focus orientations are considered separate constructs that are independent of one another (Higgins, 2001). Generally speaking, determining the regulatory focus orientation of an individual involves measuring levels of both prevention and promotion focus and figuring out which level is higher. Whichever level is highest is considered an indication of a person's regulatory focus orientation (Higgins, 2001).

In terms of accessibility, evidence suggests that regulatory focus varies across both persons and situations and that the effects of these two sources of variability are comparable (Higgins, 1999). Accessibility refers to the activation potential of available knowledge related to a particular regulatory focus orientation (Higgins, 1999). In discussing person and situation sources of variability in regulatory focus accessibility, Higgins relates,

> "There are, unquestionably, stable individual differences in the constructs used to encode or categorize events. These differences can be understood in terms of individual differences in which constructs are available and/or have high chronic accessibility. But the accessibility of constructs is also influenced by contextual priming, and thus a person's encodings of events also varies as a function of the situation. In addition, high activation potential from chronic accessibility can work together with situational priming to produce high levels of construct accessibility." (p. 84).

Chronic Regulatory Focus. Individual differences in chronic levels of

accessibility to promotion and prevention focus orientations have been shown to exist, supporting the existence of a "person" variable operating from within the individual to influence his or her levels of promotion and or prevention focus accessibility (Higgins & Tykocinski, 1992; Higgins et al., 1997; Van-Dijk & Kluger, 2004). These differences in chronic levels of promotion and prevention focus accessibility have been linked to individual differences in subjective histories of success in attaining goals related to either promotion or prevention focus concerns (Higgins et al., 2001). Individual success in attaining goals associated with either a promotion or prevention focus orientation results in individuals developing either promotion or prevention "pride". Promotion pride and prevention pride produce different orientations to new task goals that energize and direct task engagement differently (Higgins et al., 2001). Having promotion pride as result of past success in obtaining promotion focus goals results in an orientation in individuals that utilizes an approach strategy to attain new goals, while having prevention pride as a result of past success in obtaining prevention focus goals results in an orientation in individuals that employs an avoidance strategy to attain new goals. An individual's promotion or prevention pride thereby reflects their chronic level of regulatory focus orientation accessibility. Though a variety of methods are available to assess chronic regulatory focus orientation as an individual difference variable (Higgins, Bond, Klein, & Strauman, 1986; Higgins, Shah, & Friedman, 1997), a commonly used measure is the Regulatory Focus Questionnaire (RFQ). The RFQ is an assessment developed by Higgins, Friedman, Harlow, Idson, Ayduck, & Tayler (2001) consisting of items asking subjects to evaluate their personal sense of their history of promotion or prevention success in goal attainment (Cesario et al., 2004).

Higgins and Tykocinki (1992) found that participant's chronic regulatory focus

orientation interacted with the type of information they were presented in affecting participants ability to recall that information. When participants were presented with target information that was congruent with their chronic regulatory focus orientation, they were able to recall that information more accurately than when it was incongruent. A study by Higgins et al. (2001) also showed that RFQ measures of chronic regulatory focus orientation were related to participant's strategies for maintaining a diet. The results indicated that individuals with a chronic promotion focus orientation were more likely to seek out tactics that were demonstrated to be effective for losing weight, while individuals with a chronic prevention focus orientation were more likely to avoid tactics that were demonstrated to be ineffective for losing weight.

Situational Inducement of Regulatory Focus. Research has also demonstrated that both prevention and promotion focus orientation can be induced as a function of the situation, independent of individual differences in chronic regulatory focus strength (Higgins et al., 1997; Shah & Higgins, 1997; Steeper et al., 1997; Van-Dijk & Kluger, 2004). Situational inducement of regulatory focus can be accomplished in a variety of ways. It typically involves the use of some external stimuli that primes either promotion or prevention concerns to increase their accessibility within an individual. One method is to ask people to imagine a situation that highlights either their hopes and aspirations (promotion) or their duties and obligations (Shah & Higgins, 1997). Another approach is to ask people to consider either something they feel they would like to do (promotion) or something they feel obligated to do (prevention) (Van-Dijk & Kluger, 2004).

Stepper, Strack, and Higgins (1997) investigated the possibility that situational inducement of regulatory focus orientation would produce the same results regarding recall ability as those found previously in the aforementioned study by Higgins &

Tykocinski (1992) that only measured chronic regulatory focus orientation. The results of Stepper et al. were similar to those of Higgins & Tykocinski in that participants were able to recall more information related to the regulatory focus orientation they had adopted due to manipulation than information that was not related to the situational induction of regulatory focus orientation. In terms of potential differences between regulatory focus states originating either from within (person) or without (situation), the effects of person variability and situation variability on regulatory focus are similar (Higgins, 1999).

Impact of Regulatory Focus. Regulatory focus is known to have a demonstrable effect on a variety of psychological phenomenon. Individuals have been found to differ as a function of the regulatory focus orientation they have adopted in their ability to appraise objects (Shah & Higgins, 2001), processing and usage of language (Lee & Aaker, 2004; Semin et al, 2005), affective reactions to success and failure (Idson & Higgins, 2000), enjoyment of a task (Frietas & Higgins, 2002; Vaughn et al., 2006), frequency of commission vs. omission errors of omission (Crowe & Higgins, 1997) and perceptions of success and failure feedback (Higgins, 1997, 1998; Van-Dijk & Kluger, 2004). Of particular relevance to the feedback literature is empirical work examining the interaction between message valence and regulatory focus and their effect on motivation (Forrester, Grant, Idson, & Higgins, 2001; Idson & Higgins, 2000; Van-Dijk & Kluger, 2004), which is discussed in the following section.

Aspects of Performance Feedback and Individual Factors

Attempting to understand the impact of feedback on performance by examining aspects of feedback and individual factors in conjunction with one another is not a novel proposition. A number of studies have looked at how regulatory focus orientation and feedback valence interact to affect motivation (Forrester, Grant, Idson, & Higgins, 2001;

Idson & Higgins, 2000; Van-Dijk & Kluger, 2004). Findings from this area suggest that positive feedback (success) encourages motivation in promotion focused individuals while negative feedback (failure) encourages motivation in prevention focused individuals (Idson & Higgins, 2000; Van-Dijk & Kluger, 2004). This is because the feedback messages in these cases are congruent with the inherent regulatory ideals/goals of the individual. Individuals who adopt a prevention focus orientation are more strongly compelled to action by negative feedback because it aligns with their goal of not failing. Their motives are centered on failure and how not to achieve it; in this case negative feedback contains the most information on how they can avoid failure. Conversely, individuals who adopt a promotion focus orientation are more strongly motivated by positive feedback because it is congruent with their aspirations to succeed. Their motives are centered on success and how to achieve it; therefore positive feedback provides the most information relevant to their goals. Compared to the congruent states described here, incongruent states are less likely to increase motivation (Higgins, 1997). An example of why an incongruent state is less likely to increase motivation than a congruent state can be witnessed when a individual who has adopted a prevention focus orientation receives positive feedback: although the information may be accurate and the recipient acknowledges it as such, the feedback information does not highlight the possibility of future failure. Hence, an increase in effort is viewed as unnecessary. Discussed below is research that has examined the impact of the interaction between performance feedback valence and regulatory focus on motivation.

Forester et al. (2001) examined the effects of success and failure feedback on motivational expectancies and maintenance. Forester et al. required participants to solve two sets of anagrams while simultaneously performing an arm pressure task with two

conditions. The first condition involved an arm flexion task in which force is directed towards the self. The second condition involved an arm extension task in which force is directed away from the self. The arm flexion task and has been associated with avoidance and a prevention focus orientation, while the arm extension task has been shown to be associated with approach and a promotion focus orientation (see Cacioppo, Prister, & Berntson, 1993; Forster, 1998; Chen & Bargh, 1999; Forster & Strack, 1997, 1998: Prister, Cacioppo & Petty, 1996). Results from Forester et al. (2001) indicated that approach motivation associated with positive feedback was more likely to occur in participants assigned to the arm flexion task condition (promotion focus) and that avoidance motivation associated with negative feedback was more likely to occur in participants assigned to the arm extension task condition (prevention focus). Thus, regulatory focus was shown to interact with feedback valance in impacting participant's task motivation such that success maintains motivational intensity more than failure in a promotion focus orientation, while failure maintains motivational intensity more than success in a prevention focus orientation.

Idson & Higgins (2000) also tested the interaction of feedback valance and regulatory focus on motivation by providing either positive or negative performance feedback for an anagram task based on participant's regulatory focus orientation. They measured participant's chronic level of regulatory focus orientation prior to completing a set of 20 anagram tasks. Participants were provided either positive or negative bogus performance feedback after completing 10 of the 20 anagrams, based on their chronic regulatory focus orientation. Their focal measure of motivation was the post-feedback gradient of performance (i.e. whether their performance following feedback was either improving or decreasing). As expected, their results indicated that participants with a

chronic promotion focus orientation increased their performance over time following success more than if they received negative feedback, whereas participants with a chronic prevention focus orientation increased their performance over time following negative feedback more than if they received positive feedback.

Van-Dijk & Kluger (2004) examined the role of regulatory focus in the feedback valence-motivation relationship in two separate studies. In the first study, they manipulated participant's regulatory focus by asking them to imagine either a scenario in which they worked at a job that they enjoyed and wished to advance in (promotion focus) or a job that they had to keep because they were afraid of being left without income (prevention focus). Feedback valence was manipulated by asking subjects to imagine that their boss had just told them either that they had failed (negative) or that they had excelled (positive) in their job related task performance. Results showed that neither feedback sign nor regulatory focus produced main effects; however, there was a strong interaction between to two variables such that when the task performance feedback matched regulatory focus orientation, individuals reported much higher levels of intent to invest more effort than they had previously. In the second study, regulatory focus was measured as an individual difference variable (i.e. chronic regulatory focus). Similar results were found, such that individuals exhibited higher levels of motivation when feedback valence matched their chronic regulatory focus orientation.

Feedback Message Framing and Regulatory Focus: Moving beyond feedback characteristics. The aforementioned studies represent a step in the right direction towards understanding how recipient's processing of feedback information impacts their attitudes towards and motivations to use performance feedback by looking at the impact of individual factors (regulatory focus orientation) and aspects of performance feedback

(valence) on motivation. However, these studies neglect to consider how an important aspect of performance feedback affects a critical type of performance feedback information. The manner in which performance feedback recommendations are presented to recipients in conjunction with participant's regulatory focus orientation potentially affects the active processing of such information has yet to be addressed in the performance feedback literature. More specifically, the interaction between the way performance feedback recommendations are framed and recipient's regulatory focus orientation could have a significant impact on motivation and subsequent performance.

Research in fields such as marketing and health promotion has benefited significantly from incorporating regulatory focus theory into its examination of how message framing impacts the effectiveness of persuasive messages (Lee & Aaker, 2004). The field of performance feedback could stand to do the same. Performance feedback recommendations can legitimately be construed as attempts by organizations to persuade individuals to engage in particular behaviors that will improve performance. When performance feedback recommendations are viewed as such, research that examines the effectiveness of persuasive messages by incorporating regulatory focus theory and message framing has the potential to clarify the feedback-performance relationship. The relationship between regulatory focus orientation and message framing as seen in these literatures is reviewed below, along with its implications for performance feedback recommendations.

Regulatory Focus Orientation and Message Framing: Gain vs. Loss. Higgins (1999) establishment that promotion and prevention orientations possess different goals in relation to gains and losses helped lay the groundwork for subsequent research aimed at understanding how matching feedback message frames to these goals could induce

motivation to implement changes (Idson & Higgins, 2000; Van-Dijk & Kluger, 2004). Lee & Aaker (2004) examined the effects of message framing on persuasion effectiveness via the lens of regulatory focus. Framing in this case refers to how message information is structured in terms of gains or losses and is based upon Rothm and Salovey's (1997) theory that message frames can be manipulated in one of two ways. The first entails manipulating whether benefits associated with a goal may or may not be attained. In this case, *gain* information is framed in terms of benefits from a goal being attained, whereas *loss* information is framed in terms of benefits not being obtained. The second approach involves manipulating message frames such that negative outcomes may or may not be avoided. *Gain* information in this instance refers to the negative outcome not being attained, while *loss* information refers to the negative outcome being obtained. Hence, gain-framed messages may focus on attaining a positive or not attaining a negative outcome, whereas loss-framed messages may focus on attaining a negative or not attaining a positive outcome (Lee & Aaker, 2004).

In a series of studies, Lee and Aaker (2004) manipulated persuasive message frames such that the end state associated with the message, as defined by desirability (i.e. gains or losses), was either compatible (i.e. gain frame paired with message highlighting promotion focus concerns and loss frame paired with message highlighting prevention focus concerns) or incompatible (i.e. gain framed paired with message highlighting prevention focus concerns and loss frame paired with message highlighting promotion focus concerns) with regulatory focus. They demonstrated that message frames properly matched to regulatory focus orientations were more fluently processed and more persuasive than message frames mismatched with regulatory focus states.

To illustrate, consider the following example of how regulatory focus orientation

and message frame condition were matched in one of Lee & Aaker's (2004) studies that involved the presentation of an advertisement for grape juice to participants. In this study, subjects were presented with advertisement messages about a particular brand of grape juice. To manipulate regulatory focus orientation, the messages in the advertisement dealt with either promotion orientation concerns, such as increased energy, or with prevention orientation concerns, such as preventing cancer and heart disease. Message framing was manipulated via the tagline shown in the advertisement. For participants in the promotion focus orientation condition who received the message focusing on promotion concerns, the gain framed tagline read "Get Energized!" to highlight a desirable end state of getting energized, whereas the loss frame in the promotion focus orientation condition read "Don't Miss Out on Getting Energized!" to make salient an undesirable end state of missing out on getting energized. For participants in the prevention focus orientation condition who received the message focusing on prevention concerns, a gain framed tagline read "Prevent Clogged Arteries!" and the loss frame in the prevention focus orientation condition was "Don't Miss Out on Preventing Clogged Arteries!"

As predicted, the results from Lee & Aaker (2004) revealed that the gain frame, which highlighted obtaining a desirable outcome ("Get Energized!"), was most effective in persuading recipients in the promotion condition, whereas the loss frame, which underscored "missing out" on avoiding an undesirable outcome, was most effective in persuading recipients in the prevention condition. Thus, properly matching the manner in which the persuasive message was framed (gain vs. loss) to be congruent with the regulatory focus orientation provoked (promotion vs. prevention) resulted in heightened persuasion compared to mismatches that produced incongruities.

Another study by Lee & Aaker (2004) regarding proper matches between

message frames and regulatory focus orientation attempted to further extended previous results to individual states by testing whether individuals who felt vulnerable (prevention focus orientation) to losses were more persuaded by loss framed messages, whereas individuals who did not feel vulnerable to losses (promotion focus orientation) were more persuaded by gain framed messages. This study involved the presentation of an advertisement for an all-natural supplement that fights mononucleosis and used a manipulation of perceived vulnerability, which as manipulated by providing information that conveyed a high vs. low probability of the participants contracting mononucleosis. As anticipated they found that participants in the low risk condition rated the gain-framed advertisement as more persuasive compared to loss-framed advertisements. Conversely, participants in the high risk condition rated the loss framed advertisements as more persuasive than the gain framed advertisement. Both results echo previous work in demonstrating the importance of the message framing-regulatory focus interaction in understanding how messages are processed and relevant attitudes are formed.

Applicability to Performance Feedback. The body of research summarized above involving the interactive effects of message framing and regulatory focus on information processing and attitude formation in relation to persuasive messages highlights the importance of achieving compatibility between message frames and regulatory focus. Specifying conditions in which message framing and regulatory focus match one another has enhanced understanding of how persuasive messages are processed and relevant attitudes are formed in the marketing and health promotion literatures. It is time to test whether such insights can be appropriately applied to realm of performance feedback to better understand feedback's relationship to subsequent performance.

Chapter 2

Study Overview

The intent of this study is to extend the performance feedback literature by examining how the relationship between regulatory focus and message framing impacts the active processing of performance feedback information. Specifically, it will attempt to understand how regulatory focus and message framing potentially interact to affect individual attitudes toward, intentions to use, and memories of performance feedback recommendations. Performance feedback recommendations framed in concordance with an individual's regulatory focus orientation should, relative to when focus and frame are discordant, lead to greater agreement with, greater intent to use, and better memory of performance feedback recommendations.

Each of these relationships must be examined independent of performance feedback valance. Demonstrating the interactive effects of message framing and regulatory focus orientation on performance feedback recommendations independent of feedback valence is important because the assumption that such a relationship exists has yet to be established. If regulatory focus is demonstrated to moderate the effects of message framing on performance feedback recommendations, then the effects of additional variables, such as performance feedback characteristics like valence, on the interaction between performance feedback recommendation frames and regulatory focus orientation may appropriately be studied. However, before these variables are thrown into the fray, the fundamental relationship between regulatory focus, message framing fit, and performance feedback recommendations must be examined.

Additionally, it should be noted that in organizational contexts performance feedback often contains information pertaining to both successes and failures. From an

applied standpoint, establishing a relationship between message framing fit with regulatory focus on individual attitudes towards and motivation to use feedback information would help assuage organizational resistance to providing employees with negative feedback. This is because both positive and negative feedback could be matched with performance feedback recommendations that are framed in a manner that matches the regulatory focus orientation of the individual, thus enhancing their attitude towards and motivation to use feedback recommendations. Establishing this relationship could potentially produce more reliable results when using performance feedback to implement behavioral change than is currently possible.

Hypotheses

The following hypotheses will be examined in this study:

Hypothesis 1: The situational induction of regulatory focus and message frame will interact to affect attitudes toward feedback, intention to use feedback, and recall of feedback. Specifically, when induced regulatory focus matches the message frame, attitudes toward feedback will be more positive, intentions to use feedback will be higher, and recall of feedback will be better than when there is a mismatch.

Hypothesis 2: The interaction between induced regulatory focus and message frame will be further moderated by chronic self-regulatory focus. More specifically the effects of the match between induced regulatory focus and message frame will be strongest when chronic regulatory focus also matches the induced regulatory focus.

Method

Participants

The focal participants were 221 students recruited from undergraduate psychology courses at Virginia Tech via the SONA System (the Psychology

Department's online Experiment Management System). Participants were required to be 18 or older and proficient in English in order to participate. Participants were told that the study was examining personality and task performance under varying incentive conditions. They were informed that they had the opportunity to earn 2 points of extra credit for whichever psychology class they were enrolled in for completing both phases of the study and that the study would require approximately 90 minutes total for them to complete.

Phase 1

The main goal of the first phase was measure each participant's chronic regulatory focus orientation. A critical hypothesis for the current research was that the effectiveness of regulatory focus manipulations is moderated by the individual's standing on chronic regulatory focus. Measuring regulatory focus separate from the laboratory phase allowed for controlling the distributions of scores on chronic regulatory focus across all experimental conditions.

Self-regulatory Focus Questionnaire. Participants were told that they would be completing a standard personality inventory. The inventory was in fact a computerized version of the regulatory focus questionnaire (RFQ), a measure developed by Higgins et al. (2001) to assess chronic levels of regulatory focus within individuals (see APPENDIX A). The RFQ is an 11 item questionnaire developed to assess chronic individual differences in motives to succeed by measuring respondent's perceptions regarding their subjective history of promotion and prevention success in goal attainment (Higgins et al., 2001). The RFQ contains two psychometrically distinct subscales. The promotion subscale contains 6 items measuring respondent's subjective histories of promotion success. The items in the prevention subscale contain 5 items measuring respondent's

subjective histories of prevention success. Higher scores on either the promotion or prevention subscale reflect respondent's chronic perception of their subjective history of promotion or prevention success in goal attainment, respectively. Levels of chronically accessible promotion or prevention focus orientation were measured independent of one another for each participant. This differs from the method used by Higgins et al. (2001), in which participants were classified in "terms of whether, compared to others, they were relatively more promotion pride or relatively more prevention pride based on a median split on the differences between their RFQ promotion and RFQ prevention scores" (Higgins, 2001, p. 11). Although Higgins' method implies the existence of a preference for either a promotion or a prevention focus within individuals, in the same article he notes that promotion and prevention focus are orthogonal and independent of one another. Hence, it is possible that an individual can be high or low in both promotion *and* prevention focus orientation focus accessibility. It is therefore justifiable to measure the two constructs independent of one another, as was done in this study. Participants were not categorized as 'either-or' in terms of promotion/prevention regulatory focus orientation accessibility; rather, each construct was measured independently.

Demographic Information. Demographic information, including race, gender, age, and major, was also assessed for exploratory purposes.

Subject Recruitment. Participants were blind to the true nature of this study. Instead, they were informed that the study was intended to evaluate how personality type relates to task performance under varying performance incentives. The study was publicly advertised to students by information posted on the psychology department's online Experiment Management System (SONA System). Participants were able to register for time slots for the study by using the SONA system. In these advertisements

participants were informed that the experiment would take place in two phases and would consume approximately two hours total of their time. They were informed that phase1could be completed at the computer of their choice, would take no longer than 20 minutes to complete, and was worth one extra credit point. The were be told that phase 2 of the experiment would involve completing computer puzzle tasks in a computer lab located in Williams Hall, would require no more than 60 minutes to complete, and was worth 1 one extra credit point. They were given instructions about how and where to signup for phase 2 on the SONA System after they completed phase 1.

Procedure. Using a computer of their choice, each participant was directed to a website. Once they logged onto the SONA website, participants first completed the demographics measure, followed the RFQ measure. Once all the measures were completed, participants were provided instructions regarding how to signup for phase 2 on the SONA system. They were also told that they needed to signup for and complete phase 2 of the experiment no more than 7 days after they had completed phase 1. This concluded their participation in phase 1.

Phase 2

Design. The experimental design for phase 2 was a 2 (Outcome Orientation: Gain vs. Loss) x 2 (Message Frame: Promotion vs. Prevention) between-subjects factorial design. The 2x2 factorial design of phase 2 produced four possible conditions: gain-promotion, gain-prevention, loss-promotion, and loss-prevention. Participants were assigned to one of these four conditions using a quasi-random matched assignment to ensure that each condition contained a similar distribution of chronic promotion and chronic prevention participants. This was accomplished by randomly assigning the first 100 participants to one of the four possible conditions and then assigning all subsequent

participants to conditions based on a combination of two factors: 1) their respective chronic promotion and prevention scores, and 2) the distribution of chronic Promotion and Prevention scores within each condition. This logic of this process is similar to a matched random assignment process, the difference being that I was trying to match on two individual difference variables instead of one.

Puzzle Task. Phase 2 of the present study used computer-based puzzle tasks that consisted of various images that are divided into either a 3 X 3 or a 5 X 5 grid. Participants completed a total of five puzzles, two of which were for practice. The remaining three puzzles comprised the performance set. The two practice puzzles were similar to the three puzzles contained in the performance set; however, they were lower in difficulty level, as demonstrated by previous pilot testing (Breland, 2004). The two practice puzzles also differed with regard to the number of scrambled pieces; the practice puzzles were divided into a 3 X 3 grid for a total of 9 pieces, whereas the three puzzles in the performance set were divided into a 5 X 5 grid for a total of 25 pieces. Once participants indicated they were ready to begin the puzzle task, the image appeared on their computer monitor and remained intact for 5 seconds, allowing the participant to study it. After the five seconds passed, the image was then scrambled into either 9 or 25 square shaped pieces, depending on whether were completing the practice or the performance puzzles. Subjects then manipulated the puzzle pieces in the grid using mouse clicks, with the ultimate goal of re-allocating each piece to it its original location within the grid. A clock was displayed in the lower left-hand corner of the puzzle interface to indicate the number of minutes and seconds that transpired since the movie image was scrambled. Once all the pieces of the puzzle were returned to their original position in the grid, participants were notified that the puzzle was solved and the clock

stopped. The participant was notified of how long it took for them to solve the puzzle, after which they were prompted to continue on to the next puzzle in the set. They were then presented with a new image to study and the process was repeated. Each performance puzzle set contained 3 puzzles, all of which have been found to be approximately equal in difficulty level (Breland, 2004).

Puzzle Task Feedback. Participants received feedback at two points during the experiment. After completing the three puzzles in the first set, all participants received a performance feedback score of 163 out of 250 possible points on their computer terminal, regardless of their actual performance on the first puzzle set. Subjects were told that this score reflected task performance as a function of time to completion, number of mouse clicks needed to solve the puzzles, and puzzle difficulty. Pilot research showed that subjects generally did not have a negative reaction to the 163 score, and more importantly, the 163 scored conveyed that there was room for task improvement.

A second form of feedback was a set of five recommendations aimed at improving performance on the second puzzle task was given after participants received the 163 score. It was explained that the recommendations were generated by an algorithm in the computer program that selected recommendations based on the participant's behavior on the first set of puzzle tasks (i.e. the amount of time and number of moves required to solve each puzzle relative to it's difficulty level) and that the recommendations it chose had been proven by prior research to aid performance for individuals whose behavior and performance on the same puzzle tasks were similar to theirs.

To ensure that the performance feedback recommendations were perceived as credible, 22 (male = 6; female = 16) participants were recruited for pilot testing of

various performance feedback statements. Each participant received 1 extra credit point in exchange for their participation on the pilot tests and were all recruited via the SONA system. The pilot tests did not contain any aspects of phase 1, but were almost identical to phase 2 of the in that participants received the same instructions, puzzle tasks, and performance feedback information that was used in phase 2. There were three primary differences between the pilot tests and phase 2 of this study. The first difference was that regulatory focus was not manipulated because participants were never told about an opportunity to earn extra credit by completing an additional set of puzzles. The second difference was that participants in the pilot tests were asked to rate the credibility of the performance feedback information they received using the Performance Feedback Information Rating Form (see APPENDIX B), which was administered at the conclusion of the pilot tests. The third difference was that I interviewed participants in a focus-group type setting at the end of the session to gain additional information regarding participant's reactions to the performance feedback recommendations. Based on the pilot study results, a set of four recommendations were selected. The exact wording of the recommendations varied as a function of the message frame manipulation (see below).

Procedure. The second phase of this study was administered in groups of 1 to 6. Participants were brought to a computer lab where they were individually assigned to sit at a computer terminal that was configured to provide their assigned manipulations. Once all of the participants were seated, they were asked to turn off any electronic devices they had on their persons, such as portable music players or cell-phones, so as to prevent any outside distractions during their participation in the experiment. They were requested to refrain from talking to others while they participated in the experiment and that if any questions or problems arose, to please raise their hand and the administrator would attend

to them. They were then asked by the administrator to please direct their attention to the computer screen in front of them, which displayed a copy of the informed consent form they were required to read and agree to by clicking the CONTINUE tab located on the bottom of the computer screen. After each of the participants read and agreed to the terms outlined in the informed consent form, the administrator provided a brief review of the study's purpose. Participants were encouraged to refrain from speaking to one another for the duration of the experiment and to direct any questions or concerns to the administrator. The administrator then provided a brief overview of the study, accompanied by a very brief description of the puzzle tasks the participants would be completing. The administrator then provided a brief overview of the temporal order of the tasks and a reminder that the study should require no more than approximately 60 minutes to complete.

Participants were then introduced to the puzzle tasks. They were told that they would be completing one set of puzzle tasks, and the scoring protocol was explained. Participants were told that after the first set of puzzle tasks they would be provided a feedback score regarding their performance. The administrator then showed participants an example of the puzzle task and provided a brief visual demonstration of how it can successfully be completed. To more fully familiarize participants with the task and ensure they understand what they are being asked to do, participants were then given two practice puzzles to complete, during which time they were encouraged to voice any concerns they may have regarding the puzzles to the administrator. After all of the participants successfully completed the two practice puzzles and any concerns regarding the task were addressed by the administrator, participants were reminded to refrain from talking as they attempted to complete the puzzles. All of the participants were then

instructed to begin solving the first set of puzzles. Upon completion of the first puzzle set, all participants were informed that they scored 163 on the puzzle task (via the computer).

Participants were then informed of the opportunity to obtain an additional extra credit point by completing another set of puzzles, along with a short memory task. They were told these additional tasks would take approximately 20 minutes to complete and that if they were able to improve their 163 performance score, they would receive an additional point of extra credit. Additionally, they were told that they would be provided with a set of performance feedback recommendations to help them improve their performance on the additional set of puzzles and that these recommendations were proven by prior research to be effective in improving the performance of individuals whose performance on the first set of puzzles was similar to their own. They were then instructed to either sit quietly while waiting for further instructions if they chose to remain and complete the additional puzzle set and memory task, or, if they choose not to complete the additional puzzle task, to collect their belongings and exit the room quietly. Participants who chose to leave where provided a copy of the informed consent form (see APPENDIX C) as they exited the room by the administrator. Of the 229 participants who completed phase 2, eight of them choose not to complete the second puzzle set.

After all participants in the session finished reading about the opportunity to complete the additional puzzle set and memory task, participants who remained were given a brief summary of the recommendations they were about to receive by the administrator. Next, participants were provided their performance feedback recommendations on their computer. Participant's attitudes towards and intentions to use their performance feedback recommendations were then assessed. After completing these

measures, participant's general recall ability was measured, and then participants were asked to record the feedback statements from memory. Participants were then informed there is no second set of puzzle tasks and that their participation in the study is complete. They were provided a copy of the informed consent form, thoroughly debriefed, and thanked for their participation in the study.

During the debriefing process participants were provided an explanatory form detailing the true purpose of the study and the reasons for deception (see APPENDIX D). They were informed that all participants received 3 extra credit points for having participated in the study. Participants were then informed that the performance feedback score for the first puzzle set was fabricated and that no performance feedback scores were actually calculated for any participants. They were given the opportunity to ask the administrator questions about the study and be provided with contact information for the principal investigators to address any further issues or questions participants they had regarding the study that the administrator was unable to answer.

Independent variables. Regulatory focus was manipulated in this study by the way outcomes associated with participant's performance on the second set of puzzles were framed to participants. All participants were informed of the possibility of a third extra credit point. Regulatory focus was manipulated via the manner in which the possibility of a third extra credit point was explained. Promotion focus was instantiated through a gain frame where participants were told that higher performance on the second puzzle set relative to the first would result in them gaining an additional extra credit point. Prevention focus was instantiated through a loss frame where participants were told that failure to perform better on the second puzzle set relative to the first would result in them losing the third extra credit point. In other words, participants assigned to the gain frame

condition were told that if they were able to do better on the second puzzle set than they did on the first set (i.e. achieve a higher score), they would receive another extra credit point in addition to the two points they were already promised prior to the start of the study. If they did not perform better on the second puzzle set, they would not earn an additional extra credit point. Participants in the Loss frame condition were told that if they were unable to do better on the second puzzle set than they did on the first, they would lose the additional extra credit point that is being offered to them. If they were able to improve their performance on second puzzle set relative to the first, they would avoid losing the additional extra credit point available to them. This type of manipulation has proven successful in past studies (Higgins et al., 1997) that examined regulatory focus.

The outcome orientation condition of the study was then manipulated by the manner in which the opportunity to earn the additional point of extra credit was framed, depending on which outcome framing condition (gain vs. loss) participants were assigned. It was also made clear that completing the additional puzzle set and memory task was not required and that all participants would receive the two points of extra credit promised to them for having participated in the study, regardless of whether or not they chose to complete the additional puzzle set.

The *message frame* manipulation was imparted in the wording of the four feedback statements (see APPENDIX E). The promotion framed recommendations were presented as “do’s” that improve performance, whereas the prevention framed recommendations are presented as “don’t’s” that will prevent improved performance. Thus, the promotion framed recommendations focus on how to obtain positive outcomes relevant to gaining an additional extra credit point, while the prevention framed recommendations are focused on how to avoid negative outcomes that will result in the

loss of an extra credit point. Each set of performance feedback recommendations was accompanied by a statement that testified of their effectiveness in improving performance to enhance their perceived credibility (see APPENDIX F).

Dependent Variables. Three items were developed to measure *Attitudes Towards Feedback* and two items were developed to measure *Intentions to Use Feedback.* (see APPENDIX G). A 7-point likert-scale anchored by *Strongly Disagree* and *Strongly Agree* was used to measure both attitudes and intentions.

Feedback Recall was assessed by asking participants to write down as many of the recommendations as they could remember. The accuracy of their responses was assessed by two independent raters. Each rater initially assessed whether or not responses provided by participants accurately reflected the performance feedback recommendations that were provided to the participant per the standards outlined in the Recall Ability Rater Guidelines (see APPENDIX H). In the event of inter-rater disagreement, the two raters discussed the ratings in question to reach a consensus. If unable to do so, I intervened to provide an ultimate decision regarding the response(s) in question.

Covariate. The *Recall Ability* task was designed to measure participant's general recall ability and is based on the methods used by Volk, McDermott, Roediger, & Todd (2006). The task consisted of presenting participants with two 30-word lists, each comprised of five words from six semantic categories taken from the Battig and Montague norms (Battig & Montague, 1969). Each word from the lists was presented at the rate of one word every 2 seconds. Following presentation of the first 30-word list, participants were asked to recall as many of the words as possible in 2 minutes (in any order they wish) but not to guess; that is, they were asked to be certain that all the words they recalled had indeed been presented to them. This process was repeated for the

second 30-word list. Even if participants had finished recalling as many words as possible before the 2 minute time period is up, the administrator waited until the 2 minute time period was finished before proceeding. The total number of words correctly recalled from both lists was calculated for each participant and comprised their general recall ability score.

The purpose of administering this test was twofold. First, it served as a control for general recall ability in assessing the effects of the independent variables on participant's ability to recall the performance feedback recommendations they received. Second, this measure served to clear short-term memory, thereby causing participants to retrieve the feedback statements from long-term storage.

Results

Correlations and Descriptive Statistics

Descriptive statistics for the dependant variables, as well as within-condition means and standard deviations for Recall Ability, appear in Table 1. Table 2 displays the correlation matrix for all of the measured variables, collapsed over conditions. Consistent with prior research (Higgins, 2001), the chronic promotion and chronic prevention scales were modestly correlated ($r = 0.16$, $p < .05$). Reliability analyses also showed that the chronic promotion and prevention scales were consistent with recent research (= 0.62 for promotion and = 0.79 for prevention; see Higgins et al., 2001), and that both the attitudes and intentions scales demonstrated acceptable reliability (= .84 for attitudes and = .81 for intentions).

To further validate each of the scales used to assess attitudes and intentions, a principal components analysis was conducted using the three items from the attitudes scale and the two items from the intentions scale. Figure 1is the scree plot from the

analysis, and the rotated (Quartimax rotation) component matrix is displayed in Table 3. As shown in Figure 1, only the first component produced an eigen value greater than 1, suggesting a one component solution. Furthermore, Table 2 shows that while the three items intended to measure attitudes loaded highly on only the first component, the two items designed to measure intentions cross-loaded in the two component solution.

To summarize, scores on the attitudes towards feedback measure achieved acceptable levels of reliability and the results of the principal components analysis showed that all three items from this scale loaded on a single component. For intentions to use feedback, although the two items produced scores with acceptable reliability, they failed to achieve simple structure in the principal components analysis. Furthermore, analyses of the intentions to use feedback measure did not produce any meaningful results. Given the equivocal interpretation of the intentions to use feedback scores, and the lack of reliable findings, analyses of the intention to use feedback scores are not reported.

Hypothesis 1: Situational Induction of Regulatory Focus and Message Frame

To test Hypotheses 1 I ran a separate 2 (Outcome Orientation) X 2 (Message Frame) ANOVA on each of the dependant variable measures. Hypothesis 1 predicted a significant interaction effect. Specifically, I expected that conditions where message frames were concordant with situational induction of regulatory focus would produce significantly higher scores on each of the dependant variables than conditions where message frames were discordant with situational induction of regulatory focus. This would support my hypothesis that regulatory focus orientation moderates the relationship between feedback recommendation message framing and individual's attitudes towards and processing of those messages.

Results from the ANOVA used to test hypothesis 1 are reported in Table 4, and no significant effects were found. Hypothesis 1 was not supported due to the absence of any significant interactions between Outcome Orientation and Message Frame for either of the dependant variables.

Hypothesis 2: Interaction of Chronic and Situational Induction of Regulatory Focus

To test hypothesis 2, I conducted a multiple regression analysis for each dependent variable to determine if a there was a significant 3-way interaction between Chronic Regulatory Focus, Outcome Orientation, and Message Frame. To support hypothesis 2, the expected pattern of the interaction was that the relationship between chronic promotion / prevention regulatory focus and the dependent variable will be strongest when the manipulations are congruent with chronic regulatory focus. That is, in the promotion regulatory focus orientation and promotion message framing conditions, the relationship between chronic promotion regulatory focus and the dependent variable will be stronger than in the other three conditions. For prevention, the strongest relationship between chronic prevention regulatory focus and the dependent variable will be in the conditions with prevention regulatory focus orientation and prevention message framing. .

Four separate hierarchical regression analyses were conducted to test Hypothesis 2. In the first analysis, attitudes towards feedback were regressed on chronic promotion, Outcome Frame, and Message Frame, the results of which are contained in Table 5. As seen in Table 5, the only significant value of R^2 was produced in the third step of this analysis when the 3-way interaction was added to the model ($\Delta R^2 = 0.05$, $p < .05$). Figure 1 graphs this interaction. The interaction is driven by the predicted positive correlation between chronic promotion and attitudes towards feedback in the gain-promotion

condition (r = 0.33), as opposed to near zero correlations in the gain-prevention (r = -0.14), the loss-gain (r = -0.08), and the loss-prevention (r = 0.03) conditions. The pattern supports hypothesis 2 in that participants receiving promotion-oriented manipulations found the feedback to be more useful if they were high on chronic promotion. The inclusion of any prevention oriented manipulation dampened this relationship.

Additional analyses were conducted to test whether the relationship between chronic promotion and attitudes towards feedback was non-linear in any of the four conditions. This was accomplished by regressing attitudes on chronic promotion and chronic promotion squared within each of the four conditions. These analyses revealed that chronic promotion squared was significant in the loss-prevention condition (B = -0.06, $p < .05$).

Given that it was too cumbersome to test the full model including a nonlinear term for every interaction with chronic promotion, I reran the analyses comparing the gain-promotion condition with the loss-prevention condition. Participants in the incongruent conditions (i.e. gain-prevention and loss-promotion) were not included. Attitudes were regressed on chronic promotion, chronic promotion squared, and gain-promotion vs. loss-prevention, and two vectors representing the interaction between chronic promotion and gain-promotion vs. loss-prevention. The results of the regression revealed a significant interaction between chronic promotion squared and gain-promotion vs. loss-prevention (ΔR^2 = 0.07, $p < .05$). This interaction is represented graphically in Figure 2. The relationship between chronic promotion and attitudes towards feedback in the loss-prevention condition is initially positive, it levels out when values of chronic promotion reach approximately 23, after which the relationship becomes negative.

The detection of the nonlinear relationship between chronic promotion and attitudes towards feedback in the loss-prevention condition did not change the interpretation of the findings in relation to the support of hypothesis 2. This conclusion is reinforced by the fact that the distribution of chronic promotion scores was negatively skewed, with approximately 57% of the sample scoring 23 or greater on chronic promotion. For high chronic promotion scores, participants in the gain-promotion condition clearly saw the feedback as more useful than participants in the loss-prevention condition, and the two incongruent conditions, also.

The second regression analysis performed to test hypothesis 2 regressed attitudes towards feedback on Chronic Prevention, Manipulation of RF, and Recommendation Frame, and all interactions (see Table 6). The R^2 value for the first step of the regression was significant ($R^2 = 0.04$, $p < .05$), which was driven by the significant main effect of chronic prevention on attitudes towards feedback ($B = 0.17$, $p < .05$), with attitudes about the usefulness of the feedback increasing as chronic prevention increased ($r = 0.16$). This relationship was qualified by an interaction between chronic prevention and the Outcome Orientation ($B = 0.69$, $p < .05$, $\Delta R^2 = 0.03$). This interaction is displayed graphically in Figure 3, and it shows the positive relationship between chronic prevention and attitudes towards feedback was positive only in the promotion outcome orientation conditions ($r = 0.32$). Such an interaction is inconsistent with predictions from self-regulatory focus theory in that if anything, the positive relationship would be predicted to occur in the prevention recommendation conditions. There is no interpretation of self-regulatory focus theory would predict that promotion framing of the feedback message would be perceived as most useful by individuals high on chronic prevention. Finally, no curvilinear relationships were found between chronic prevention and attitudes toward

feedback with any condition of the experiment. Taken altogether there is no evidence of an interaction between chronic prevention and attitudes towards feedback that can be interpreted as supporting hypothesis 2.

The last two regression analyses tested hypothesis 2 in relation to participant's recall of the performance feedback recommendations they received. The same regression strategy used to assess attitudes toward feedback was also used to assess feedback recall, with the exception that recall ability was included as a covariate in Step 1 of the regression model. Results from these analyses are displayed in Table 7 (chronic promotion) and Table 8 (chronic prevention). For Chronic promotion, A significant R^2 value was produced in the first step of the analysis ($R^2 = 0.07$, $p < .05$), and this effect was produced by recall ability ($B = 0.04$, $p < .05$) and chronic promotion ($B = -0.06$, $p < .05$). Individuals high on chronic promotion recalled fewer recommendations than individuals low on chronic promotion ($r = -0.16$). No other main or interaction effects were found. Since neither of the significant main effects found in this analysis were related to hypothesis 2, the results do not support hypothesis 2.

For chronic prevention (See Table 8), the R^2 in step 1 of the analysis was significant, but the only significant effect was for recall ability ($B = 0.03$, $p < .05$, $R^2 = 0.05$). Steps 2 and 3 did not produce significant increases in R^2, nor did they produce any significant interaction effects. Consequently, support for hypothesis 2 was not found in this analysis.

Discussion

The purpose of the current study was to test predictions based on self-regulatory focus theory in relation to processing performance feedback. In particular, how message framing and regulatory focus interact when processing of performance feedback. Based

on previous research that examined regulatory focus and framing effects in relation to persuasive messages, it was predicted that performance feedback messages would be processed more fluently and recipients would have more favorable attitudes regarding such messages when the framing of such messages matched the recipient's regulatory focus orientation. Though prior research in the marketing and health literatures has found such effects, this study was, to my knowledge, the first to test whether such effects are possible in the context of performance feedback.

Additionally, this study attempted to determine the extent to which chronic regulatory focus orientation and situational induction of regulatory focus orientation potentially interact with one another in relation to message framing. Past research involving regulatory focus has typically examined the effects of either situational induction of regulatory focus or chronic regulatory focus. Although prior research has shown the effects of regulatory focus to be similar regardless of whether a promotion or prevention orientation has been made more accessible either from either an external (i.e. situational induction) or internal (i.e. chronic) source in relation to the individual, rarely have the two sources of accessibility been investigated concurrently. The current study considered whether research involving regulatory focus might benefit from considering the two sources of accessibility contemporaneously rather than independently by incorporating both sources of accessibility into the experimental design and analyses.

Interpretation of Results

Hypothesis 1: Interaction of Manipulation of RF and Recommendation Framing. Overall, none of the analyses that examined the interaction of situational induction of regulatory focus and recommendation framing, independent of chronic regulatory focus were significant. The results provide no support for hypothesis 1 in relation to attitudes or

recommendation recall, and are counter to what prior research examining message framing and regulatory focus have found (Lee & Aaker, 2004). Obviously, the lack of effects raises concerns over the potency of the manipulations.

The manipulation used to induce regulatory focus (i.e., the framing of the additional extra credit point as either a gain or loss) may simply not have been potent enough to produce the interaction when chronic self-regulatory focus was not included in the analyses. Prior research has shown that the use of rewards is an effective way to manipulate regulatory focus (Crow & Higgins, 1997; Shah & Higgins, 1997; Shah & Higgins, 2001). However, this is the first study I am aware of that has attempted to use this manipulation strategy in conjunction with message framing. Though numerous studies have explored how messages can be framed properly in relation to regulatory focus to produce regulatory fit (Cesario et al., 2004, Lee & Aaker, 2004; Tykocinski, Higgins, & Chaiken, 1994; Aaker & Lee, 2001), none of them used manipulations involving reward framing to induce a promotion/prevention orientation. Most of the previous research involving message framing and regulatory focus that informed the design of the current study involved persuasive messages (see Lee & Aaker, 2004, and Aaker & Lee, 2001, for specific examples).

In these studies, regulatory focus is manipulation <u>within</u> a persuasive message and is accomplished by framing potential gains/non-gains (promotion) vs. potential losses/non-losses (prevention). The content of the message is then altered to address promotion/prevention concerns. That is, the manipulation is the *fit* of the gains vs. losses framing to the message content. In the current study the gains vs. losses framing was conveyed in a separate manipulation from the promotion vs. prevention feedback message. Perhaps my protocol produced a weaker manipulation of the key psychological

constructs, resulting in the lack of effects when chronic regulatory focus was not included in the analyses.

It is also possible that the even if the manipulation of the regulatory focus was appropriate for the message framing strategy used, it did not produce effects in the absence of chronic regulatory focus due to the manner in which it was induced. All participants were informed of the opportunity to gain or lose an additional extra credit point via the computer terminal they were assigned to and it is possible that individuals were inattentive to the message containing this information. Such a scenario may have been prevalent during sessions involving two or more participants where one of the participants finished the first three puzzle sets much sooner than the other participant(s). It was observed by the research assistants that participants tended to read though the manipulation message rather quickly if they were the last one to finish the first puzzle set. If this manipulation is used again, a likely better strategy for administering the manipulation is to have the research assistant read the manipulation aloud once everyone had completed the first puzzle.

Another possible explanation for why the manipulations of regulatory focus did not produce reliable effects is that there may be psychological differences between processing performance feedback recommendations as opposed to processing consumer and health messages. I am aware of only one study by Van Dijk and Kluger (2004) that actually manipulated regulatory focus in the context of performance feedback. The manipulation used in this study involved asking participants to envision that they were working for a job they had to keep (prevention) vs. a ‘dream job’ (promotion). While the study provided support for notion of fit between regulatory focus and feedback

information, it is not clear that processes captured by Van Dijk and Kluger (2004) map onto regulatory focus as involved in the processing of specific task feedback.

Hypothesis 2: Interaction of Chronic and Situational Induction of Regulatory Focus. There was strong support for hypothesis 2 for chronic promotion and attitudes toward feedback. As predicted, the positive relationship between chronic promotion and attitudes toward feedback was strongest for participants exposed to the promotion manipulation of regulatory focus and the promotion framed performance feedback recommendations (see Figure 2). In addition, a significant curvilinear effect was found for participants exposed to the prevention manipulation and the prevention framed recommendations (see Figure 3). This nonlinear effect added further support of hypothesis 2 in that above the median chronic promotion score, the relationship between chronic promotion and attitudes toward feedback was negative in the loss-prevention condition.

In contrast, no support was found for hypothesis 2 when examining chronic prevention and attitudes. In fact, the only reliable interaction was a positive relationship between chronic prevention and attitudes when the feedback messages had a *promotion* frame. Such a finding is inconsistent with self-regulation theory. Furthermore, it is difficult to make sense of the findings for chronic prevention when considering the results for chronic promotion.

Hypothesis 2 also was not supported using the recall of feedback dependent variable. Perhaps framing feedback recommendations to match regulatory focus orientation only impacts recipient's attitudes towards the feedback recommendations. More likely, the lack of effects for recall was due to the perceived utility of the feedback statements. Due to the nature of the task, it was difficult to develop feedback statements

that were both believable in terms of leading to improve performance, and relevant in the sense of conveying a strategy not previously used by the participant. Future research would benefit from a task that readily provides believable strategies for improvement that participants see as tailored to their limitations.

Additional Limitations

Nature of the Task. The puzzle task used in this study has proven useful in previous motivational research (Breland, 2004). It is a task that students often find to be fairly engaging and enjoyable. Even so, there are several reasons why it was not ideal for the current study. First the task has been found to have a 'ceiling effect' wherein performance increases are limited. Breland (2004) noted that performance on the puzzle task has been shown to be peak after the first learning trial and becomes quite stable thereafter. Additionally, Breland showed that once participants have adopted a strategy for solving the puzzle that has proven effective, they are unlikely to abandon it in favor a different strategy. Given that the performance of most participants tends to peak by the time they are attempting to complete the second puzzle task, it is possible that by the time they received their performance feedback recommendations, most participants had already developed strategies for solving the puzzles that they were comfortable with and that were effective, given the lack of variability in difficulty among the first three puzzles. However, this comfort level, if indeed present, may have been attenuated by the performance feedback score they received after completing the first three puzzles. Since the score they received was meant to convey to the recipient that their performance was average, it indicated that performance improvements were possible and that perhaps the strategies they used predominately on the first three puzzles were suboptimal.

The second major limitation of the puzzle task is its simplicity, which made it difficult to provide strategies to participants that would, if applied correctly, actually produce gains in performance. While an effort was made to ensure that the recommendations were perceived as credible by conducting pilot work, no research has been done to test if using the recommendations actually increases performance on the puzzle task. Therefore, it is unknown whether or not applying the strategies provided improves performance on the puzzle tasks.

As discussed above, the simplicity of the task limits the ability to prescribe strategies to participants that are not already quite obvious. Other than telling participants to study the image very carefully before it is scrambled, it is quite difficult to think of strategies that could conceivably enhance performance on the task, let alone many that would seem both novel and specific to the recipient's performance. An important component of the feedback information provided to participants in this study was that it was framed to the recipient as being specific to the participant's actual performance on the task so that it addressed areas they needed to improve on. Given the simple nature of the task, it is possible that participants viewed the recommendations as generic with little or no information that spoke to how they actually performed on the puzzle task. Though pilot work established that recipients generally believed that the recommendations would help them improve their performance on the puzzle task, it also showed that they did not believe the recommendations they received were specific to them individually in the sense that they were generated based on their individual performance on the puzzle task rather than being general strategies that were given to all participants. Though alterations were made to the initial set of recommendations based on feedback from the participants

in the pilot study so that the final set of recommendations would seem specific to the recipient, it is uncertain whether such efforts were successful.

Implications

Despite the lack of support for hypothesis 1 and the aforementioned limitations of this study, there was a key finding consistent with regulatory focus theory and framing effects. As such, more research on self-regulatory focus theory in the performance feedback domain is warranted. Another important implication from the significant interaction between chronic promotion, Outcome Orientation, and Feedback Frame is that research involving regulatory focus should examine the interaction of external (i.e. situational induced) and internal (i.e. chronic) sources of regulatory focus orientation accessibility within the individual. Had the current study failed to examine the two sources of accessibility concurrently, no significant findings supporting either of the hypotheses would have been found. This highlights the importance of taking into consideration both types of accessibility when studying the effects of regulatory focus, rather than looking at each independently. In reality, studying the interaction of both types of accessibility is probably a more accurate depiction of the conditions that typically exist outside of laboratory settings. Though the current study focused on the interaction between these two types of variability in the context of performance feedback, there is no reason to believe that such interaction effects do not extend to other important psychological phenomenon as well (e.g., goal orientation).

Future Research. If the aforementioned limitations are the primary reason for the general lack of support this study found for its hypotheses, then perhaps the most important question for future research is this: if the proposed relationship between regulatory focus and message framing does exist in relation to performance feedback,

what conditions are necessary to produce the types of effects predicted by such a relationship?

Foremost, a better experimental task must be developed/selected. The criteria for a better task includes: A difficult task that individuals are unlikely to perform well on with out some guidance; a behaviorally-oriented task for which a rich set of specific task and / or motivational feedback statements can be provided in real time, and changes in behaviors and / or effort can be accurately measured in a second task trial. Furthermore, in the ideal study feedback will be tailored to individual performance (i.e., idiographic research design), thereby ensuring the feedback is personally relevant to improving task performance. In addition to identifying an appropriate task, future work may benefit from pilot research. In particular, there is the issue of whether the manipulation of regulatory focus should be embedded in the message frame as is traditionally done, or whether regulatory focus can be manipulated independent of message frame as I did in the current study.

Conclusion

In conclusion, some support was found for the notion that regulatory focus and message framing interact to influence cognitions regarding performance feedback recommendations. However, there were too many non-supportive findings to conclude that self-regulatory focus theory significantly adds to the performance feedback literature. That being said, limitations of the experimental task coupled with issues regarding the manipulations of regulatory focus and message frame may have reduced the likelihood of finding the predicted results.

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APPENDIX A

Regulatory Focus Questionnaire

This set of questions asks you HOW FREQUENTLY specific events actually occur or have occurred in your life. Please indicate your answer to each question by circling the appropriate number below it.

1. Compared to most people, are you typically unable to get what you want out of life?

1	2	3	4	5
never or seldom		sometimes		very often

2. Do you often do well at different things that you try?

1	2	3	4	5
never or seldom		sometimes		very often

3. Growing up, would you ever "cross the line" by doing things that your parents would not tolerate?

1	2	3	4	5
never or seldom		sometimes		very often

4. Not being careful enough has gotten me into trouble at times.

1	2	3	4	5
never or seldom		sometimes		very often

5. How often have you accomplished things that got you "psyched" to work even harder?

1	2	3	4	5
never or seldom		sometimes		very often

6. When it comes to achieving things that are important to me, I find that I don't perform as well as I ideally would like to do.

1	2	3	4	5

never or seldom — sometimes — very often

7. Did you get on your parents' nerves often when you were growing up?

1 2 3 4 5

never or seldom — sometimes — very often

8. I feel like I have made progress toward being successful in my life.

1 2 3 4 5

never or seldom — sometimes — very often

9. How often did you obey rules and regulations that were established by your parents?

1 2 3 4 5

never or seldom — sometimes — very often

10. I have found very few hobbies or activities in my life that capture my interest or motivate me to put effort into them.

1 2 3 4 5

never or seldom — sometimes — very often

11. Growing up, did you ever act in ways that your parents thought were objectionable?

1 2 3 4 5

never or seldom — sometimes — very often

APPENDIX B

Performance Feedback Rating Form

1. Did the performance feedback recommendations seem logical?

   Not at all logical Very logical

   1 2 3 4 5 6 7

2. Did the performance feedback recommendations make sense?

   They did not make very much sense They made a lot of sense

   1 2 3 4 5 6 7

3. Did you believe that the performance feedback recommendations would help you improve your performance?

   I did not believe they would help I fully believed that they would help

   1 2 3 4 5 6 7

   If you did not believe this, please state why.

4. Did you believe that the performance feedback recommendations were generated based on your performance?

   I did not believe this I fully believed this

   1 2 3 4 5 6 7

   If you did not believe this, please state why.

5. Did you believe that your feedback score was an accurate representation of your performance on the puzzle task?

I did not believe this I fully believed this

1 2 3 4 5 6 7

If you did not believe this, please state why.

6. Were you at all skeptical about the credibility of the performance feedback recommendations?

Very skeptical Not at all skeptical

1 2 3 4 5 6 7

If you were skeptical, please state why.

7. Did you understand that your performance feedback recommendations would be generated based on how you performed on the puzzle task?

I did not understand this I fully understood this

1 2 3 4 5 6 7

8. Were the instructions provided by the research administrator clear and easy to understand?

Not at all clear or easy to understand Very clear and easy to understand

1 2 3 4 5 6 7

If you thought the instructions provided were <u>not</u> clear or easy to understand, please state why.

APPENDIX C

Informed Consent Form

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Debriefing for study entitled: "An examination of personality type and task performance under varying incentive conditions"

The study that you have just participated in is meant to examine how performance feedback information and recommendations for improving performance on relevant tasks in the future can most effectively be presented to individuals. There was a deception in this study involving the feedback information you received regarding your performance on the first puzzle set. The score that you were provided was not actually calculated according to the methods that were described to you. In fact, everyone in this study was assigned a score of 163 out of 250. No scores were actually completed for any of the participants in this study. This deception was necessary to ensure that participant's perceptions of the feedback recommendations they received, which were given to participants who chose to complete the additional puzzle set for the opportunity to receive another extra credit point, were not influenced by how well they were told they did on the first puzzle set. Though the information you were provided regarding how long it took for you to complete the puzzles is accurate, we have no way of actually knowing your performance scores because they was not computed.

The principal investigators would like to apologize the use of deception in this study and for any discomfort it may have caused you as a participant. If you believe that you need counseling for any emotional disturbance as a result of you participation in this study, please feel free to contact any of the individuals below, and they will put you in contact with a University counselor.

The data from this study do not contain any individuating information and your right to privacy is guaranteed if the results of this study become public. If you are confused about the use of deception or any other aspect of this study, or would like to see the results of this study once completed, please feel free to contact either of the investigators listed below.

Thank you again for your participation. You may withdraw your data if you desire.

WE ASK THAT YOU DO NOT SHARE THE DETAILS OF THIS STUDY WITH ANYONE, AS THIS MIGHT AFFECT OUR DATA.

Contact Information

Investigator: Jaron Holmes, 257-5062/ holmesj@vt.edu
Investigator: Dr. Neil M. Hauenstein, 231-5716/ nhauen@vt.edu
Chair, HSC: Dr. David W. Harrison, 231-4422/ harriso@vt.edu

Chair, IRB: Dr. David M. Moore, 231-4991/ moored@vt.edu

APPENDIX D

Credibility of Performance Feedback Recommendations

The performance feedback recommendations that you are about to receive have been generated based on your performance on the puzzle tasks. The strategies for improving performance contained in the recommendations that you receive have been tested in several experiments using the same puzzle tasks you are completing in this study. They have been found to be highly effective at improving performance for individuals whose performance on these same puzzle tasks was similar to your own.

APPENDIX E

Performance Feedback Recommendations

Promotion condition

1. Once the puzzle is scrambled, carefully examine the layout of the scrambled pieces before moving them. This will reduce the number of wasted movements.
2. If the image has a lot of objects in it, such as the 1st (Hulk) and 2nd (Toy Story) puzzles you completed in the last set, concentrate more on memorizing the objects at the bottom of the puzzle rather than the top. Once the image is scrambled, begin reassembling the puzzle from the bottom up.
3. If the image only has a few large objects in it, such as the 3rd (Pay It Forward) puzzle you completed in the last set, after memorizing the largest objects first, concentrate on memorizing dark colored areas of the image rather than lighter colored areas. When the puzzle is scrambled, after reassembling the largest objects, concentrate on re-assembling darker colored pieces first, then lighter colored pieces.
4. As you reassemble people, focus on reassembling their body parts (legs, arms, torso, etc…) before their faces.

Prevention condition

1. Once the puzzle is scrambled, don't begin moving the puzzle pieces until you have carefully examined the layout of the scrambled pieces. This will reduce the number of wasted movements.
2. If the image has a lot of objects in it, such as the 1st (Hulk) and 2nd (Toy Story) puzzles you completed in the last set, don't concentrate on memorizing the objects at the top of the puzzle. Instead, concentrate on memorizing the objects at the bottom of the puzzle rather than the top. Once the image is scrambled, begin reassembling the puzzle from the bottom up.
3. If the image only has a few large objects in it, such as the 3rd (Pay It Forward) puzzle you completed in the last set, after memorizing the largest object first, don't concentrate on memorizing lighter colored areas of the image. Instead, focus on memorizing darker colored areas. When the puzzle is scrambled, after reassembling the largest objects, don't concentrate on re-assembling lighter colored pieces first. Focus instead on re-assembling darker colored pieces.
4. As you reassemble people, don’t focus on reassembling their faces first. Instead, focus on reassembling their body parts (legs, arms, torso, etc…) before their faces.

APPENDIX F

Attitudes and Intentions Towards Feedback Recommendations Questionnaire

Please answer the following regarding the performance feedback recommendations:

1. The recommendations for solving the puzzles will be helpful.

   Strongly Disagree Strongly Agree

   1 2 3 4 5 6 7

2. I believe the recommendations provided to me will lead to better performance on the next set of puzzles.

   Strongly Disagree Strongly Agree

   1 2 3 4 5 6 7

3. I feel more confident in my ability to improve my performance on the next puzzle set because of the recommendations I was given.

   Strongly Disagree Strongly Agree

   1 2 3 4 5 6 7

1. I plan to use the performance feedback recommendations I received on the next puzzle set.

   Strongly Disagree Strongly Agree

   1 2 3 4 5 6 7

2. I am very motivated to use the performance feedback recommendations I received on the next puzzle set.

   Strongly Disagree Strongly Agree

   1 2 3 4 5 6 7

APPENDIX G

Recall Ability Rater Guidelines

The following guidelines are for raters as they rate participant's attempts to recall performance feedback recommendations:

1. Directly compare participant's responses to the original performance feedback recommendations that were provided to them.

2. Responses that capture the essential strategy contained in the original performance feedback recommendations constitute a 'hit', while those that do not constitute a 'miss'. Responses upon which you are not sure constitute an 'almost' to be discussed with the other rater.

3. Responses need not mirror exactly the original performance feedback recommendations; however, they should contain the essential strategies that were provided in the recommendations.

   For example, consider the following hypothetical recall response:

   "Pick out several large objects in the image to concentrate on before it's scrambled."

   This would be coded as a 'hit' because it contains the basic strategy of an original performance feedback recommendation.

   Now consider the following hypothetical recall response:

   "Don't get distracted while doing the puzzle".

   Though this would certainly help performance, it is too vague to reflect any of the strategies provided in any of the performance feedback recommendations. This would be coded as a 'miss'.

4. After rating all of the responses for a participant, each rater is to calculate the total number of 'hits' and 'misses' for each participant.

5. As you compare your ratings with the other rater, each rater is to discuss instances in which he or she rated a response as 'almost' with the other rater. If the other rater has rated the response as 'almost', then it will be presented to the principal investigator, who will make a final decision regarding the proper rating of the response in question. If the other rater has marked the same response as either a 'hit' or a 'miss', this will be the final rating of the response in question.

6. As you compare and discuss your ratings with the other rater, each rater is to note instances of disagreement. Each of these responses will then be presented to the

principal investigator, who will then make a final decision regarding the proper rating of the response in question.

7. All items rated as ‘hits’ will then be coded for the degree to which they accurately reflect the wording of the original performance feedback recommendation.

Table 1

Descriptive Statistics for each Condition with Attitudes Toward Feedback, Recommendations Recall, and Recall Ability (N = 221).

	Gain Outcome Orientation (*n* = 112)	Loss Outcome Orientation (*n* = 109)	Promotion Message Frame (*n*=106)	Prevention Message Frame (*n*=115)	Gain-Promotion (*n* =53)	Loss-Prevention (*n* = 56)	Gain-prevention (*n* =59)	Loss-Promotion (*n* =53)
Mean Attitudes Toward Feedback	17.16	16.63	16.89	16.91	17.32	16.8	17.02	16.45
(*SD*)	2.23	2.43	2.4	2.29	2.29	2.42	2.19	2.45
Mean Feedback Recall	1.97	1.98	1.87	2.08	1.83	2.06	2.11	1.90
(*SD*)	1.13	1.17	1.19	1.11	1.22	1.19	1.04	1.17
Mean Recall Ability	33.82	32.46	33.74	32.59	34.60	32.11	33.07	32.84
(*SD*)	6.31	7.42	6.31	7.40	6.17	8.33	6.40	6.38

Table 2

Intercorrelations between Variables for All Participants

Variable	1	2	3	4	5
1. Attitudes Toward Feedback	-				
2. Recall Ability	-0.02	-			
3. Feedback Recall	0.12	0.19**	-		
4. Chronic Promotion	0.00	0.08	-0.16*	-	
5. Chronic Prevention	0.16*	0.06	0.06	0.16*	-

Note. N = 221. Recall Ability = Number of words recalled on word-list; Recommendations Recall = Number of performance feedback recommendations successfully recalled; Chronic Promotion = Composite of promotion items from Regulatory Focus Questionnaire; Chronic Prevention = Composite of prevention items from Regulatory Focus Questionnaire. * $p < 0.05$. ** $p < 0.01$.

Table 3

Rotated component matrix from principal components analysis of items from Attitudes and Intentions scales.

Item from Scale	Component	
	1	2
The strategies for solving the puzzle will be helpful.	.856	.101
The recommendations provided to me will lead to better performance on the next set of puzzles.	.860	.219
I feel more confident in my ability to improve my performance on the next set of puzzles because of the recommendations I was given.	.884	-.039
I plan to use the performance feedback recommendations I received on the next puzzle set.	.474	.809
I am very motivated to use the performance feedback recommendations that I received on the next puzzle set.	.594	.679

Note. The extraction method used was Principal Component Analysis with a Quartimax rotation and Kaiser Normalization.

Table 4

Summary of Analysis of Variance for Outcome Orientation and Message Frame (N=221).

Variable	Type III Sum of Squares	df	Mean Square	F
Attitudes				
Outcome Orientation	16.12	1	16.12	2.95
Message Frame	0.03	1	0.03	0.01
Outcome Orientation x Message Frame	5.91	1	5.91	1.08
Error	1184.50	217	5.46	
Total	64329	221		
Feedback Recall				
Outcome Orientation	0.01	1	0.01	0.01
Feedback Frame	2.48	1	2.48	1.86
Outcome Orientation x Feedback Frame	0.19	1	0.19	0.14
Error	274.16	206	1.33	

Table 5

Summary of Hierarchical Regression Analysis for predicting Attitudes Toward Feedback from Chronic Promotion, Outcome Orientation, and Message Frame (N = 221).

Variable	*B*	*t*	ΔR^2	ΔF	R^2
Step 1			0.01	0.98	0.01
Outcome Orientation	0.03	1.71			
Message Frame	0.12	-0.12			
Chronic Promotion	0.01	0.37			
Step 2			0.01	0.62	0.02
Outcome Orientation X Feedback Frame	0.06	0.84			
Chronic Promotion X Outcome Orientation	0.31	0.61			
Chronic Promotion X Feedback Frame	-0.23	-0.69			
Step 3			0.02*	5.22*	0.05
Chronic Promotion X Outcome Orientation X Feedback Frame	1.18*	2.29			

Note. * $p < .05$.

Table 6

Summary of Hierarchical Regression Analysis for predicting Attitudes from Chronic Prevention, Outcome Orientation, and Message Frame (N =221)

Variable	*B*	*t*	ΔR^2	ΔF	R^2
Step 1			0.04	3.08*	0.04*
Outcome Orientation	0.13	1.93			
Message Frame	-0.02	-0.23			
Chronic Prevention	0.17	2.52*			
Step 2			0.03	2.17	0.07
Outcome Orientation X Feedback Frame	0.058	0.85			
Chronic Prevention X Outcome Orientation	0.69	2.08*			
Chronic Prevention X Feedback Frame	0.59	1.20			
Step 3			0.00	0.02	0.07
Chronic Prevention X Outcome Orientation X Feedback Frame	0.52	0.16			

Note. * $p < .05$.

Table 7

Summary of Hierarchical Regression Analysis for predicting Recommendations Recall from Chronic Promotion, Outcome Orientation, and Message Frame (N = 211)

Variable	*B*	*t*	ΔR^2	ΔF	R^2
Step 1			0.07*	3.82	0.07*
Outcome Orientation	0.04*	3.01			
Message Frame	-0.05	-0.65			
Chronic Promotion	-0.10	-1.21			
Step 2	-0.06*	-2.21			
Outcome Orientation X Feedback Frame			0.01	0.81	0.08
Chronic Promotion X Outcome Orientation	-0.04	-0.51			
Chronic Promotion X Feedback Frame	-0.02	-0.71			
Step 3	-0.03	-1.28			
Chronic Promotion X Outcome Orientation X Feedback Frame	0.02	0.68	0.00	0.46	0.08

Note. * $p < .05$.

Table 8

Summary of Hierarchical Regression Analysis for predicting Recommendations Recall from Chronic Prevention, Outcome Orientation, and Message Frame (N = 211)

Variable	*B*	*t*	ΔR^2	ΔF	R^2
Step 1			0.05*	2.7	0.05*
Recall Ability	0.03*	2.81			
Outcome Orientation	-0.02	-0.21			
Feedback Frame	-0.13	-1.62			
Chronic Prevention	0.02	0.78			
Step 2			0.01	0.64	0.06
Outcome Orientation X Feedback Frame	-0.05	-0.65			
Chronic Prevention X Outcome Orientation	-0.03	-1.15			
Chronic Prevention X Feedback Frame	-0.01	-0.43			
Step 3			0.00	0.51	0.06
Chronic Prevention X Outcome Orientation X Feedback Frame	-0.02	-0.71			

Note. * $p < .05$.

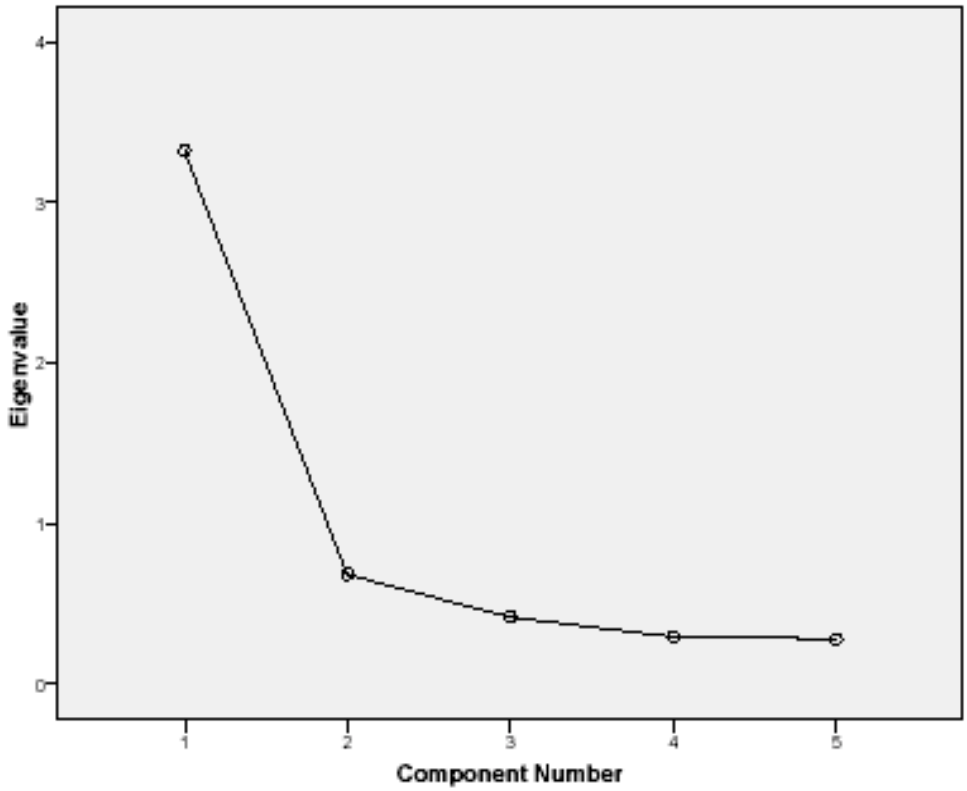

Figure 1. Scree plot from factor analysis of items from attitudes toward feedback and

intentions to use feedback scales.

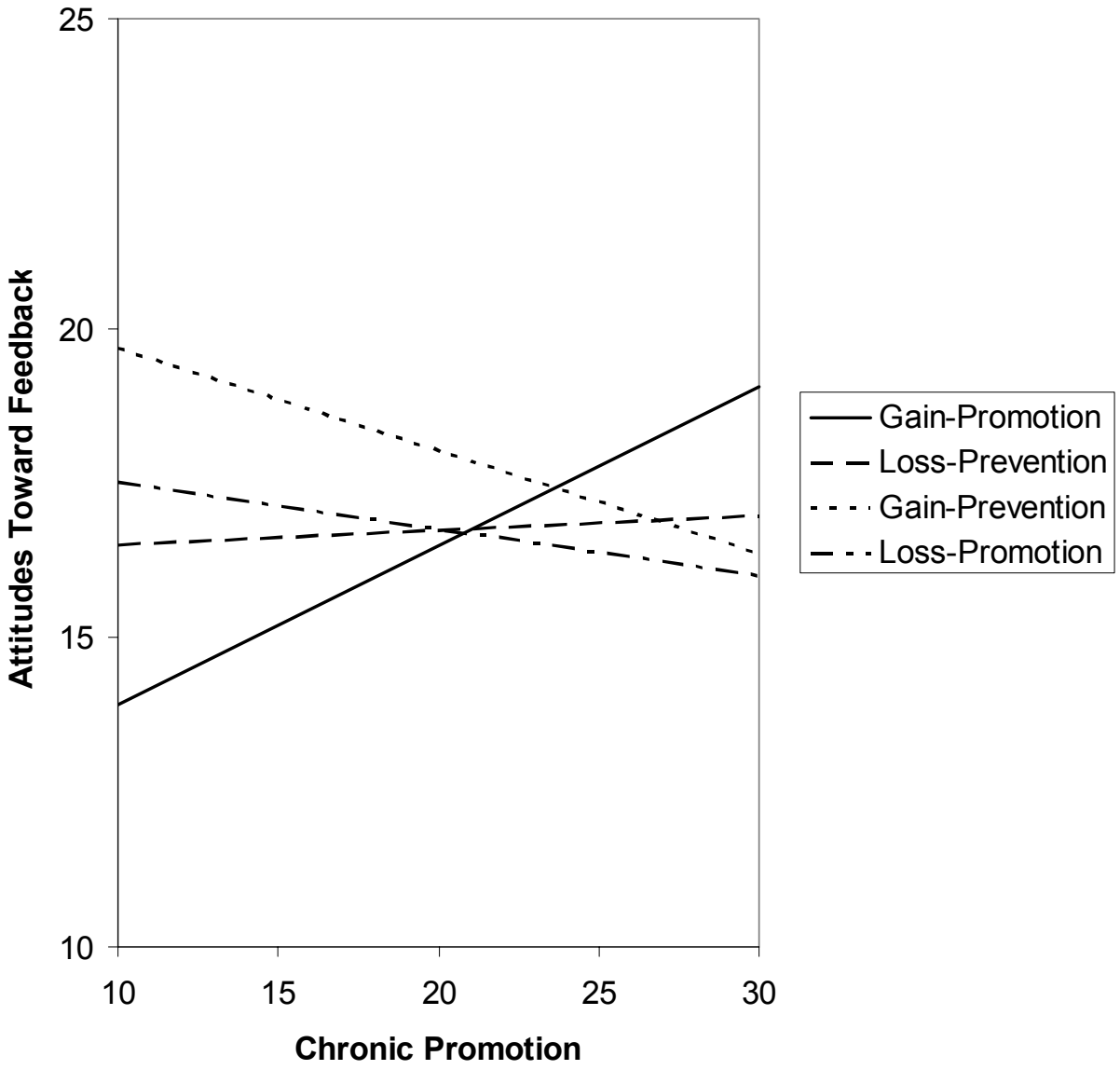

Figure 2. Three-way interaction between Chronic Promotion, Outcome Orientation, and

Message Frame.

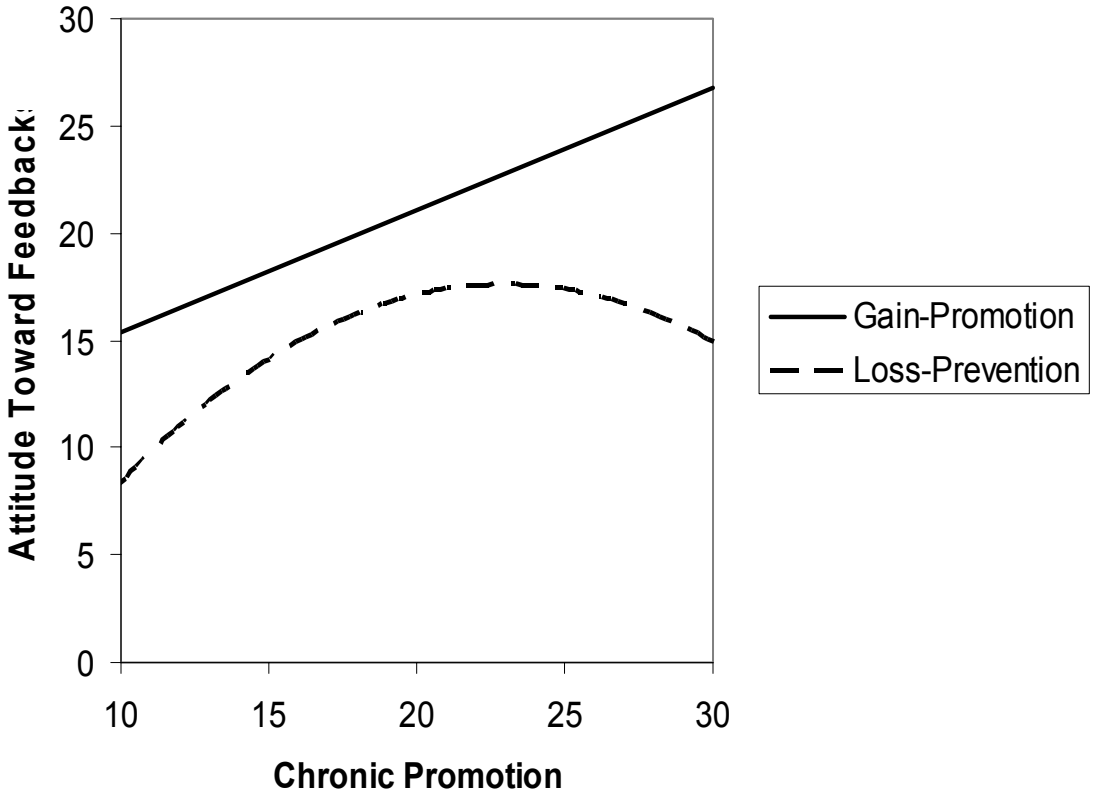

Figure 3. Comparison of relationship between Attitudes and Chronic Promotion for

Gain-Promotion and Loss-Prevention conditions, with curvilinear trend for

Loss-Prevention.

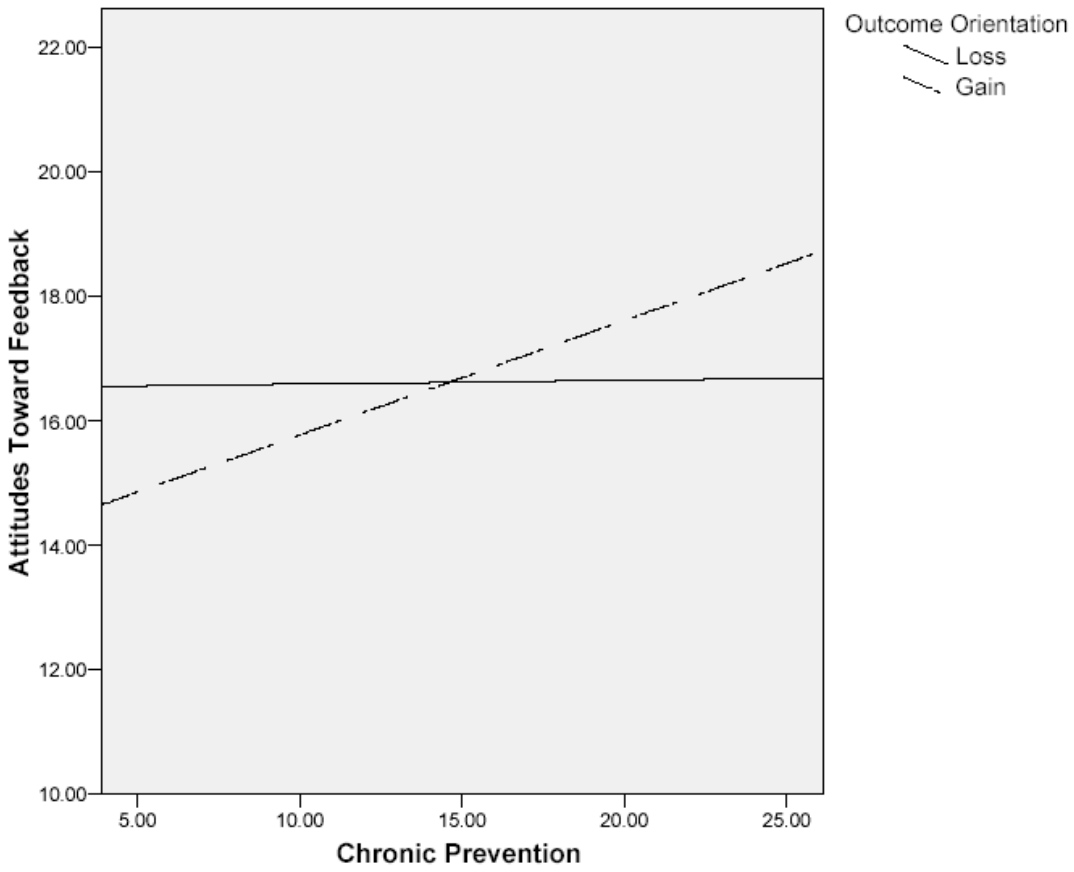

Figure 4. Interaction between Chronic Prevention and Outcome Orientation on Attitudes

Toward Feedback.