

Anticipations and performance: The effect of orientation on goal-oriented behaviour

by

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A thesis submitted to
the Faculty of Graduate and Postdoctoral Affairs
in partial fulfillment of the requirements for the degree of

Master of Arts

in

Psychology

Carleton University
Ottawa, Canada

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Your file Votre référence

ISBN: 978-0-494-93575-0

Our file Notre référence

ISBN: 978-0-494-93575-0

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Abstract

Anticipating both positive and negative outcomes can be more adaptive than simply anticipating the positive, especially in the face of failure. This thesis examined the role orientation plays in the effect of failure feedback on mood, expectations, and performance. In study I, first-year students at Carleton filled out the Orientation to Test Taking Scale (OTT) administered in mass testing (N=1486) to test the reliability and validity. Results indicated the OTT, as a measure of positive, negative, and realistic orientation, had good reliability, convergent validity (using measures of hope and defensive pessimism), and discriminant validity (using measures of impression management and self-deception). Study II (N=113) showed (a) realistically oriented participants more accurately assessed performance prior to feedback; (b) realistic orientation may be adaptive for mood only if the outcome is within the anticipated range of possibilities; and (c) pre-existing orientation may not play a role in performance on ability-based tests.

Acknowledgements

I would like to first and foremost thank my supervisor and ‘life-coach’, Dr Chris Davis, for his role in shaping this study, for his encouragement, support, and seemingly infinite patience, and also for all the advice and guidance he has given me over the past two years. Chris has given me so much advice I had to create a word document just to remember it all. I am grateful that we will get to continue our wonderful working relationship for at least another three years as I begin my PhD this fall.

Thank you to Danay Novoa and Michael Giguere, who were a great help in the early stages of the study, and graciously donated their time to run participants.

I would also like to give special thanks to my committee members Michael Wohl and John Zelinski for their insightful comments and helpful suggestions during my prospectus. They really helped to shape the project into what it is today.

I would also like to extend my heart-felt thanks to the support staff at Carleton University, especially Etelle Bourassa and June Drayton Callender. They are the heart of the program and I could not thank them enough for the support, guidance, and countless email replies they have given me over the past two year.

Last, no acknowledgement is complete without the writer thanking their friends and family. Without such wonderful people in my life I am sure I would not be where I am today. To Dorothy and Sofie, always willing to lend a sympathetic ear or be my personal cheerleaders. To Blair, Kim, and Raelyne for sharing in this rollercoaster of an experience with me, and giving me lots of social support. My parents, brother, and sisters, whose continuing support and love give me the motivation and drive to always try harder. And last, to my wonderful husband Michael who despite not being entirely sure what I do, continues to cheer me toward the finish line.

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Whether one is thinking about what will be on an exam next week, what kind of parent one will be, or whether one should take one job offer over another, it is clear that people spend a lot of time thinking about the future. In fact, some have argued that the ability to consider future possibilities (e.g., our own death) is a defining feature of the species (Leary, 2004). Presumably, humans have developed the ability to think about the future at least in part because such future-oriented thinking allows individuals to anticipate -- and therefore plan and prepare for -- possible eventualities. The ability to anticipate possible outcomes could enhance one's success in a variety of spheres of life (e.g., finding or growing food, protecting one's assets, surviving a harsh climate). In this thesis, I will make the argument that anticipations are important because they help frame one's experiences, form expectations, and guide behaviour (Aspinwall, 2005; Davis & Asliturk, 2011; Kelly, 1955). I will argue that people differ in their tendencies to anticipate future events, and these individual differences have implications for how individuals respond to setbacks.

Anticipations are the mental pictures or imagined scenarios and possibilities that one thinks about when one considers the self in the future. They are akin to the 'possible selves' described by Markus and Nurius (1986) and the 'pre-factual thoughts' described by Sanna (1996). Although anticipations can be vague and fantasy-like (e.g., living "happily ever after"), in this thesis I am particularly interested in those anticipations that people develop in specific contexts that are particularly relevant at a given time (e.g., thinking about post-graduate work as you finish up your coursework). Specifically, the thesis centres on the anticipations that people form as they approach a challenge with an uncertain outcome.

Anticipations, as I define them, are distinct from expectations. Anticipations are a set of distinct possibilities or imagined outcomes that one considers for a particular context. For instance, a soon-to-graduate student might develop a set of anticipations that include the self hunting fruitlessly for a job, moving back in with parents, landing the dream job, putting into

practice what one has learned in school, buying an upscale condominium downtown, and becoming a full-time “sandwich artist” at Subway. Expectations, on the other hand, carry the weight of probability. That is, whereas anticipations represent what *might* come to pass, expectations reflect what one thinks *will* come to pass. Thus, working at Subway is a possibility, but it is not likely. From this perspective, anticipations might be considered a precondition of expectations in the sense that one develops a set of expectations out of the pool of anticipations by weighting anticipations by their perceived likelihood of occurrence. Although expectations clearly play an important role in guiding behaviour, anticipations also play a role in how we prepare for and respond to challenges in our lives.

Theoretical Framework

In developing the theoretical framework for this study, it was important to examine the work of George Kelly in the area of personal constructs. Kelly postulated that people, like scientists, are highly motivated to predict future events (Kelly, 1955). He argued that people formulate constructs in an attempt to turn the chaos of life into something understandable, and hopefully predictable. Kelly (1955) stated that “anticipation is not merely carried on for its own sake; it is carried on so that future reality may be better represented” (p. 49). He went on to argue that our anticipations are based on our constructions of reality, or personal constructs, which act as a lens for how we view the world. This predictability is desired because it gives us a cue regarding how to act in concrete contexts and relationships. According to Personal Construct Theory, the way that a person constructs reality and subsequently anticipates future events will have an effect on his or her psychological reactions.

A set of anticipations can vary along several dimensions, including valence (positivity-negativity, desired - undesired) and complexity (simple-complex, vague-elaborate). Some anticipations get little more than fleeting attention whereas others can be quite elaborate. Whereas a simple anticipation is one-dimensional, an elaborate anticipation is apt to include a

detailed set of contingencies (i.e., if - then scenarios). Pancer, Pratt, Hunsberger, and Gallant (2000) showed that couples expecting the birth of their first child differed in the complexity of their anticipations. The researchers asked couples expecting their first child to describe how parenthood would affect various aspects of their lives (e.g. their relationship as a couple, their social activities, or their work life) and coded these explanations for integrative complexity. They found that expectant mothers with cognitively simple (and generally overly positive) perceptions about the transition to motherhood tended to report more depressive symptoms, lower marital satisfaction, and lower self-esteem post-partum relative to those women with more cognitively complex perceptions. Pancer et al. suggested that those with more complex perceptions are better prepared to cope with the stresses of parenthood because they have anticipated a broader and more elaborate range of possibilities.

To the extent that anticipating future events allows one to prepare for their eventuality, the positivity and negativity of one's anticipations may be particularly important. Anticipating only positive possible outcomes in a given situation may leave one unprepared for negative outcomes. Likewise, anticipating only negative possible outcomes may leave one unprepared for positive outcomes. Current thinking in personal construct theory suggests that whereas it is adaptive to anticipate success, acknowledging negative future possibilities is also important (Butt & Parton, 2005; Sewell, 2003). According to Sewell (2003), individuals who do not give thought to the possibility of experiencing failure or negative outcomes have difficulty when problems arise. If correct, this suggests that people who elaborate a wide range of possibilities -- some positive and some negative -- will be better prepared to deal with setbacks than those who consider only positive possibilities.

In a preliminary test of the adaptive importance of anticipating both positive and negative possibilities, Churchill and Davis (2010) asked women pregnant with their first child the extent to which they think about a range of positive and negative possibilities for life with their baby

(e.g., being isolated from friends after the baby is born, or holding a beautiful healthy baby in your arms). Those women who reported thinking primarily positive thoughts were labelled “positively-oriented”, whereas those who reported thinking predominantly negative thoughts were labelled “negatively-oriented.” Those who frequently considered both positive and negative possibilities were labelled “realistically-oriented.”¹ Following up with these women post-partum, they found that not only did a realistic orientation predict adjustment, but realistic individuals also experienced a decrease in depressive symptoms postpartum whereas positively and negatively oriented women did not. Furthermore, when the transition was accompanied by unexpected stressors, those who had anticipated both positive and negative outcomes continued to experience this decrease in depressive symptoms whereas those with a positive orientation experienced an increase in depressive symptoms.

Oyserman and Markus (1990) have also made the case that ‘possible selves’ are most effective when one’s possible selves are balanced between hoped for selves (e.g. rock-star self) and feared selves (e.g. homeless self). In their research with delinquent adolescents, they asked youth to generate their three most important expected selves, hoped-for selves, and feared selves for the next year. They found that compared to youth with more positive expected selves, youth with few positive expected selves had a greater tendency to “drift” into delinquency. They also state that youth with many positive expected selves but few feared selves may also drift into delinquency. Again, this emphasizes the need for balance between expected hoped-for selves, and feared selves for success.

Implicit in the research on the valence of anticipations is the assumption that orientations are stable over time. It is acknowledged that anticipations may be somewhat fluid. As one approaches a new challenge, new anticipations arise and old anticipations may be revised.

¹ Use of the term “realistic” is not meant to imply that those with this orientation are more grounded in reality or more likely to be accurate, but rather that they possess a construct system that is broad enough to accommodate a wide array of both positive and negative outcomes (Churchill & Davis, 2010).

Research suggests that as people approach a specific challenge, anticipations shift from the abstract (i.e., what they would like to occur) to possibilities that are more probable (i.e., what is more likely to happen) (Trope & Liberman, 2003). Illustrating this, Shepperd, Ouellette, and Fernandez (1996) demonstrated that college students lowered their anticipated post-graduation salary as they came closer to graduation; their predicted salary 4 months before graduation was considerably higher than their predicted salary 2 weeks before graduation. Nevertheless, although anticipations may change over time, research suggests that the valence of one's anticipations for a situation appears to be quite stable. Assessing a range of positively-valenced and negatively-valenced anticipations about life at university among freshman university students, Rainey (2008) demonstrated high test-retest correlations from September to January ($r = .56$ for positive thoughts, $r = .61$ for negative thoughts) suggesting that there is a dispositional quality to anticipations.

The Effect of Anticipations on Expectations

Anticipations likely serve a number of functions. One of the most important functions they serve is that of shaping one's expectations. Research by Hoch (1985) illustrates the effect of anticipations on expectations in a study of students' perceptions of finding a job post-graduation (9 months away). Students were asked either to write down (a) a reason why the target event might occur (positive anticipations), (b) a reason why the target event might not occur (negative anticipations), or (c) one reason each why the event might or might not occur (positive and negative anticipations). After generating these reasons the participants were asked to predict the results of their future job search. Those who generated negative anticipations (whether exclusively or mixed with positive anticipations) gave significantly lowered predictions regarding their success in a future job search compared to the positive anticipation group. In a similar study, Sherman, Skov, Hervitz, and Stock (1981) had subjects explain either hypothetical success or failure on an upcoming anagram task after which they set explicit expectations for the

task. Results showed that participants who had explained hypothetical success expected to do better than those who had explained failure².

There is a great deal of research indicating that expectancies influence performance. Research going back more than three decades indicates that people with (and those led to set) high expectations for success work harder and do better after failure relative to people with (and those led to set) low expectations for success (Brickman & Hendricks, 1975; Feather, 1968). More recently, research on the individual difference construct of optimism (i.e., the general tendency to expect success) also indicates that expectations for success are associated with a variety of benefits such as better psychological health (see Carver & Scheier, Miller, Fulford, 2009 for review), better recovery from surgery (Leedham, Meyerowitz, Muirhead, & Frist, 1995), better immune status (Byrnes et al., 1998; Milam, Richardson, Marks, Kemper & McMutchan, 2004), more active coping with stressors (Solberg Nes & Segerstrom, 2006), and more persistence in mastering difficult tasks (Solberg Nes & Segerstrom, 2006). Aspinwall and Taylor (1992) reported that among freshmen university students, greater optimism was linked to better adjustment to college, less use of avoidant coping, greater use of active coping, and a greater increase in social support seeking in the first two years of university. Thus, positive expectations can have many benefits.

Although there are clear advantages to expecting success, people who have unrealistically high expectations for success often do not fare as well. Because unrealistic optimists downplay their risk of suffering negative outcomes (e.g. pregnancy, heart attack, drinking problems) they appear to be less likely to pay attention to information regarding risk factors for the negative outcomes, and rate such information as less personally relevant. For example, Dillard McCaul, and Klein (2006) asked smokers about their perceived risk of lung cancer, as well as information

² Interestingly, in a condition where subjects were not instructed to come up with expectations, those who first explained a hypothetical failure performed better than all other groups, suggesting that making the individual aware of the possibility of failure without having them form specific failure expectancies can motivate better performance.

on several risk factors for lung cancer (e.g., number of years one has smoked, or number of cigarettes smoked per day). The researchers then calculated each subject's relative risk of developing lung cancer and compared it to the participant's perceived risk. Compared to smokers who were accurate or pessimistically biased, those who were unrealistically optimistic³ were more likely to believe their chance of developing lung cancer as unrelated to their behaviour (i.e., they were more likely to agree with statements such as, "Lung cancer depends mostly on genes"). Unrealistically optimistic participants were also less likely to plan to quit smoking, suggesting that unrealistic optimism can be harmful.

Other research shows that people who imagine success without also having strategies for achieving success (i.e., fantasizers) tend to perform less well than those who strategize for success (Oettingen & Mayer, 2002). For instance, Oettingen and Wadden (1991) had women about to start a diet program set expectations about their weight loss goals and their likelihood of achieving that goal. They also asked each woman to complete the ending to four hypothetical weight- and food-related fantasies (e.g., "Tonight you have plans to go out with an old friend whom you have not seen in about a year. As you wait for your friend to arrive you imagine..."). Oettingen and Wadden found that women who set high expectations lost more weight than those with low expectations, but they also found that women who completed the hypothetical situations with overly positive outcomes actually were less successful losing weight compared to those who had less positive fantasies. The results of several related studies by Oettingen and colleagues yield similar results suggesting that by engaging in extremely positive fantasies without acknowledging the challenges one is apt to face leads to less persistence and less success meeting goals (Oettingen & Mayer, 2002). Similar to the weight loss study, Oettingen, Losert, Wood, Kazak, and Nathanson (1995) had children with chronic asthma and gastrointestinal

³ "Unrealistic optimism" is defined as the incorrect perception that one's odds of experiencing problems are lower than that of the general population (Dillard, Midboe, & Klein, 2009).

disease complete twelve hypothetical scenarios related to health and achievement as well as set expectations regarding their health. Again they found that children who set positive expectations recovered better than children who set low expectations, but children who had extremely positive fantasies subsequently experienced more symptoms and took more medication compared to those who had more modest or negative fantasies. This same pattern of results also was found in similar studies for outcomes such as job achievement (i.e. high expectations lead to more job success, however, positive fantasies had an inverse relationship to job success); dating (i.e. individuals who had positive expectancies were more like to end up dating a “crush”, whereas positive fantasizers were less likely to be involved with their “crush”) and in recovery from acute illnesses (i.e. in children with cancer, positive fantasies were associated with a less favourable recovery rate).

In sum, the research evidence suggests that anticipating positive outcomes (as opposed to negative outcomes) may lead to higher expectations, but expecting success without considering how one will achieve success or considering how one will deal with setbacks often leads to a failure to meet those expectations. To avoid setting unrealistically optimistic expectations, it may be important to consider the possibility of negative outcomes. Indeed, prior research on positive and negative anticipations indicates that a person’s set of anticipations typically contain a mix of both positive and negative anticipations for any given situation. In their study of first time expectant mothers, Churchill and Davis (2010) found that the correlation of the frequency of positive anticipations with the frequency of negative anticipations was approximately zero ($r = .05$). Likewise, Rainey’s (2008) study of students’ anticipations for life at university indicated that the frequency of positive anticipations was *positively* correlated with the frequency of negative anticipations ($r = .36$), indicating that many people consider a range of both positive and negative anticipations. Therefore, although it may be the case that people with high expectations have considered positive possibilities and those with low expectations have

considered negative possibilities, high expectations need not imply that one has not also considered negative possibilities, and low expectations need not imply that one has not also considered positive possibilities. People who consider a range of positive and negative possible outcomes (i.e., those who are realistically oriented) may be just as optimistic of success as those who consider predominantly positive outcomes. However, unlike those who tend not to consider negative possibilities, those who are realistic are likely better prepared when things do not go as expected.

Other strands of research also suggest that failure to consider negative possible outcomes may be hazardous. Perloff (1983) reviewed several areas related to the belief of control, and found that when people underestimate their own vulnerability to negative events, they have more difficulty adjusting should that negative event happen. Chang and Sanna (2003; see also Tennen & Affleck, 1987) have suggested that to the extent that optimists do not believe things will go wrong, they may be particularly vulnerable when things go wrong in a big way. Thus, converging lines of research suggest that anticipating both positive and negative outcomes creates a more complex view of future events and should be more adaptive in the long run. Being aware of possible future challenges can not only lead individuals to create strategies beforehand, but help them develop alternate routes to their goals when issues do arise.

To assess the effect of considering both positive and negative possibilities on expectations and performance, Asliturk (2009) recruited positively oriented and realistically oriented students to participate in an experiment where they were randomly assigned to consider positive outcomes or a mix of positive and negative possible outcomes for a forthcoming test of mental ability. Before performing their test, the researchers assessed mood and expectations. After the test, participants were asked to estimate their performance. Asliturk found that both those who were positively oriented and those instructed to imagine exclusively positive outcomes set higher expectations before the test, but only those positively oriented participants

instructed to only think about success failed to recognize when they had done poorly. In contrast, those instructed to imagine both positive and negative possible outcomes recognized when their performance did not match their expectations. This result was found both for post-performance self-assessments and for mood.

Although Asliturk's (2009) study indicates that realistically oriented people (and those instructed to imagine both success and failure) set lower expectations than positively oriented people (and those instructed to imagine only success), the groups did not differ on actual performance. The purpose of this thesis is to examine the effect that failure feedback has on subsequent performance for those who are balanced (i.e., realistic) in their anticipations, those who are positively-biased in their anticipations, and those who are negatively-biased in their anticipations. Like Asliturk's study, participants will be randomly assigned to prepare for the tests by either imagining success or imagining both success and failure. In this thesis, I will test the proposition that because people with a realistic orientation consider both positive and negative outcomes they will be more resilient and thus have a less impaired performance when faced with adversity. The main interest concerns how students with a realistic orientation (relative to those with a positive or negative orientation) respond to failure feedback on a test of mental abilities. Before conducting such a study, however, it is necessary to validate the questionnaire used to assess orientation to test-taking. Study I therefore is a validation study whereas Study II is the central study of the thesis.

Study I

Because anticipations are context-specific, it is important to develop and validate a new measure of orientations for each new context. For his study on the effect of positive and realistic orientations on test performance, Asliturk (2009) used a prior measure of orientation to university. Since orientations to university may differ from orientations to test-taking, I developed a new measure specific to the test-taking context. To develop the questionnaire, I

generated a list of 15 thoughts I believed students might have prior to taking a difficult test. Two research assistants also read over the items to ensure face validity. Of these 15 thought items, eight reflected thoughts associated with doing well (e.g., “Feeling prepared for the test”) and seven reflected thoughts associated with doing poorly (e.g., “Looking at the questions on the test and feeling overwhelmed”). The 15 items were then read over by another graduate student and undergraduate student to ensure face validity.

To validate the new orientation to test-taking (OTT) instrument, the scale was administered to students from mass-testing along with a measure of dispositional hope (Snyder et al., 1996), defensive pessimism (Norem, 2000), and impression management (Paulhus, 1991). The first two constructs were selected because they are conceptually similar to realistic orientation and thus can be used for convergent validity; impression management is included as a measure of potential bias, and is included to test the extent to which the OTT is contaminated with the tendency to present an overly positive image of the self.

People who are realistic in their orientation to future events have been described as “hoping for the best while preparing for the worst” (Churchill & Davis, 2010). To the extent that this is correct, those who score as realistic on the OTT should score as hopeful on Snyder et al.’s hope scale as those who are positively oriented, and higher than those who are negatively oriented.

The concept of hope includes two aspects: Agency and Pathway (Snyder et al. 1996). The agency component refers to the extent to which one is motivated to achieve one’s goals whereas the pathway component refers to the extent to which one has considered how one will achieve one’s goals. According to Snyder, people with hope are those who possess both agency and pathways. Based on research it appears that, compared to individuals who are “low hoppers,” individuals who are “high hoppers” are not only better at achieving their goals, but are also more resilient and persistent when encountering adversity (Snyder, 1994, 2002). According to Snyder

et al. (1996), people who are hopeful analyze agency and pathways when goal setting which generally leads to the perception of higher probability of goal attainment, and a focus on success rather than failure. For low hope individuals, on the other hand, lack of agency and pathways in goal setting generally leads to perceptions of low probability of goal attainment, and a focus on failure rather than success (Snyder et al., 1996). Sharing similar characteristics to hope, a realistic orientation in essence involves agency and pathways in the goal setting process. Given the similarities between the concept of hope and realistic orientation, I hypothesize that realists will score higher in agency and pathways than those negative in orientation. Relative to positively-oriented individuals who maintain a positive focus and thus are hopeful when setting expectations for future events, I hypothesize that individuals realistic in their orientation will score lower in agency but higher in pathways.

The realistic orientation also has much in common with defensive pessimism. Defensive pessimism is defined as “a cognitive strategy in which individuals set low expectations for an upcoming performance, despite having done well in similar situations in the past” (Norem, 2000, p. 77). According to the original formulation of the construct, defensive pessimists prepare for future challenges by imagining failure, but then use this possibility of failure to motivate performance. Although a strategy that involves heightened anxiety and lowered expectations may lead people to believe a defensive pessimist would perform poorly (as they do themselves), Norem and colleagues have demonstrated that defensive pessimists perform quite well (Norem & Cantor, 1986; Spencer & Norem 1996).

More recently, Norem (2000; Norem & Smith, 2006) has suggested that defensive pessimism has two components: a tendency to set low expectations, and a tendency to reflect on a wide range of possible outcomes. Recent research suggests that the latter component is the aspect of defensive pessimism that predicts successful performance. Specifically, Gasper, Lozinski, and Smith LeBeau (2009) found that reflexivity counteracts the detrimental effects of

pessimism by encouraging not only planning, but also the pursuit of those goals. Their research further supported the notion that reflection helps defensive pessimists by increasing goal performance, promoting effort, raising initial expectations, and buffering the anticipated sting of failure.

What distinguishes the realistic orientation from defensive pessimism is that where those who possess a realistic orientation also reflect extensively on possible outcomes, unlike a defensive pessimist, they are not motivated by anxiety but merely motivated to prepare for the unknown. Thus this process is not pessimistic, because these individuals do not expect the worst, they simply acknowledge that things can go wrong and they are not immune to this (Wong, 2006). Based on this, it is anticipated that those who are realistic will score higher than both positively and negatively oriented people on the reflection aspect of defensive pessimism, and lower than negatively oriented people on the pessimism aspect.

Desirable responding as measured by the Balanced Inventory of Desirable Responding has two subscales: impression management and self-deceptive enhancement (Paulhus, 2002). Impression management refers to the motivation to present oneself in a positive light by exaggerating one's virtue and minimizing or denying one's faults. Individuals who score high on this scale have a desire to appear morally good and consequently tend to under-report undesirable behaviours (e.g. engaging in binge drinking) and over-report desirable behaviours (e.g. helping the less fortunate). Because imagining failure may be construed as a sign of personal weakness, I hypothesize that negatively oriented and realistically oriented people will tend to score low on measures of impression management. Positively oriented people are more likely to score high on impression management. Self-deceptive enhancement as outlined by Paulhus (2002) focuses on exaggeration of or overconfidence in one's personal attributes. Individuals who score high on this subscale also tend to over-report desirable traits and behaviours. However, these individuals differ from impression managers in that they believe in

their unrealistically positive self-depictions. Similarly to impression management, I hypothesize that negatively oriented and realistically oriented people will tend to score low on self-deceptive enhancement whereas positively oriented people are more likely to score high.

Methods

Participants

As part of the mass testing package of surveys, first year and second year students (N = 1486; 70.5% female) completed the Orientation to Test-Taking Scale (OTT), Hope Scale, Balanced Inventory of Desirable Responding, and the Defensive Pessimism Questionnaire. From this pool of participants, participants who scored as realistically-oriented, positively-oriented, or negatively-oriented ($n = 504$; 76% female) were included in the validation study.

Procedures

Participants completed the mass-testing package of surveys online in September or early October, 2010. They received credit towards their grade in the first or second year course for completing the survey package. The questionnaires were presented in a randomized order.

Measures

Orientation to Test Taking Questionnaire (OTT): The OTT asked students to rate how frequently they think about each of 15 possibilities in the days leading up to a major test. Of the 15 thoughts, seven concerned negative or undesirable possibilities (e.g., “what if you draw a complete blank”) and eight concerned positive or desired possibilities (e.g., “getting a good grade on the test”). Each item was rated by subject pool participants on a 7 point Likert rating scale from 1 (not at all) to 7 (very frequently). It was anticipated that the items that made up the orientation to test taking scale would factor along two dimensions: positive anticipations, and negative anticipations. A principal component analysis of the ratings by all who completed the questionnaire in the subject pool (N = 1486) was conducted on the 15 items, and the scree plot of

the eigenvalues suggested that the data best fit a two factor model (eigenvalues > 2.23, representing 51.0% of the common variance). Following Varimax rotation, two factors were identified. The first factor included all seven items reflecting negative/undesired anticipations; the second factor included seven of the eight items intended to reflect positive/desired anticipations (See Table 1). In order for an item to be retained it had to meet four criteria 1) loading on its factor greater than .32 (Tabachnick and Fidell, 2007), 2) be theoretically related to the other items in the factor, 3) must improve the reliability (alpha) of the factor, and 4) must not load substantially on two factors. One item (“Whether you have studied enough to do well”) loaded substantially on both factors and so was not included in either. Based on these analyses, a positive thoughts subscale was computed as an average of the seven positive/desired items ($M = 4.96$, $SD = 1.50$, $\alpha = .71$), and a negative thoughts subscale was computed as an average of the seven negative/undesired items ($M = 4.97$, $SD = 1.56$, $\alpha = .89$). The two dimensions were correlated modestly and positively ($r = .31$, $p < .01$).

As realistic orientation is defined as the tendency to think frequently about both positive and negative possibilities, the realistically oriented group was created by selecting participants who scored in the top third of the distribution on the positive and negative thoughts subscales of the OTT ($n = 276$). The positively oriented group was created by selecting individuals who scored in the top third of the distribution on the positive thoughts subscale and in the bottom third of the distribution of negative thoughts ($n = 134$). Lastly, the negatively oriented group was created by selecting individuals who scored in the top third of the distribution on the negative thoughts subscale and the bottom third of the distribution on positive thoughts subscale ($n = 94$).

Table 1

Factor structure and item loadings of the OTT

In the days or hours leading up to an important test, people have different thoughts about the test. As you get ready to take a test, how often do you think about the following possibilities.	Components	
	1	2
The test being much harder than you anticipated	.814	.101
There being too much material to understand; there is no way to know it all	.803	-.040
The possibility that the questions on the test will be too hard	.791	.179
The possibility that the test includes questions that you did not anticipate	.746	.159
Getting a disappointing grade on the test	.732	.164
Drawing a complete blank when you see the questions	.731	-.029
Whether or not you are capable of doing well	.729	.196
How good it will feel to do well on the test	.053	.713
The test being an opportunity to show how well you have mastered the material	-.147	.708
How your grade on the test will help you achieve your goals for the class	.329	.631
Getting a good grade on the test	.303	.618
The kinds of questions you might see on the test	.295	.573
Whether you have studied enough to do well	.504	.523
The possibility that you will fly through all the questions with ease	-.195	.505
How easy the test is going to be	.258	.331

Note: Items are listed in order of magnitude of loading. Loading values are based on varimax rotation of a two-component principal components analysis. N = 1486.

Hope Scale Questionnaire: The Hope Scale (Snyder et al., 1996) contained eight statements, each rated using a Likert scale ranging from 1 (definitely false) to 8 (definitely true). Four items assess Pathways (e.g., “There are lots of ways around any problem”) and four items assess Agency (e.g., “I meet the goals I set for myself”). Based on the mass testing sample of N = 1458, the eight items were added to yield a score for Hope ($M = 49.14$, $SD = 7.63$, $\alpha =$

.83). I also obtained a score for the four item subscales of agency ($M = 24.63$, $SD = 4.48$, $\alpha = .84$), and pathways ($M = 24.49$, $SD = 4.16$, $\alpha = .78$). This instrument is the standard instrument in the field for assessing hope and has demonstrated validity and reliability in prior research (Curry, Ruby, Rehm, Snyder, & Cook, 1997; Snyder et al., 1996, Snyder, Shorey, Cheavens, Pulvers, Adams & Wiklund, 2002). For instance, Snyder et al. (1996) found that hope was moderately and significantly correlated with optimism (LOT-R, $r = .60$ & $r = .50$), generalized expectancy for success (GESS, $r = .55$ & $r = .54$), self-esteem (Rosenberg scale of self-esteem, $r = .58$), depression (Beck Depression inventory, $r = -.42$), and hopelessness (hopelessness scale, $r = -.51$). When entered into a regression analysis predicting problem focused coping, hope predicted significant variance above and beyond these other variables. The scale has been validated and used with several student samples (Curry et al., 1997; Snyder et al., 1996; Snyder et al, 2002). The mean, SD, and alphas obtained in the current sample are comparable to those reported by others (e.g., Snyder et al, 2002).

Defensive Pessimism Questionnaire: Since defensive pessimism is defined as “a cognitive strategy in which individuals set low expectations for an upcoming performance, despite having done well in similar situations in the past” (Norem, 2000 p. 77), to qualify as a defensive pessimist one must fulfill two criteria: adopt the strategy and have performed well in similar situations in the past. One item on the DPQ (“I’ve generally done pretty well in academic situations in the past”) is used to assess the second criterion, with those scoring at least 4 on the seven point Likert scale (where 1 = not at all true of me and 7 = very true of me) meeting the criterion. The first criterion is met by scoring high on the 12 remaining items assessing the strategy of defensive pessimists. Norem continues to use a single defensive pessimism score by computing the sum total of the pessimism and reflectivity items. In addition, Norem also calculates separate pessimism and reflectivity scores to further explore the role of each construct. Validity for the defensive pessimism construct (based on total scores) has been established with

research indicating that those who are defensive pessimists tending to score high on measures of neuroticism, fear of negative evaluation, rumination and imposter syndrome, and tending to score low on measures of optimism, extraversion, and agreeableness (for a review, see Norem, 2000).

As a number of studies have suggested that two distinct factors underlie defensive pessimism: a tendency to set low expectations (referred to as pessimism) and a tendency to reflect on a variety of possible scenarios (Gasper, Lozinski, & LeBeau 2009; Norem & Smith, 2006). I calculated a Reflection score (8 items) and a Pessimism score (4 items) and consistent with these studies, the two subscales had acceptable reliability coefficients (alphas = .69 for reflection and .65 for pessimism) and were moderately correlated ($r = .37, p < .001$).

The Balanced Inventory of Desirable Responding: BIDR-6 has two distinct subscales: impression management (IM) and self-deceptive enhancement (SDE). Impression management reflects an intentional or deliberate tendency to self-attribute saintly or virtuous characteristics and deny socially deviant impulses or behaviours (e.g., “I always pick up my litter on the street”). In contrast, self-deceptive enhancement reflects a tendency to exaggerate (unwittingly) desirable qualities (e.g., “my first impressions always turn out to be right”; Paulhus, 1998). IM and SDE are each measured with 20 statements, each rated by the responder on seven point Likert scale ranging from 1 (not true) to 7 (very true). To calculate an IM or SDE score, one counts the number of extreme positive responses (i.e., 6 or 7) for items reflecting a desirable quality such as “I always pick up my litter on the street”, and extreme negative responses (i.e., 1 or 2) for items reflecting an undesirable quality, such as “I sometimes tell lies if I have to”). In the present study mean IM score was $M = 5.85$ ($SD = 3.76$) and the alpha was .79 which is comparable to what others have found for student samples (Paulhus, 1991; Thake, 2011). The mean SDE score was $M = 5.33$ ($SD = 3.37$) and the alpha was .80. The IM subscale of the BIDR

has been found to correlate highly with scales developed to detect attempts by participants to present themselves in a favourable light (e.g., MMPI Lie scale, EPI Lie scale).

Results

The means and standard deviations of all measures are presented in Table 2. Six separate ANOVA's were conducted to determine the effect of group orientation on agency, pathways, pessimism, reflection, impression management, and self-deception. Because on occasion gender differences have been reported on these outcomes, gender was also entered into the analysis. Gender differences will be discussed where applicable. The first ANOVA analyzing the effect of group orientation on agency (subscale of the Hope Scale) revealed a main effect of group orientation on agency scores, $F(2, 500) = 40.51, p < .001$. Post hoc analyses using the Dunnett procedure (in which all group means are compared to a single comparison group) indicated that the mean score for agency for both positive orientation ($M = 26.80, SD = 3.88$) and negative orientation ($M = 21.97, SD = 5.73$) differed from those with a realistic orientation ($M = 25.42, SD = 4.03$). It should be noted, however, that the effect size for the difference between positively oriented and realistically oriented groups was rather small ($d = .35$), whereas the effect size for the difference between those who are negatively oriented and those who are realistically oriented was large ($d = .70$). There was also a main effect of gender, $F(1, 500) = 17.35, p < .001$, where women ($M = 24.96, SD = 4.28$) scored higher on agency than men ($M = 23.91, SD = 4.82, d = .23$). Last, there was also a gender by orientation interaction, $F(2, 500) = 6.07, p < .005$. Closer analyses of the interaction (see Figure 1) indicates that realistically oriented women ($M = 25.68$) scored marginally higher on agency than realistically oriented men ($M = 24.56; F(1, 500) = 2.98, p = .09$). Similarly, of those who are negatively oriented women ($M = 22.68$) scored significantly higher on agency compared to men ($M = 17.17; F(1, 500) = 17.40, p < .001$). However, no gender differences were present for those who were positively oriented ($M_{men} = 26.64, M_{women} = 26.90; F(1, 500) = 2.16, p = .73$).

Table 2

Means and Standard Deviations of Measures Used

	Positive Orientation		Negative Orientation		Realistic Orientation	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Hope						
<i>Agency</i>	26.80	3.88	21.97	5.73	25.42	4.03
<i>Pathways</i>	26.42	4.07	22.24	4.89	24.61	3.99
Desirable Responding						
<i>Impression Management</i>	6.62	4.04	5.14	3.43	5.52	3.53
<i>Self-Deceptive Enhancement</i>	6.88	3.46	3.76	2.55	4.81	3.12
Defensive Pessimism						
<i>Pessimism</i>	2.98	1.08	4.91	0.98	4.84	1.00
<i>Reflexivity</i>	4.46	0.74	4.40	0.88	5.20	0.87

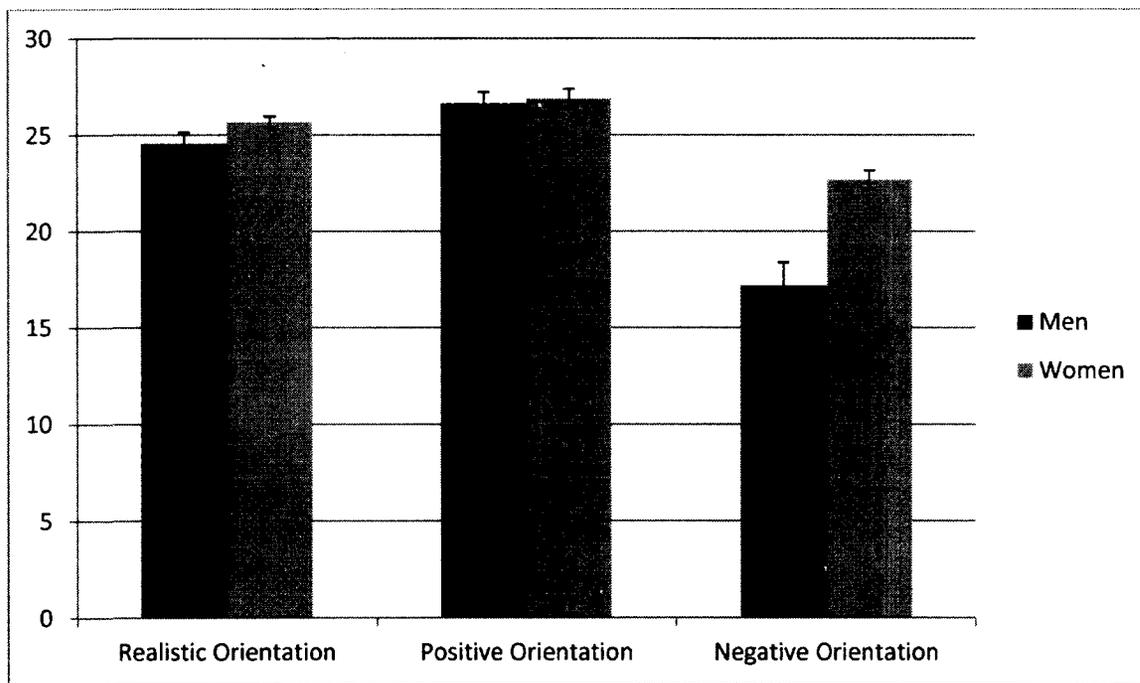


Figure 1. Effect of Gender and Orientation on Agency

The second ANOVA analyzed the effect of group orientation on the pathways subscale of the Hope Scale. It revealed a main effect of group orientation on pathway scores, $F(2, 494) = 27.61, p < .0001$. Post hoc analyses using the Dunnett procedure indicated a similar pattern of results: the mean score for pathway for both the positively oriented ($M = 26.41, SD = 4.06; d = .43$) and the negatively oriented groups ($M = 22.24, SD = 4.89; d = .56$) differed from the mean for those with a realistic orientation ($M = 24.71, SD = 3.88$).

The third ANOVA analyzed the effect of group orientation on the impression management subscale of the BIDR. It revealed a main effect of group orientation on impression management, $F(2, 502) = 6.62, p < .005$. Post hoc analyses using the Dunnett procedure indicated that the mean score for impression management for the positively oriented group ($M = 6.63, SD = 4.02; d = .33$), but not the negatively oriented group ($M = 5.13, SD = 3.42; d = .08$) differed significantly from the realistic orientation group ($M = 5.40, SD = 3.39$).

The fourth ANOVA analyzed the effect of group orientation on the self-deception subscale of the BIDR. It revealed a main effect of group orientation on self-deception, $F(2, 502) = 31.19, p < .001$. Post hoc analyses using the Dunnett procedure indicated that the mean score on self-deception for the realistically oriented group ($M = 4.80, SD = 3.21$) differed significantly from both the positively oriented group ($M = 6.90, SD = 3.45; d = .63$) and the negatively orientated group ($M = 3.76, SD = 2.55; d = .36$).

The fifth ANOVA analyzed the effect group orientation had on the pessimism subscale of the DPQ. This analysis revealed a main effect of group orientation on pessimism, $F(2, 379) = 123.48, p < .001$. Post hoc analyses using the Dunnett procedure indicated that the mean score for pessimism for positive orientation ($M = 2.98, SD = 1.08; d = 1.65$) differed from those with a realistic orientation ($M = 4.71, SD = 1.01$). Negative orientation ($M = 4.91, SD = .98; d = .20$) and realistic orientation did not differ.

The last ANOVA analyzed the effect of group orientation on the reflection subscale of the DPQ. This revealed a main effect of group orientation on reflection, $F(2, 376) = 34.37, p < .001$. Post hoc analyses using the Dunnett procedure indicated that the mean score for reflection for both positive orientation ($M = 4.46, SD = .74; d = .86$) and negative orientation ($M = 4.40, SD = .88; d = .86$) significantly differed from the realistic orientation ($M = 5.12, SD = .80$).

Discussion

This study was designed to develop a measure of realistic orientation to test taking, and to assess its validity. Based on past research, I expected the items to load on two dimensions: a set of positive anticipations regarding test taking, and a set of negative anticipations regarding test taking. Principal component analysis indicated that the items reflected these two dimensions. Unit weighting the positive anticipation items and the negative anticipations yielded two normally distributed variables that were modestly (positively) correlated. Consistent with prior research, I identified people reporting frequently thinking of both positive and negative anticipations as realistically oriented, those thinking frequently about positive anticipations but infrequently about negative anticipations as positively oriented, and those thinking frequently about negative anticipations but infrequently about positive anticipations as negatively oriented. Excluded from these groups were those who reported infrequently thinking about positive and negative possibilities, and those who were around the average.

To validate these groupings, I assessed the extent to which the groups differed on a measure of hope, defensive pessimism, and impression management response style. The analyses with impression management indicated that individuals with a positive orientation are most susceptible to social desirability. This may indicate that positively oriented individuals may be reluctant to admit to negative thoughts, perhaps interpreting them as a sign of weakness. Those who are realistic in orientation seem to be more modest in their perceptions of self. They scored significantly lower on the measure of IM than positively oriented people. While acknowledging strengths, those who are realistic are less likely to feel the desire to appear “perfect”. Negatively oriented participants score’s on IM were lower than positively oriented participants but did not differ significantly from realistically oriented participants. Positively oriented participants also scored significantly higher than realistically and negatively oriented participants on self-deceptive enhancement. This indicates that those who are positively oriented are more likely to

be dishonest with themselves regarding their negative attributes, or poor performances compared to those who are realistically or negative oriented. As expected, those with a realistic orientation to test taking scored higher than negatively oriented people on both dimensions of hope and higher than both positively- and negatively-oriented people on the reflection aspect of defensive pessimism. This confirms that those who are realistic are both hopeful and reflective.

Surprisingly, they also scored higher on the pessimism aspect of defensive pessimism than positively oriented participants. This suggests that at the same time that they are hopeful, they also tend to set lower expectations for success. It should be noted that like the negatively oriented participants, although their pessimism scores are higher than positively oriented participants, these are not people expecting doom. On the 7-point Likert scale, their group mean was just above the midpoint of the scale (4.7; 4.9 for negatively oriented participants). Rather, they regard failure a distinct possibility.

In line with my hypothesis, my analysis indicates that those with a realistic orientation scored lower on agency than those with a positive orientation. However, counter to my hypotheses, my analyses also indicate that those with a realistic orientation score somewhat lower on pathways than positively oriented individuals. The difference between these groups on agency may be due to the possibility that positively oriented people have more of a “can do” attitude than do realistically oriented people. Because they don’t consider possible roadblocks they are also more likely to perceive any goal as achievable and therefore be likely to score higher on agency. Realistically oriented individuals acknowledge possible setbacks and adjust their perceived ability to achieve their goals based on this. It is surprising, however, that those who are positively oriented scored higher on pathways than those who are realistically oriented. Based on the higher impression management scores, it is conceivable that those who are positively oriented simply perceive themselves as being more capable of finding alternative means of achieving goals when this may not actually be the case in practice.

Despite some unexpected group differences, generally the groups differed as expected indicating that those who have a realistic orientation are more hopeful than negatively oriented people, and more reflective than positively oriented people. Thus, some validity has been established for this measure of realistic orientation.

Study II

Prior research by Churchill and Davis (2010) indicates that people with a realistic orientation are better able to adjust to unexpected setbacks than people with a positive orientation. Asliturk's (2009) research suggests that people with a realistic orientation or those instructed to prepare for the challenge by adopting a realistic strategy may be better able to handle setbacks because they set lower expectations and better recognize the early signs that things are not going as planned relative to positively oriented individuals. Following up on these studies, the purpose of this study is to first replicate Asliturk's findings, and second extend his findings by examining whether the early recognition that things are not going well influences subsequent performance and mood. Faced with unexpected failure, positively oriented and those instructed to prepare for the prior task by only imagining success may lose focus whereas those with a realistic orientation might be expected to redouble efforts.

Showing differences in mood and performance between those with a realistic orientation and those with a positive orientation suggests that the orientation plays a causal role, but such an approach cannot rule out alternative explanations. That is, given the similarities between orientations and defensive pessimism or trait optimism, one could reinterpret such findings as attributable to these traits. Therefore, in addition to measuring orientation, I will attempt to manipulate the preparatory strategies presumably used by those with a positive orientation (i.e., only consider successful outcomes) and those used by people with a realistic orientation (i.e., imagine both successful and unsuccessful outcomes).

To test the hypothesis that those with a realistic orientation and those instructed to prepare by imagining a range of positive and negative possible outcomes will respond to an unexpected setback with increased effort and less mood disturbance than positively oriented people, an experiment will be conducted in which participants will complete two tests of mental ability consecutively. Following the first test, participants will be given failure feedback. They

will then complete the second test. My main interest is in assessing change in mood and performance following the failure feedback as a function of orientation and preparation strategy.

An additional aspect of the proposed study is the inclusion of negatively oriented participants. Asliturk (2009) only recruited positively and realistically oriented students. It is hypothesized that relative to realistically oriented students, following negative feedback those with a negative orientation will experience decrements in mood, however, they will perform as well as realistically oriented participants and those instructed to anticipate success and failure on the second test.

Hypotheses:

- 1) I hypothesize that those with a realistic orientation or a negative orientation and those instructed to prepare using the “think success & fail” strategy will set lower expectations for performance on the first test relative to those positive in their orientation instructed to “think success”.
- 2) It is hypothesized that those with a realistic orientation or a negative orientation and those instructed to prepare using the “think success & fail” strategy will better recognize the level of their performance on the first test (as measured by their post-test 1 performance assessment) compared to positively orientated participants instructed to “think success”.
- 3) I also hypothesize that after receiving failure feedback, realistically oriented subjects and those instructed to imagine success and failure as well as positively oriented subjects instructed to imagine success will downwardly adjust their post-test 2 performance assessment (relative to their first post-test assessment).
- 4) It is also hypothesized that when comparing mood scores taken before the first task to mood scores taken after the second task those with a realistic orientation and those instructed to prepare using the “think success & fail” strategy will have smaller

decrements in mood relative to those positive in their orientation instructed to “think success”.

- 5) Last, it is hypothesized that those with a realistic orientation and those instructed to prepare using the “think success & fail” strategy will perform better on the second test relative to those with a positive orientation instructed to “think success.”

Method

Participants

Participants were 113 first year students (30 males and 83 females) recruited from mass testing based on their scores on the Orientation to Test Taking scale (OTT) from Study I. The realistic group was created by selecting participants who scored in the top third of the distribution on both the positive and negative thoughts subscales, the positive group was created by taking individuals who scored in the top third of the distribution on the positive thoughts subscale and the bottom third of the distribution on the negative thoughts subscale, and the negative group was created by taking individuals who scored in the top third of the distribution on the negative thoughts subscale and the bottom third of the distribution on the positive thoughts subscale. Thirty-nine realistically orientated participants (7 males, 32 females), 43 positively oriented participants (18 males, 25 females), and 31 negatively oriented participants (5 males, 26 females) participated in the study.

Procedures

Participants were either phoned or sent an email inviting them to participate in a study called “Acing the IQ Test” (From September to November 2010). Participants were told the purpose of the study was to assess the effect of different preparation strategies on intelligence test scores.

Participants were randomly assigned to either the “imagine success” condition or the “imagine success and fail” condition. Upon beginning the study participants were given a consent form, and a demographics page.

Participants then took part in the preparation process. Those assigned to the “imagine success” condition were asked to prepare for the test by thinking about doing well on the test. They were told:

“I would like you to think positively and optimistically about the IQ test you are going to be taking. I want you to imagine that you are flying through all the questions very easily and without any effort at all. I want you to imagine that you will do very well on this test, and how this great score demonstrates that you are very intelligent. I want you to imagine how happy you will feel after completing the IQ test and the confidence you will have in your performance.”

Those assigned to the “imagine success and failure” condition, on the other hand, were asked to imagine a variety of thoughts about the forthcoming test. This instructional set was intended to emulate the strategy believed to be used by realistically-oriented students. They were told:

“I would like you all to think of both positive and negative possible outcomes from the IQ test you are going to be taking. I want you to imagine the possibility of answering the questions where the answers come to you quite easily. I also want you to imagine the possibility where the questions are much more of a struggle and you are quite unsure of the answer. I want you to imagine the possibility of an IQ score which makes you happy, and also the possibility of an IQ score which you are not happy with. I want you to imagine the possibility of feeling happy with how you did after the IQ test, and also the possibility of feeling unhappy with how you did after the IQ test.”

Participants were then given 5 minutes to mentally prepare for the test as instructed. As a manipulation check, they were asked to write down what they were thinking as they prepared for

the test (e.g., how they feel about the test, what a particular score on the test might mean to them, what the questions may be like). Following this, they were asked to complete a state mood measure as well as rate how well they expected to do on the test using a 5 point scale where 1 = really well and 5 = poor. This rating (reverse scored) is their expectancy score.⁴

Students were then given between 15-20 minutes to complete the first test. The test included 15 multiple choice questions including 10 questions taken from practice GRE questions (Kaplan, 2011) and 5 mental rotation questions (Voyer and Doyle, 2010). After completing the task, students were again given a state mood measure (PANAS). They were then asked to rate how well they thought they had done (i.e., the post-test self-assessment) using the same 5-point scale used for the expectancy scale (1 = “really well” to 5 = “poor”) and how well they thought they would do on the second task using the same five-point scale. While students completed the second set of questionnaires the researcher left the room and “scored” the IQ test. Upon returning the researcher notified the student that they had received a score of 9/20 (45%) and that most people do better than that. Students were then given another 15-20 minutes to complete a second test identical in format to the first. After completing the second test they were given a final mood measure (PANAS) and a final question asking them to rate how well they thought they had performed on the second IQ task (again, using the same five-point scale). In the debriefing at the end of the experiment, students were told the true purpose of the experiment and their actual scores on the two tests, and given a debriefing note. Those who participated in the experiment were granted 1 percentage increase in their Psychology 1001/1002 grade.

Measures

Mood. The PANAS was used to assess students’ current mood state (Watson, Clark & Tellegen, 1988). The scale is comprised of 10 positive and 10 negative mood adjectives (e.g., “proud”, “ashamed”) and asked students to indicate on a 5 point scale (1 “slightly or not at all”;

⁴ Participants also completed the implicit theory measure (Dweck, 1999). The scale was not included in the analyses.

5 “extremely”) to what extent they feel that emotion. The reliability for the scale was good (before test 1 positive affect $\alpha = 0.88$, before test 1 negative affect $\alpha = 0.84$; after 1st test positive affect $\alpha = 0.93$, after 1st test negative affect $\alpha = 0.91$; After 2nd test positive affect $\alpha = 0.93$, after 2nd test negative affect $\alpha = 0.87$). Positive affect ratings before test one and after test one were correlated strongly and positively ($r = .73, p < .001$) as were the positive affect ratings after test one and after test two ($r = .86, p < .001$). Negative affect ratings before test one and after test one were correlated moderately and positively ($r = .55, p < .001$). Negative affect ratings after test one and after test two were correlated strong and positively ($r = .81, p < .001$).

Orientation to Test Taking questionnaire (OTT): The OTT was administered at mass testing, and was used as a selection criterion for recruiting participants who were positively oriented, negatively oriented, and realistic. Information on the validity of the OTT was reported in Study 1.

Tests. Two 15-item tests that had a total score of 20 were used as test stimuli. These tests were difficult with an average scores of 61% on Test 1 ($M = 12.21, SD = 3.69$) and 63% on Test 2 ($M = 12.54, SD = 4.24$). Five of the questions on each test were derived from the verbal ability tasks in the GRE, five of the items used on each test were taken from the quantitative questions section from the GRE booklet (Kaplan, 2011) and five questions were mental rotation tasks. For each mental rotation question, students were presented with a target block figure on the far left and four alternatives. In each case, they were required to determine which two of the four alternatives are the same as the target except that they have been rotated in space (Voyer & Doyle, 2010).

Results

To check whether the strategy manipulation was effective, I compared the number of success- and failure-oriented thoughts listed by those in the ‘imagine success’ condition with the

number listed by those in the ‘imagine success and failure’ condition, taking into consideration one’s pre-existing orientation (i.e. positive, negative, and realistic). As expected, those in the ‘imagine success’ condition generated more success-oriented thoughts ($M = 8.73, SD = 3.69$) than those in the ‘imagine success and failure’ condition ($M = 2.91, SD = 1.69; F(1, 112) = 111.16, p < .001$). Likewise, those in the ‘imagine success’ condition generated fewer failure-oriented thoughts ($M = 0.44, SD = 1.99$) than those in the ‘imagine success and failure’ condition ($M = 2.53, SD = 1.77; F(1, 112) = 119.18, p < .001$). Those in the ‘imagine success and failure’ condition generated more neutral thoughts⁵ ($M = 3.61, SD = 3.03$) compared to the ‘imagine success’ condition ($M = 1.87, SD = 2.49; F(1, 111) = 10.99, p < .01$). The number of positive and negative thoughts listed did not differ as a function of orientation (positive, negative, or realistic; $F_{postthoughts}(2, 112) = .29, p = .75; F_{negthoughts}(2, 112) = 1.48, p = .23$). No interactions between orientation and condition were significant ($F_s < 1, p_s > .90$).

Correlations between DVs.

The correlations among the dependent variables (i.e., expected scores, actual scores, and post-test performance assessments for test 1 and test 2) indicated that expected scores were positively and significantly correlated with post-test performance assessment as well as actual scores (see Table 3 for correlation coefficients). Self-reported GPA was positively correlated with score on test 1 and but not test 2. Self-reported GPA was also positively and significantly correlated with post-test 1 performance assessment and expectation setting.

⁵ Neutral thoughts were classified as thoughts that either contained neither positive or negative thoughts, or thoughts that contained both positive and negative thoughts.

Table 3

Matrices of Correlation Values

Variable	Age	Gender	GPA	Expect. 1	Actual Score 1	Post-test 1	Expect. 2	Actual Score 2	Post-test 2
Age	---								
Gender	.01	---							
GPA	-.14	.03	---						
Expect. 1	-.02	-.13	.20*	---					
Actual Score 1	.01	-.14	.21*	.12	---				
Post-test 1	-.13	-.11	.26**	.52***	.49***	---			
Expect. 2	-.02	.18*	.26**	.63***	.28**	.72***	---		
Actual Score 2	-.06	-.09	.15	.20*	.69***	.37***	.24*	---	
Post-test 2	-.17	-.06	.27**	.44***	.35***	.55***	.61***	.34***	---

* $p < .05$ ** $p < .01$ *** $p < .001$

To test the first hypothesis that people with a negative or realistic orientation and those instructed to prepare using the “think success & failure” strategy set lower expectations than those with a positive orientation, a 3 (Orientation: Realistic, Positively Oriented, Negatively Oriented) x 2 (preparation strategy: success vs success & fail) ANOVA was conducted with Test 1 expected performance as the dependent variable. Results indicate a main effect of condition where those in the success condition ($M = 3.89$ $SD = .63$) set higher expectations than those in the success & fail condition ($M = 3.30$ $SD = .65$; $F(1, 112) = 29.04$, $p < .001$). There was also a main effect of orientation such that those with a realistic orientation ($M = 3.53$ $SD = .61$) set similar expectations as those with a positive orientation ($M = 3.73$ $SD = .64$) but higher than those with a negative orientation ($M = 3.22$ $SD = .67$; $F(2, 112) = 8.11$, $p < .01$). An interaction between orientation and condition $F(2, 112) = 3.14$, $p < .05$ was found such that positively oriented participants expectation scores were the same regardless of whether they were in the success ($M = 3.91$ $SD = .68$) or the success & fail condition ($M = 3.67$ $SD = .73$; $F(1, 105) =$

1.77, $p = .19$; however, those who were realistically oriented had significantly higher expectation scores in the success condition ($M = 4.12$ $SD = .60$) compared to the success and fail condition ($M = 3.24$ $SD = .44$; $F(1, 105) = 20.41, p < .001$). Similarly, those who were negatively oriented set higher expectations in the success condition ($M = 3.60$ $SD = .51$) compared to the success and fail condition ($M = 2.87$ $SD = .52$; $F(1, 105) = 11.33, p < .01$; see Figure 2)⁶.

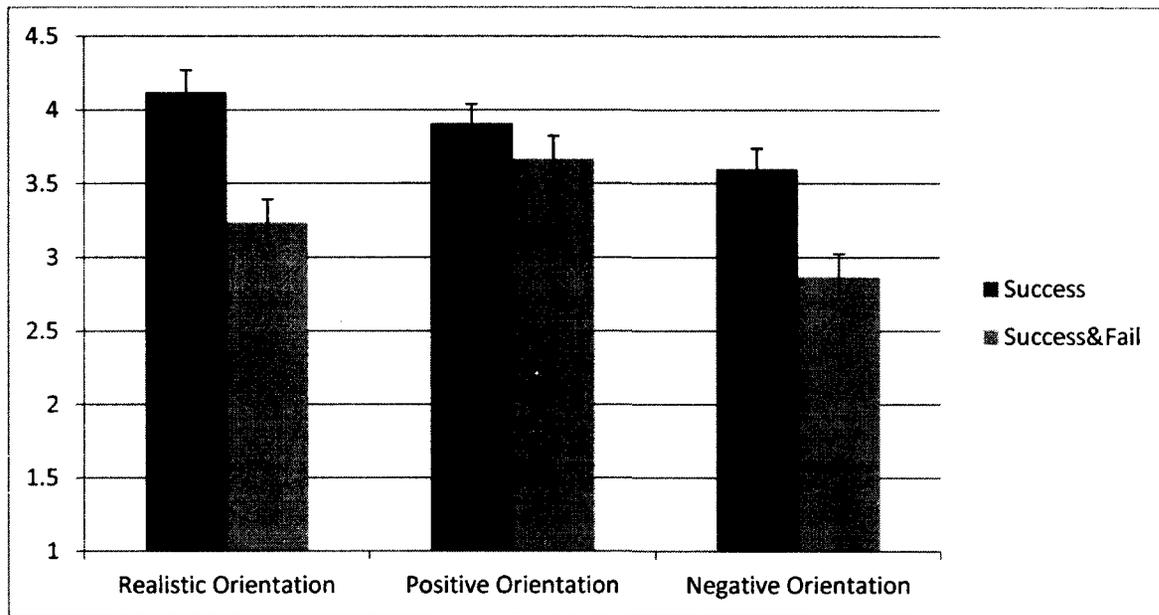


Figure 2. Effect of Orientation and Strategy on Pre-test Expectations (Test 1)

Next, to test whether those with a realistic orientation or a negative orientation and those instructed to prepare using the think success and fail strategy will better recognize poor performance compared to those instructed to imagine success only, a 3 (Orientation: Realistically, Positively Oriented, Negatively Oriented) x 2 (preparation strategy: success vs success & fail) x 2 (Time: Pre-test 1 performance estimates versus Post-test 1 performance assessment) mixed ANOVA was conducted where the last factor was the repeated factor. The analyses indicated (a) a main effect of Time $F(1, 104) = 109.62, p < .001$, such that pre-test 1 performance estimates ($M = 3.56$) were higher than post-test 1 performance assessments ($M =$

⁶ All analyses were also run with gender included in the model; however, the results were consistent therefore gender was removed from the analyses.

2.67); (b) a main effect of preparation strategy $F(1,104) = 15.01, p < .001$ such that individuals in the success condition ($M = 3.37$) had higher estimates of performance than those in the success & fail condition ($M = 2.85$); (c) a main effect of pre-existing orientation $F(2,104) = 6.70, p < .01$ such that those with a realistic orientation ($M = 3.03$) set similar estimates to those with a negative orientation ($M = 2.87$), but significantly lower than those with a positive orientation ($M = 3.44$); and (d) a significant two way interaction between time and orientation $F(2,104) = 5.63, p < .01$. The interaction, shown in Figure 3 indicates that although post-test performance assessments were significantly lower than pre-test performance estimates for all three groups, the change from pre-test assessment to post-test performance assessment was greatest for those with a realistic orientation (vs change for positively oriented: $d = 2.07$, and vs change for negatively oriented: $d = 1.12$). [realistically oriented ($M_{pre-test} = 3.68; M_{post-test} = 2.38; F(1, 104) = 80.57, p < .001$), positively oriented ($M_{pre-test} = 3.79; M_{post-test} = 3.09; F(1, 104) = 26.75, p < .001$), and negatively oriented participants ($M_{pre-test} = 3.22; M_{post-test} = 2.52; F(1, 104) = 18.01, p < .001$).]⁷

Contrary to my hypothesis the three way interaction between time, condition, and pre-existing orientation was also not significant $F(2, 104) = 0.69, p = .51$. The pattern, shown in Figure 4, indicates that when comparing the success to the success and fail condition the decrease from pre-test 1 estimated performance to post-test 1 performance assessment was similar for each orientation (Realistic: $F(1, 104) = 0.15, p = .70$, Positive: $F(1, 104) = 0.01, p = .91$, Negative: $F(1, 104) = 1.82, p = .18$; see Table 4)

⁷ In order to assess the accuracy of participants' post-test 1 assessments the analysis was re-run only including participants who received 70% or less (less than 15 on 20) on the exam. The results were consistent still showing the same significant time by orientation interaction $F(1, 73) = 4.32, p < .05$. Cell sample size was too small to run the analysis with those who received above 70% on test 1. I also found when comparing positive affect prior to test 1, and positive affect after test 1 (but prior to failure feedback) that whereas those with a realistic orientation experienced a drop in PA $F(1, 105) = 18.55, p < .001$, those who were positively oriented did not $F(1, 105) = 0.56, p = .46$.

Table 4

Mixed ANOVA results for interaction between Time, Condition, and Orientation on Pre-Test 1 Expectations and Post-Test 1 Assessment

Orientation	Condition	Pre-Test Expectations			Post-Test Assessment			<i>time x condition within group</i>		
		M	95% C.I.		M	95% C.I.		F	df	p
			Lower	Upper		Lower	Upper			
Realistic	Success	4.12	3.83	4.41	2.77	2.29	3.24	0.15	1	.70
	Success & Fail	3.24	2.98	3.50	2.00	1.57	2.43			
Positive	Success	3.91	3.66	4.16	3.23	2.81	3.65	0.01	1	.91
	Success & Fail	3.67	3.41	3.93	2.95	2.52	3.38			
Negative	Success	3.57	3.25	3.89	2.64	2.12	3.17	1.82	1	.18
	Success & Fail	2.87	2.56	3.17	2.40	1.89	2.91			

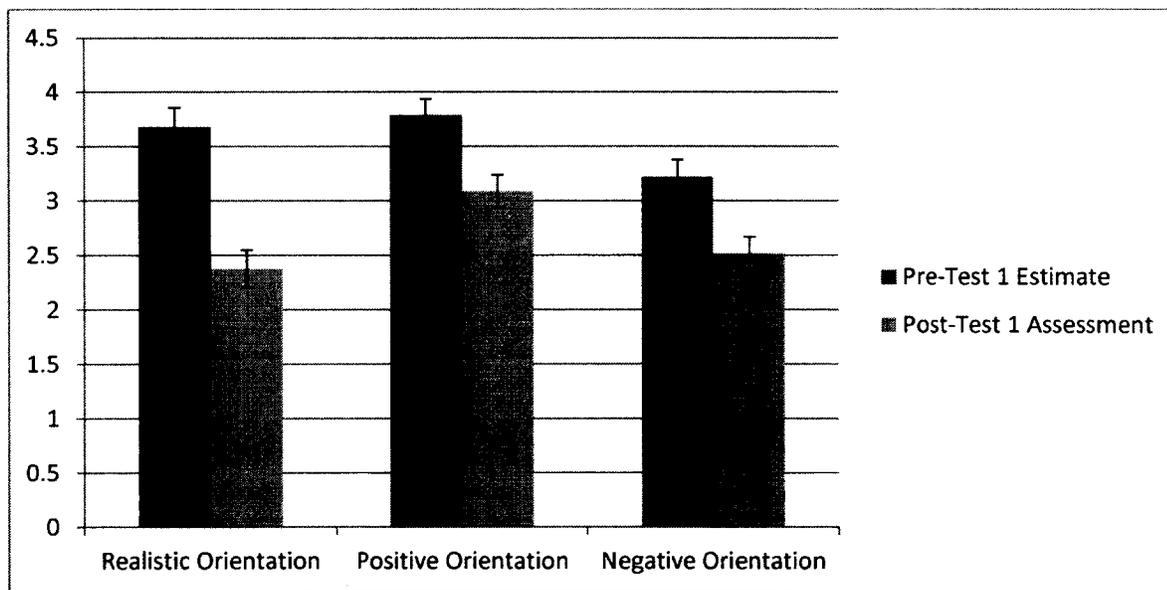


Figure 3. Interaction between Time and Orientation on Pre-Test 1 Expectations and Post-Test 1 Assessment

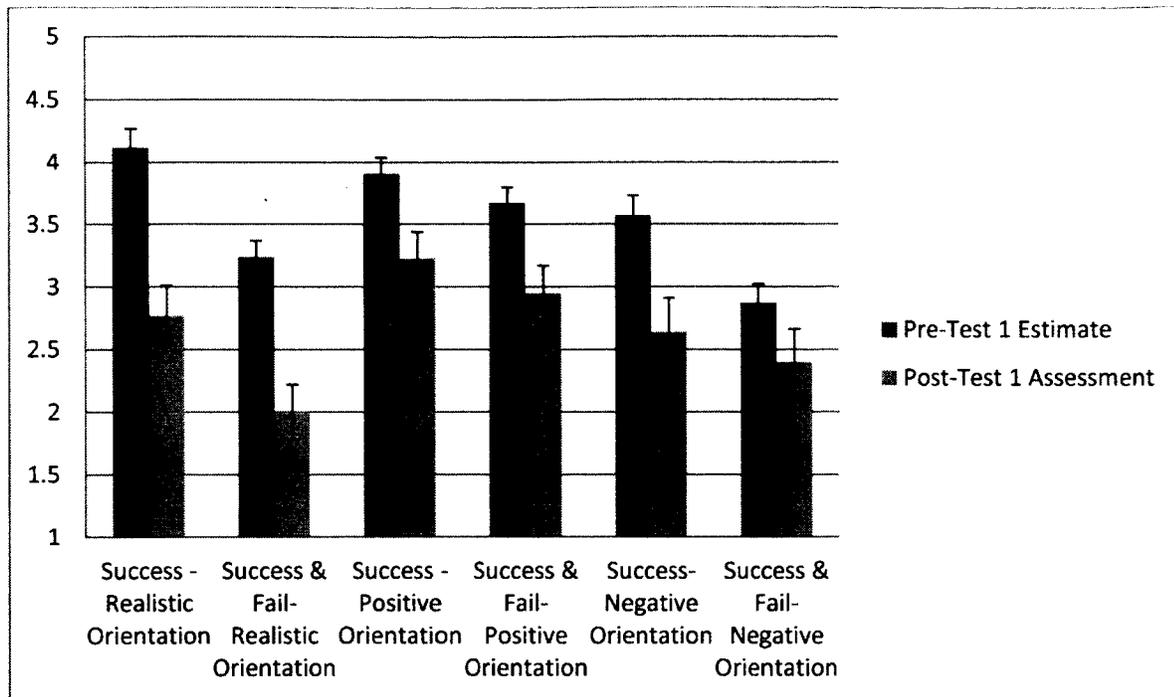


Figure 4. Three-Way Interaction between Time, Orientation, and Strategy on Pre-Test 1 Expectations and Post-Test 1 Assessment

To test whether people with a realistic orientation and those instructed to prepare by imagining both success and failure continue to adjust their assessment of performance after receiving failure feedback compared to positively oriented participants and those instructed to imagine success only, a 3 (group) x 2 (condition) x 2 (time: post-test 1 assessment, post-test 2 assessment) mixed ANOVA was conducted where the last factor was the repeated factor. This analyses indicated (a) a main effect of Time, $F(1, 102) = 10.73, p = .001$, such that post-test 1 performance assessments ($M = 2.69, 95\% \text{ CI: } 2.50, 2.87$) were higher than post-test 2 performance assessments ($M = 2.38, 95\% \text{ CI: } 2.20, 2.56$); (b) a main effect of preparation strategy, $F(1,102) = 6.82, p = .01$, such that participants in the success condition ($M = 2.74; 95\% \text{ CI: } 2.51, 2.97$) had higher estimates of performance than those in the success & fail condition ($M = 2.33, 95\% \text{ CI: } 2.11, 2.55$); and (c) a main effect of pre-existing orientation $F(2,102) = 6.97, p = .001$ such that those with a realistic orientation ($M = 2.31, 95\% \text{ CI: } 2.05, 2.58$) set similar

estimates as those with a negative orientation ($M = 2.35$, 95% CI: 2.05, 2.65), but lower than those with a positive orientation ($M = 2.94$, 95% CI: 2.68, 3.19).

The interaction between time and orientation was not significant $F(2,102) = 1.17, p = .31$. Those with a realistic orientation did not change their performance estimates from post-test 1 ($M = 2.38$, 95% CI: 2.07, 2.69) to post-test 2 ($M = 2.24$, 95% CI: 1.94, 2.55; $F(1, 102) = 0.82, p = .37$). Although those with a positive orientation set higher post-test 1 expectations ($M = 3.18$, 95% CI: 2.88, 3.48) they significantly lowered those expectations in the post-test 2 estimate ($M = 2.70$, 95% CI: 2.41; $F(1, 102) = 9.80, p < .01$). Those with a negative orientation showed a marginal decrease from post-test 1 performance assessment ($M = 2.50$) to post-test 2 performance assessment ($M = 2.20$, 95% CI: 2.15, 2.85; $F(1, 102) = 2.93, p = .09$).

The interaction between time and strategy was also not significant ($F(1, 102) = 0.01, p = .91$). Those in the success condition lowered their performance assessment from test 1 ($M = 2.89$, 95% CI 2.62, 3.15) to test 2 ($M = 2.59$, 95% CI: 2.33, 2.85; $F(1, 102) = 4.85, p < .05$). Likewise, those in the success and fail condition also decreased post-test 2 estimates ($M = 2.17$, 95% CI: 1.20, 2.42; $F(1, 102) = 5.93, p < .05$) compared to their post-test 1 estimates ($M = 2.48$, 95% CI: 2.23, 2.74).

As hypothesized a three-way interaction the interaction between post-test assessment, strategy, and pre-existing orientation was non-significant ($F(2, 102) = 0.36, p = .70$). Examining the results in Figure 5 we see that in both the success and the success and fail condition those who were positively oriented lowered their post-test assessments ($F(1, 102) = 0.03, p = .87$) and those who were realistically oriented ($F(1, 102) = 0.36, p = .55$) and negatively oriented ($F(1, 102) = 0.33, p = .57$) did not (see Table 5).

Table 5

Mixed ANOVA results for interaction between Time, Condition, and Orientation on Post-Test 1 Assessment and Post-Test 2 Assessment

Orientation	Condition	Pre-Test Expectations			Post-Test Assessment			<i>time x condition within group</i>		
		M	95% C.I.		M	95% C.I.		F	df	p
			Lower	Upper		Lower	Upper			
Realistic	Success	2.77	2.30	3.23	2.53	2.08	2.98	0.36	1	.55
	Success & Fail	2.00	1.59	2.41	1.95	1.55	2.36			
Positive	Success	3.30	2.88	3.72	2.85	2.43	3.27	0.03	1	.87
	Success & Fail	3.05	2.63	3.47	2.55	2.13	2.97			
Negative	Success	2.60	2.11	3.09	2.40	1.92	2.88	0.33	1	.57
	Success & Fail	2.40	1.91	2.89	2.00	1.52	2.48			

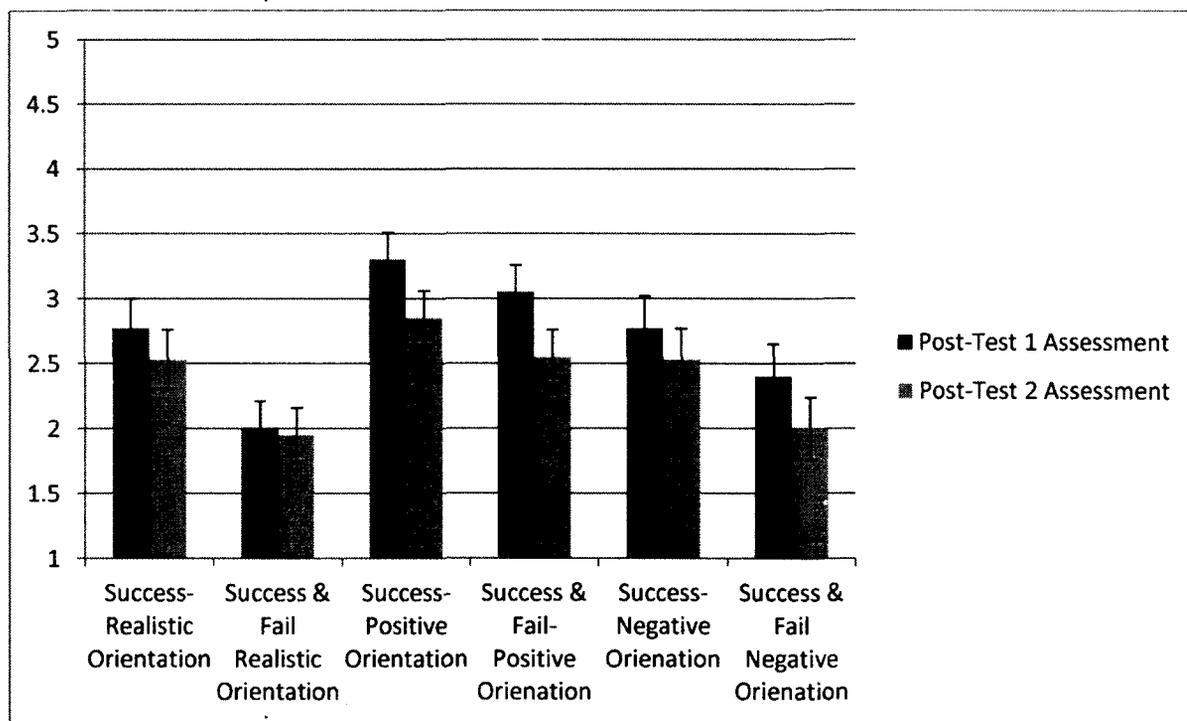


Figure 5. Three-Way Interaction between Post-Test Time, Orientation, and Strategy on Post-Test 1 and Post-Test 2 Assessments

Next, to test whether people with a negative or realistic orientation and those instructed to prepare by imagining both success and failure will have smaller decrements in affect (mood) after failure feedback compared to positively oriented participants instructed to imagine success

only, two analyses were run. First I conducted a 3 (group) x 2 (condition) x 2 (pre-test 1 and post-test 2 positive affect) mixed ANOVA where the last factor is the repeated factor. Then I conducted a 3 (group) x 2 (condition) x 2 (pre-test 1 and post-test 2 negative affect) mixed ANOVA where the last factor is the repeated factor.

Positive Affect (PA)

There was (a) a main effect of time on positive affect, $F(1, 102) = 96.59, p < .001$, such that positive affect ratings significantly decreased from before Test 1 (time 1) ($M = 2.89$, 95% CI: 2.76, 3.03) to after Test 2 (time 2) ($M = 2.30$, 95% CI: 2.13, 2.47); and (b) a main effect of orientation on affect, $F(2, 102) = 4.03, p < .05$; such that among those with a realistic orientation and those with a negative orientation reported lower PA ($M_{Realistic} = 2.54$, 95% CI: 2.30, 2.78; $M_{Negative} = 2.38$, 95% CI: 2.10, 2.65) than those with a positive orientation ($M = 2.87$, 95% CI: 2.65, 3.10). There was however, no main effect of condition $F(1, 102) = 0.09, p = .77$.

The interaction between positive affect and strategy was not significant ($F(1, 102) = 0.06, p = .81$). Those in the success ($M_{time1} = 2.91$, 95% CI: 2.71, 3.10; $M_{time2} = 2.33$, 95% CI: 2.01, 2.58; $F(1, 102) = 44.47, p < .001$) and the success and fail condition ($M_{time1} = 2.88$, 95% CI: 2.69, 3.07; $M_{time2} = 2.27$, 2.03, 2.51; $F(1, 102) = 52.43, p < .001$) had similar decrements in positive affect across time.

The interaction between time and orientation was also not significant $F(2,102) = 1.09, p = .34$. A similar drop in positive affect from before test 1 to after test 2 was experienced by realistically ($M_{time1} = 2.90$ 95% CI = 2.67, 3.13; $M_{time2} = 2.19$, 95% CI: 1.90, 2.48; $F(1, 102) = 49.54, p < .001$), positively ($M_{time1} = 3.13$, 95% CI: 2.91, 3.45; $M_{time2} = 2.61$, 95% CI: 2.33, 2.90; $F(1, 102) = 27.49, p < .001$), and negatively oriented ($M_{time1} = 2.65$, 95% CI: 2.39, 2.91; $M_{time2} = 2.10$, 95% CI: 1.77, 2.43; $F(1, 102) = 23.61, p < .001$).

Contrary to my hypothesis the three way interaction between time, pre-existing orientation, and condition was also not significant $F(1, 102) = 1.37, p = .26$. For all three

orientations the decrease in PA was similar in the success condition compared to the success and fail condition ($F_{realistic}(1, 102) = 0.75, p = .39$; $F_{positive}(1, 102) = 1.51, p = .22$; $F_{negative}(1, 102) = 0.45, p = .50$; see Table 6).

Table 6

Mixed ANOVA results for interaction between Time, Condition, and Orientation on Positive Affect

Orientation	Condition	Pre-Test 1 Positive Affect			Post-Test 2 Positive Affect			<i>time x condition within group</i>		
		<i>M</i>	95% C.I.		<i>M</i>	95% C.I.		<i>F</i>	<i>df</i>	<i>p</i>
			Lower	Upper		Lower	Upper			
Realistic	Success	2.91	2.57	3.25	2.28	1.85	2.72	0.75	1	.39
	Success & Fail	2.89	2.59	3.20	2.09	1.70	2.48			
Positive	Success	3.25	2.93	3.56	2.61	2.21	3.01	1.51	1	.22
	Success & Fail	3.01	2.70	3.32	2.62	2.22	3.02			
Negative	Success	2.57	2.21	2.93	2.09	1.63	2.56	0.45	1	.50
	Success & Fail	2.73	2.37	3.10	2.11	1.65	2.67			

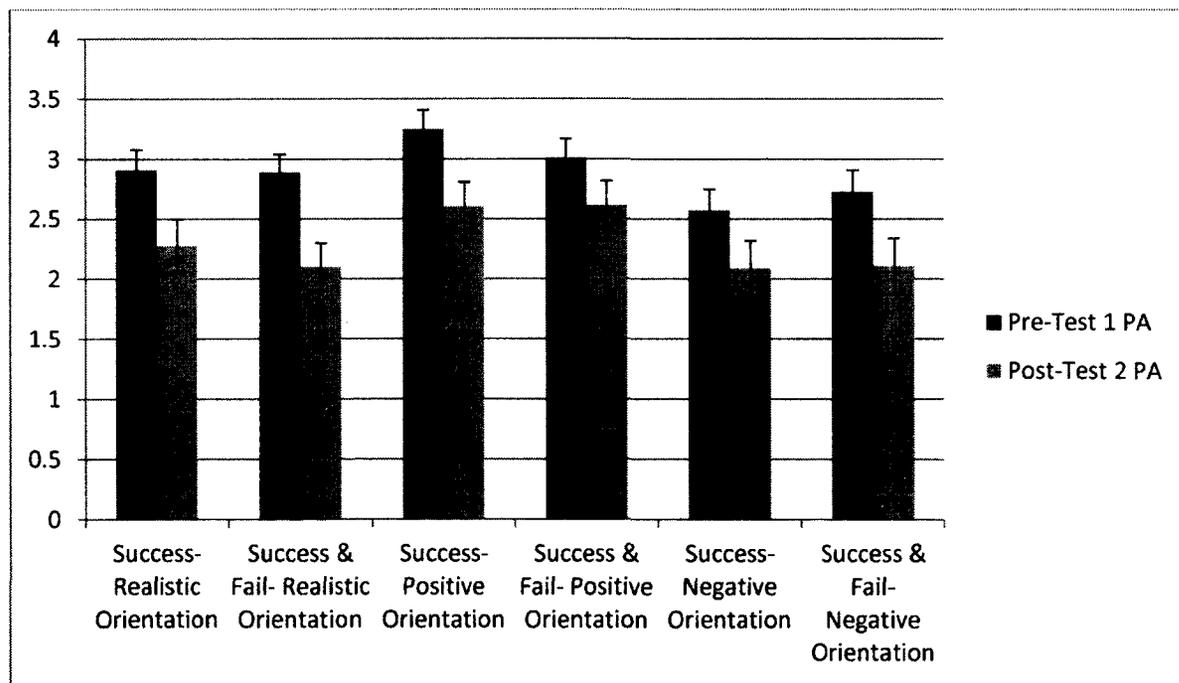


Figure 6. Three-Way Interaction between Time, Orientation, and Strategy on Positive Affect

Negative Affect (NA)

The analysis indicated (a) a main effect of time on negative affect, $F(1, 102) = 8.73, p < .01$, such that negative affect (NA) ratings significantly increased from before test 1 (time 1) ($M = 1.46, 95\% \text{ CI: } 1.36, 1.56$) to after test 2 (time 2) ($M = 1.60, 95\% \text{ CI: } 1.48, 1.72$). There was no main effect of condition $F(1, 102) = 0.26, p = .61$, or group $F(1, 102) = 2.24, p = .11$. Those in the success condition ($M = 1.51, 95\% \text{ CI: } 1.37, 1.64$) had similar NA compared to those in the success and fail condition ($M = 1.56, 95\% \text{ CI: } 1.42, 1.69$). Those who were realistically oriented ($M = 1.53, 95\% \text{ CI: } 1.37, 1.69$) also had similar NA scores to those who were negatively ($M = 1.66, 95\% \text{ CI: } 1.48, 1.84$) and positively oriented ($M = 1.41, 95\% \text{ CI: } 1.25, 1.56$). There was also no time by strategy interaction $F(1, 102) = 0.16, p = .69$ and where the success condition had a marginal increase of NA over time ($M_{time1} = 1.44, 95\% \text{ CI: } 1.31, 1.58; M_{time2} = 1.57, 95\% \text{ CI: } 1.40, 1.74; F(1, 102) = 3.16, p = .08$) the success and fail condition showed a significant increase of NA across time ($M_{time1} = 1.47, 95\% \text{ CI: } 1.34, 1.61; M_{time2} = 1.64, 95\% \text{ CI: } 1.47, 1.80; F(1, 102) = 5.83, p < .05$). The time by orientation interaction was also non-significant $F(1, 102) = 0.03, p = .97$, and upon examination we see a marginal increase in NA in realistically ($M_{time1} = 1.46, 95\% \text{ CI: } 1.29, 1.62; M_{time2} = 1.60, 95\% \text{ CI: } 1.40, 1.80; F(1, 102) = 3.23, p = .08$) as well as negatively oriented participants ($M_{time1} = 1.58, 95\% \text{ CI: } 1.40, 1.76; M_{time2} = 1.74, 95\% \text{ CI: } 1.52, 1.96; F(1, 102) = 2.96, p = .09$) but not for positively oriented participants ($M_{time1} = 1.34, 95\% \text{ CI: } 1.19, 1.50; M_{time2} = 1.47, 95\% \text{ CI: } 1.19, 1.50; F(1, 102) = 2.58, p = .11$).

Contrary to my hypothesis there was no significant interaction between mood, orientation, and condition $F(2, 102) = .08, p = .92$. As you can see in Figure 7 for all three orientations NA slightly increased over time in both the success and the success and fail condition.

Table 7

Mixed ANOVA results for interaction between Time, Condition, and Orientation on Negative Affect

Orientation	Condition	Pre-Test 1 Negative Affect			Post-Test 2 Negative Affect			<i>time x condition within group</i>		
		M	95% C.I.		M	95% C.I.		F	df	p
			Lower	Upper		Lower	Upper			
Realistic	Success	1.34	1.10	1.58	1.47	1.18	1.76	0.03	1	.85
	Success & Fail	1.57	1.35	1.79	1.73	1.47	1.99			
Positive	Success	1.43	1.21	1.65	1.51	1.24	1.78	0.34	1	.56
	Success & Fail	1.26	1.03	1.48	1.43	1.16	1.69			
Negative	Success	1.56	1.31	1.82	1.72	1.41	2.03	0.00	1	.97
	Success & Fail	1.60	1.34	1.86	1.75	1.44	2.06			

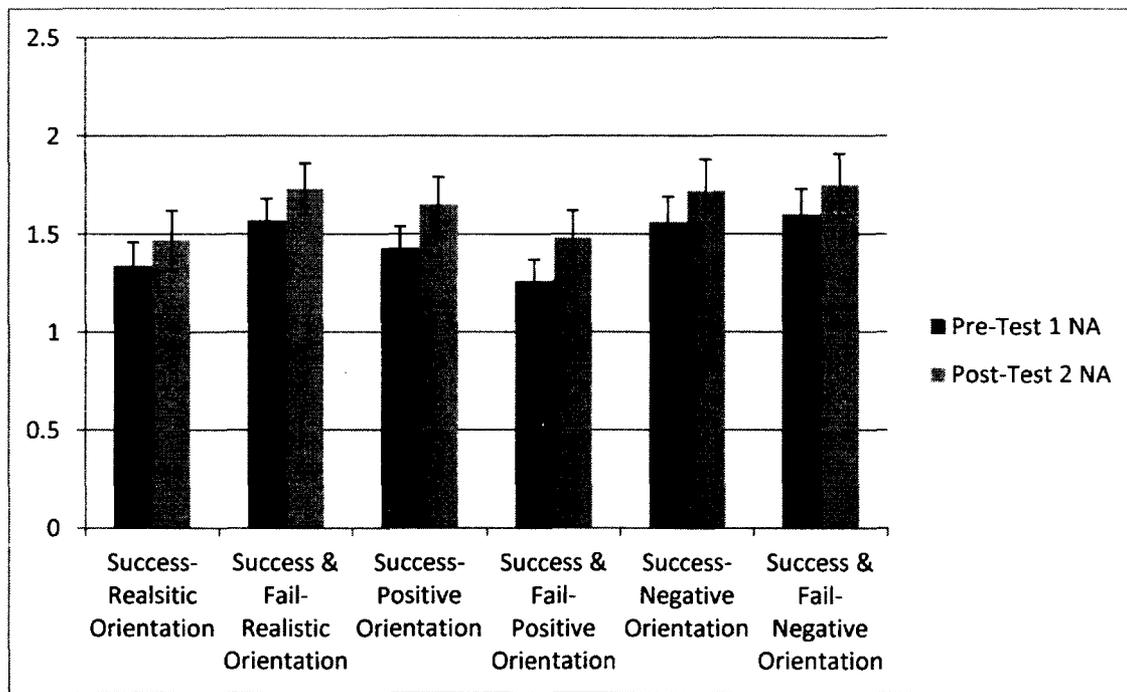


Figure 7. Three-Way Interaction between Time, Orientation, and Strategy on Negative Affect

Last, to test the whether people with a negative or realistic orientation and those instructed to think success and failure perform better on the second test compared to those with a positive orientation and those instructed to think success, I ran a 3 (group) x 2 (condition) ANCOVA on Test 2 performance controlling for participants performance on their first test.

Results indicated that there was no effect of condition $F(2, 112) = 0.29, p = .75$ ($M_{success} = 12.36, SD = 4.54; M_{success\&fail} = 12.73, SD = 3.91$). There was also no significant main effect of pre-existing orientation $F(1, 112) = 0.38, p = .54$ ($M_{realistic} = 12.78, SD = 3.59; M_{positive} = 12.25, SD = 5.08; M_{negative} = 12.59, SD = 3.74$).

Results indicated that the hypothesized two-way interaction between pre-existing orientation and condition was also not significant $F(1, 112) = .27, p = .76$. We can see in Figure 8 that for all three orientations scores on Test 2 did not differ as a function of condition (see Table 8).

Table 8
ANCOVA results for Interaction between Condition, and Orientation on Test 2 Score

Orientation	Condition	<i>M(SD)</i>	<i>F</i>	<i>df</i>	<i>p</i>
Realistic	Success	12.48(3.04)	0.36	1	.55
	Success & Fail	13.09(4.04)			
Positive	Success	11.86(5.74)	0.64	1	.42
	Success & Fail	12.63(4.22)			
Negative	Success	12.73(4.26)	0.06	1	.81
	Success & Fail	12.46(3.08)			

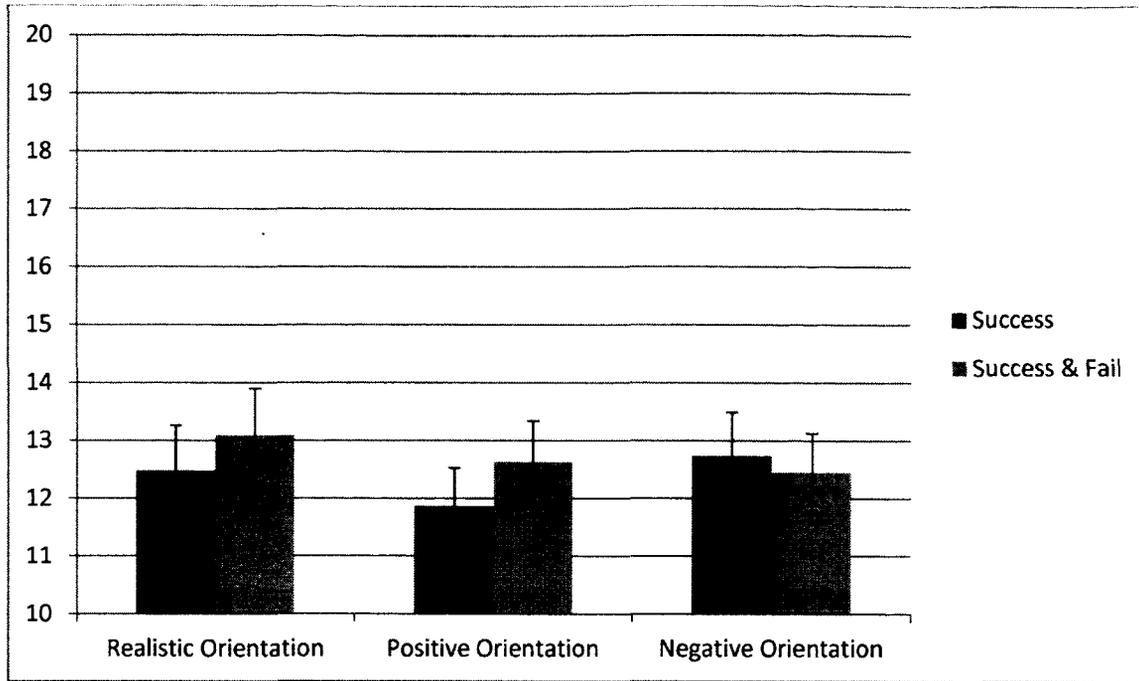


Figure 8. Interaction between Condition and Orientation on Test 2 Score

General Discussion

The purpose of this study was to examine whether considering both positive and negative outcomes (either through pre-existing orientation or through explicit instruction) prior to an anticipated stressful event would buffer the effect of failure on performance on a subsequent task. The particular stressor that participants in this experiment faced was a difficult test of mental ability. I hypothesized that those with a realistic orientation, and those instructed to prepare by anticipating a range of positive and negative outcomes would be less adversely affected by failure feedback. Therefore, I anticipated that those who considered positive and negative outcomes would perform better on the second test relative to those who imagined only successful possible outcomes. Counter to my hypothesis, neither individual differences in orientation nor the prescribed preparatory strategy had an effect on actual performance on the second test. Moreover, neither orientation nor prescribed preparatory strategy had an effect on changes in mood after receiving feedback that one had done poorly on the first test. Although mood did decline from the beginning of the study to following failure feedback for all groups (i.e., lower positive affect and higher negative affect), the change in mood was not greater among those with a positive orientation, or for those instructed to prepare by focusing exclusively on positive scenarios.

Although the failure feedback had similar effects on mood regardless of orientation or instructional set, the data do suggest that instructional set and pre-existing orientation played a role in expectations. I hypothesized that those who were realistic in orientation and instructed to imagine success and failure would set lower expectations compared to those who were positively oriented and instructed to imagine success only. The results partially supported this hypothesis in that compared to those who considered both positive and negative possibilities, those who considered only positive possibilities did set higher expectations. However, realistically oriented

participants set expectations that were similar to positively oriented participants but higher than negatively oriented participants.

Although I had hypothesized that those who were realistic in orientation and instructed to consider both success and failure would better assess their performance compared to those who were positively oriented and instructed to consider success it appears that only pre-existing orientation had an effect. Where those who were positively oriented assessed their performance as 'average' those who were realistically oriented assessed their performance as closer to 'poor'. Thus, individuals with a realistic orientation were more likely to recognize that they had not done as well on the test as they had hoped prior to feedback. This is apparent from changes in positive affect observed prior to feedback, and in terms of their own perceived performance.

It appears that the data do not support the supposition that imagining the possibility of both success and failure, as opposed to imagining only success, would protect one from the surprise of failing, as none of the groups performed worse on the second test relative to the first. I believe that the most likely explanation for the lack of effect on performance is due to the nature of the test used in the study. The tests were ability-based and largely focused on knowledge required for the general GRE test. Given this, performance is more likely to be stable, and less likely to be influenced by setbacks. If this is case we might see different results if this study was replicated using a task where performance was more effort-based than ability-based.

The results also suggest that considering negative scenarios did not buffer the effect of failure on mood (i.e., positive and negative affect) with positive affect decreasing and negative affect increasing similarly across all groups after failure feedback. I expected those who were positively oriented to show larger decreases in positive affect and larger increases in negative affect given that they had not considered the possibility of failure and that failure feedback was unexpected. Research has indicated that while anticipating exclusively positive outcomes can be adaptive it also leaves the person more vulnerable in the face of setbacks or failure because they

are unexpected. Therefore, it was surprising that those who considered the possibility of failure suffered the same decrements in positive affect and increases in negative affect. One reason for these unexpected results may be that although those asked to consider both success and failure were asked to consider the possibility of doing poorly, they were not specifically asked to consider the possibility of failing. Thus, it is possible that the feedback of doing “worse than average” on a test of general intelligence was still disappointing. If this is the case than considering possible negative outcomes may not be protective if the negative outcome exceeds the range of anticipations (i.e., the outcome is worse than the participant anticipated it could be). Future research should consider focusing on the range as well as the valance of the person’s anticipated outcomes in relation to their reactions to the actual outcome.

In line with my hypothesis, the analysis indicated that those instructed to imagine both success and failure set lower expectations than those instructed to prepare by imagining only success. However, those with a realistic orientation set expectations similar to those with a positive orientation and higher than those with a negative orientation. This lends support to the theory that although those with a realistic orientation consider the negative they also ‘hope for the best’ (Churchill & Davis, 2010). The results also suggest that although all groups perceived, prior to feedback, that they fell short of their expectations, those with a realistic orientation had a better sense of how they actually performed than the other two groups. Although all participants were aware to some degree of their poor performance as reflected in their post-test estimates, it does appear that those who are realistically oriented were more aware of their poor performance as their post-test estimates showed the biggest decline. Given that performance on the test was generally quite low (with a mean score was 61%), it is reasonable to suggest that those who are realistically oriented appear to be more accurate in their performance assessment than those who are positively oriented without having received any feedback. It may be that positively oriented participants are less accurately assessing their performance because of their tendency to engage

in self-deceptive enhancement. In study I, positively oriented participants scored significantly higher on self-deceptive enhancement compared to realistically and negatively oriented participants. Thus, those who are positively oriented may be avoiding acknowledging to themselves that they performed poorly on the “IQ” test. Given this, those who are realistically oriented may be better prepared for situations in which feedback is delayed (e.g., if a graded assignment is not given back until after the next assignment is due) or if no feedback is given at all (e.g., a job interview where the candidate does not receive the job). Conversely, those who are positively oriented will not adjust their behaviour, or prepare differently in the future if they are unable to assess when their performance is poor. For example, there are times in the classroom where feedback on an assignment might not be given to the student until after the next assignment is due. A realistically oriented student who is capable of assessing their own performance will be able to proactively work harder on the next assignment if they believe they have done poorly on the first assignment. A positively oriented student who is unable to assess their performance level will not adjust their strategy and will likely perform just as poorly on the second assignment. Furthermore, they are likely to continue setting high expectations for similar tasks which could lead to greater disappointment if/when feedback is eventually given, and their desired outcome is not achieved. Self-assessment is a skill that can be developed, and given that it would be an adaptive skill to have in the academic world, it would be beneficial for students to learn this skill early on in their education. We do see that once feedback is given by the researcher those who are positively oriented did lower their second post-test assessment. Those who were realistic in orientation did not further lower their test 2 performance assessment compared to their test 1 performance assessment, but this is likely because they had already set significantly lower post-test 1 assessments (as mentioned above) and therefore did not have to re-adjust.

In summary, although pre-existing orientation and condition did not appear to have an effect on performance following failure feedback, this is most likely due to the type of test that was used (i.e., an ability-based test). Future research may want to assess whether these same results arise if the tests are effort-based (e.g., memory task). Examining the post-test performance assessments indicates that where those who are realistic can independently adjust their performance estimates, that those who are positively oriented require feedback to adjust their estimates. Some interesting questions arise from these results, such as whether the failure to accurately assess one's performance could be detrimental when feedback is not available. All participants experienced decrements in mood (i.e. increase in negative affect and decrease in positive affect) after receiving failure feedback. Our results suggest that considering negative possibilities may only be adaptive if the outcome is within the person's realm of possibilities. Even if negative outcomes are considered a person may still be negatively affected if the outcome exceeds the ones anticipated.

Limitations

In addition to the concern expressed earlier that the tests used to assess performance may have been too ability-based, a further limitation of Study II is that I did not obtain test 2 performance expectations after failure feedback. This was a design implementation error. I was therefore not able to examine what expectations participants would set for test two after feedback, only their assessment of their second performance. If the study is replicated in the future I would suggest the failure feedback be given before participants set their expectations for the second task.

Conclusion

Anticipating the future is something people do fairly frequently in life. If the way we anticipate the future can yield certain benefits or drawbacks, then research that examines the optimal way to anticipate the future is important. Although it appears that anticipations do not

have an effect on one's performance on ability-based tests, they do have an effect on one's self-assessment of performance. This can be particularly important when feedback is delayed or not given. The results also suggest that the range of anticipations is an important factor in whether considering negative outcomes is adaptive. This research is another step towards demonstrating that considering negative possibilities can be adaptive.

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Appendix A: Study I

Orientation to Test-Taking

In the days or hours leading up to an important test, people have different thoughts about the test. As you get ready to take a test, how often do you think about the following possibilities?

Not at all			Sometimes			Very Frequently
1	2	3	4	5	6	7

In the days leading up to an important test, how often do you think about:

1. _____ getting a good grade on the test
2. _____ whether you have studied enough to do well
3. _____ how your grade on the test will help you achieve your goals for the class
4. _____ the kinds of questions you might see on the test
5. _____ getting a disappointing grade on the test
6. _____ whether or not you are capable of doing well
7. _____ how easy the test is going to be
8. _____ drawing a complete blank when you see the questions(i.e., you don't recognize the material)
9. _____ there being much material to understand; there is no way you can know it all
10. _____ the test being much harder than you anticipated
11. _____ the possibility that you will fly through all the questions with ease
12. _____ the test being an opportunity to show how well you have mastered the material
13. _____ the possibility that the questions on the test will be too hard
14. _____ the possibility that the test includes questions that you did not anticipate
15. _____ how good it will feel to do well on the test

Defensive Pessimism Questionnaire (DPQ)

When you answer the following questions, please think about how you prepare for and think about academic situations like class presentations, tests, and assignments. Each of the statements below describes how people sometimes think or feel about these kinds of situations. In the blank space beside each statement, please indicate how true it is of you in academic situations.

Not at all true of me 1—2—3—4—5—6—7 Very true of me

- ___ 1. I go into academic situations (like tests and assignments) expecting the worst, even though I know I will probably do OK.
- ___ 2. I generally go into tests and assignments with positive expectations about how I will do
- ___ 3. I've generally done pretty well in academic situations in the past
- ___ 4. I carefully consider all possible outcomes before these academic situations
- ___ 5. When I do well on tests, assignments and presentations, I often feel really happy.
- ___ 6. I often worry, in academic situations, that I won't be able to carry through my intentions.
- ___ 7. I often think about how I will feel if I do poorly on tests and assignments.
- ___ 8. I often think about how I will feel if I do very well in academic situations.
- ___ 9. When I do well in academic situations it is usually because I didn't get too worried about it beforehand.
- ___ 10. I often try to figure out how likely it is that I will do very poorly in academic situations,
- ___ 11. . I'm careful not to become overconfident in academic situations.
- ___ 12. I spend a lot of time planning when a test, assignment, or presentation is coming up.
- ___ 13. When working with others in academic situations, I often worry that they will control things or interfere with my plans.
- ___ 14. I often try to figure out how likely it is that I will do very well in academic situations.
- ___ 15. In academic situations, sometimes I worry more about looking like a fool than doing really well.
- ___ 16. Prior to an academic situation, I avoid thinking about possible bad outcomes.
- ___ 17. Considering what can do wrong in academic situations helps me to prepare.

Adult Hope Scale-Revised

Read each item carefully. Using the scale shown below, please select the number that best describes YOU and put that number in the blank provided.

Definitely False	Mostly False	Somewhat False	Slightly False	Slightly True	Somewhat True	Mostly True	Definitely True
1	2	3	4	5	6	7	8

- ___ 1. I can think of many ways to get out of a jam.
- ___ 2. I energetically pursue my goals.
- ___ 3. There are lots of ways around any problem.
- ___ 4. I can think of many ways to get the things in life that are important to me.
- ___ 5. Even when others get discouraged, I know I can find a way to solve the problem.
- ___ 6. My past experiences have prepared me well for my future.
- ___ 7. I've been pretty successful in life.
- ___ 8. I meet the goals that I set for myself.

- ___ 23. I don't care to know what other people really think of me.
- ___ 24. I have not always been honest with myself.
- ___ 25. I don't always know the reasons why I do the things I do.
- ___ 26. I always know why I like things.
- ___ 27. When my emotions are aroused, it biases my thinking.
- ___ 28. Once I've made up my mind, other people can seldom change my opinion.
- ___ 29. I am not a safe driver when I exceed the speed limit.
- ___ 30. I am fully in control of my own fate.
- ___ 31. It is hard for me to shut off a disturbing thought.
- ___ 32. I never regret my decisions.
- ___ 33. I sometimes lose out on things because I can't make up my mind soon enough.
- ___ 34. The reason I vote is because my vote can make a difference.
- ___ 35. My parents were not always fair when they punished me.
- ___ 36. I am a completely rational person.
- ___ 37. I rarely appreciate criticism.
- ___ 38. I am very confident of my judgments
- ___ 39. I have sometimes doubted my ability as a lover.
- ___ 40. It's all right with me if some people happen to dislike me.

Appendix B: Study II

NOTICE FOR RECRUITMENT

To be delivered by phone or email to pre-selected students who score as positively-oriented, negatively-oriented, or realistically-oriented on a mass testing questionnaire

Hi my name is _____, and I am a researcher from Carleton University's Psychology Department. I want to invite you to participate in a study that is assessing study strategies for intelligence tests. This study has received clearance by the Carleton University Psychology Research Ethics Board (insert your ethics file number once obtained). In this study we will be asking you to take two short IQ tests, and we will ask about your reactions to them. Participation in this study is strictly voluntary; however, if you participate, you will receive 1% credit toward your introductory psychology credit mark.

The study will take approximately 1 hour of your time to complete. Please be assured that your responses will be kept confidential. Your participation in this study is not a mandatory requirement for your course and your instructor will not be aware of whether or not you participate.

If you are interested, we can set a date for you to come into the lab to participate. Thank you for your time and we look forward to hearing from you.

Script**Purpose of the Study:**

The purpose of our study is to see if different preparation strategies affect how well people do on intelligence tests. You will be asked to use one of the strategies that we are considering and it is important for the accuracy of our results that you actually use this strategy. Today we will be giving you two equivalent versions of the intelligence test, and we will give you feedback on how you did on each test. So to prepare for this test, I will ask you to prepare in a certain way for about 5 minutes. Then I will give you the first test. When we are done, I will give you some questions that ask about your reactions while I score your test. Any questions?

Before we begin, I would like you to review and sign this informed consent form.

Informed Consent

The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent is intended to provide sufficient information, such that you have the opportunity to determine whether you wish to participate in the study. This study has received clearance by the Carleton University Psychology Research Ethics Board (insert your ethics file number once obtained).

Study Title: Acing the IQ test

Study Personnel: Christine Frank (613-520-2600 ext. 1448)
Michael Giguere (613-520-2600 ext 1448)
Danay Novoa (613-520-2600 ext 1448)
Professor Chris Davis (613-520-2600 ext. 2251) chris_davis@carleton.ca

Should you have any ethical or other concerns about this study, then please contact Dr. Monique Senechal, (Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 1155; Monique_senechal@carleton.ca) or Dr. Janet Mantler (Chair, Dept. of Psychology, 520-2600, ext. 2648; janet_mantler@carleton.ca).

Purpose and Task Requirements: The general purpose of this study is to assess whether IQ test scores may be influenced by preparation strategies. We will be asking you to complete a series of questionnaires, to participate in a short thinking task and two short IQ tests. The complete study will take about one hour.

Potential Risk and Discomfort: Some people get anxious when they have to take a test. If the test is too difficult or you find it too stressful, you may quit the study.

Credit: You will receive 1% in credits towards PSYC1001/1002 for your participation in the study.

Confidentiality: The data collected in this study will be confidential and anonymous. We will not disclose any information on individual participants.

Right to Withdraw: Your participation in this study is entirely voluntary. At any point during the study you have the right to not complete certain questions or to withdraw with no penalty whatsoever.

I have read the above description of the study concerning IQ test taking strategies. The data collected will be used in research publications and/or for teaching purposes. My endorsement indicates that I agree to participate in the study, and this in no way constitutes a waiver of my rights. I am at least 16 years of age.

ACKNOWLEDGEMENT

I ACKNOWLEDGE THAT I HAVE READ AND UNDERSTOOD THIS AGREEMENT, that I have executed this agreement voluntarily.

SIGNED THIS _____ day of _____, 2010, at Ottawa Ontario.

Signature of Participant

Signature of Witness (Researcher)

Printed Name of Participant

Printed Name of Witness

Background Information

Please fill in the following information.

What is your gender: Please circle one: Male Female

What is your current age: _____

What is your current average at Carleton University (based on the tests and assignments you have completed so far. If you do not yet have any grades at Carleton, indicate your high school grade average): Please circle one of the below grades

A+ A A- B+ B B- C+ C C- D+ D D-

This next questionnaire has been designed to investigate ideas about intelligence. There are no right or wrong answers. We are interested in your ideas. Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements by writing the number that corresponds to your opinion in the space next to each statement.

1	2	3	4	5	6
Strongly Agree	Mostly Agree	Agree	<u>Disagree</u>	Mostly <u>Disagree</u>	Strongly <u>Disagree</u>

- _____ 1. You have a certain amount of intelligence, and you really can't do much to change it.
- _____ 2. Your intelligence is something about you that you can't change very much.
- _____ 3. No matter who you are, you can significantly change your intelligence level.
- _____ 4. To be honest, you can't really change how intelligent you are.
- _____ 5. You can always substantially change how intelligent you are.
- _____ 6. You can learn new things, but you can't really change your basic intelligence.
- _____ 7. No matter how much intelligence you have, you can always change it quite a bit.
- _____ 8. You can change even your basic intelligence level considerably.

PANAS

Directions

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way right now.

Use the following scale to record your answers.

(1) = Very slightly or not at all (2) = A little (3) = Moderately (4) = Quite a bit (5) = Extremely

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

Script: Manipulation of Strategies

In a few minutes we are going to ask you to complete an IQ test to assess your mental aptitude. IQ tests have been shown to predict a variety of real-world outcomes, like academic success and future earning potential, so it is important to determine whether the use of certain preparation strategies can affect how well people do on these tests.

“Think Positive” Group:

Before I get you to complete the IQ test, I would like you to participate in a short thinking activity.

I would like you to think positively and optimistically about the IQ test you are going to be taking. I want you to imagine that you are flying through all the questions very easily and without any effort at all. I want you to imagine that you will do very well on this test, and how this great score demonstrates that you are very intelligent. I want you to imagine how happy you will feel after completing the IQ test and the confidence you will have in your performance.

I’m going to pass out some sheets, on them I would like you to write out the positive thoughts you are having relating to the IQ test that you will be completing. There is also one question on the bottom of this page I would like you to answer. The expectations can be about the test itself, any personal behavior or personal meaning that comes from the IQ test. Remember that all thoughts must be positive. Just raise your hand when you are done and I will collect the sheet from you.

Realistic Thinking Group:

Before I get you to complete the IQ test, I would like you to participate in a short thinking activity.

I would like you all to think of both positive and negative possible outcomes from the IQ test you are going to be taking. I want you to imagine the possibility of answering the questions where the answers come to you quite easily. I also want you to imagine the possibility where the questions are much more of a struggle and you are quite unsure of the answer. I want you to imagine the possibility of an IQ score which makes you happy, and also the possibility of an IQ score which you are not happy with. I want you to imagine the possibility of feeling happy with how you did after the IQ test, and also the possibility of feeling unhappy with how you did after the IQ test.

I’m going to pass out some sheets, on them I would like you to write out positive and negative expectations relating to the IQ test that you will be completing. There is also one question on the bottom of this page I would like you to answer. The expectations can be about the test itself, any personal behavior or personal meaning that comes from the IQ test. Just raise your hand when you are done and I will collect the sheet from you.

(All Conditions)

Thoughts:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

Please circle the option which applies

1. How well do you expect to do on the IQ test?

Really well

Pretty well

Average

Below Average

Poor

Smith - Anderson Test of Mental Abilities

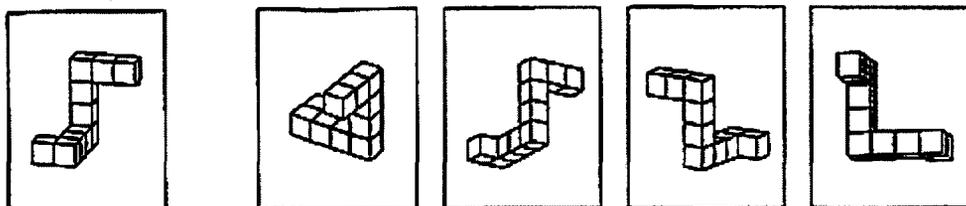
Version: Adult Short Form-A

Do not begin this test until instructed to do so.

© 2005, Intelligence Testing Service, Berkeley, CA
Section One- Spatial

Directions: In this task, you will be presented with a target figure on the far left and 4 alternatives. In each case, you will be required to determine which two of the 4 alternatives are the same as the target except that they have been rotated in space. Remember there are two correct answers.

1.



1

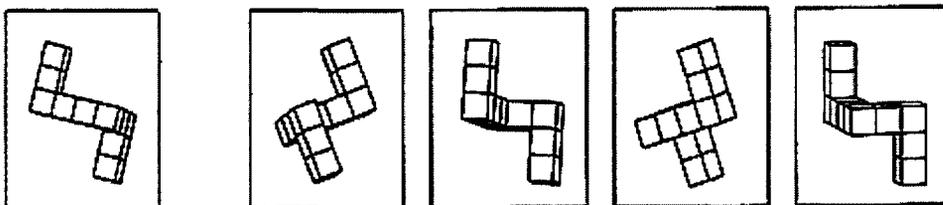
2

3

4

- a. 1 and 2
- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

2.



1

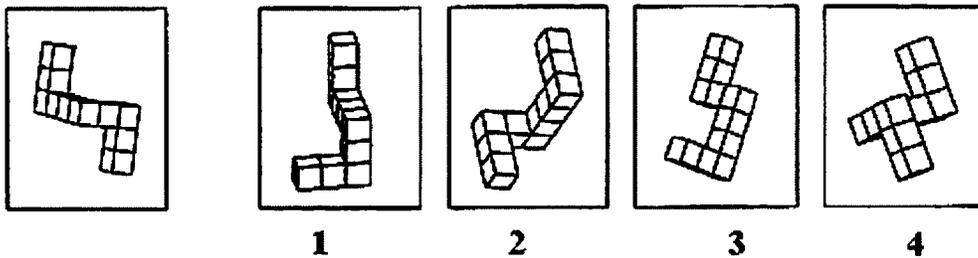
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3

4

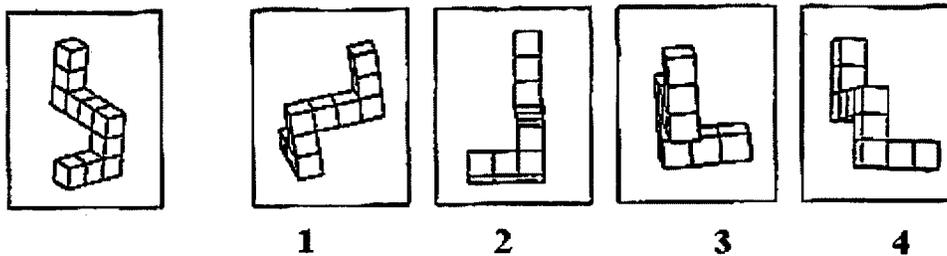
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- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

3.



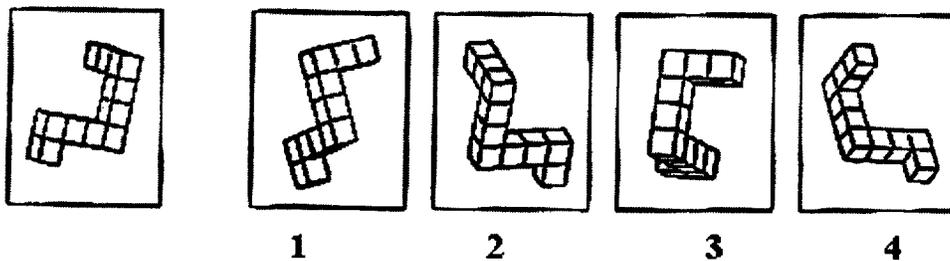
- a. 1 and 2
- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

4.



- a. 1 and 2
- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

5.



- a. 1 and 2
- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

Section Two- Verbal

Directions: Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five lettered words or sets of words. Choose the word or set of words for each blank that best fits the meaning of the sentence as a whole.

1. His earliest novel was ____ work which, despite unmistakable ____ in style and structure, was to influence fiction for the next several decades.
 - a. a symbolic.... peculiarities
 - b. a seminal... blemishes
 - c. a consummate... achievements
 - d. an enigmatic.... shortcomings
 - e. an anomalous... qualities

2. People who accept a rigid doctrine of loyalty to international principles rather than to national governments must, if they are consistent, ____ the will of their own governments to wage war except where sanctioned by a world organization of nations.
 - a. delay
 - b. influence
 - c. rationalize
 - d. resist
 - e. support

3. The countess did not deign to notice the other passengers, for, although not a member of the peerage, by ____, she had become ____ by habit
 - a. tradition... democratic
 - b. birth... elitist
 - c. marriage... proud
 - d. nature... preeminent
 - e. inclination... secretarian

4. The original American colonies were separate and ____ entities, each having its own government, maintaining its own militia, and functioning _____.
 - a. dependent... competitively
 - b. distinct... autonomously
 - c. independent... interrelatedly
 - d. prosperous... austerely
 - e. united... expediently

5. Since child development is not one ____ process for all infants, pediatricians must carefully study and monitor the ____ growth pattern of each child.
 - a. aberrant... basic

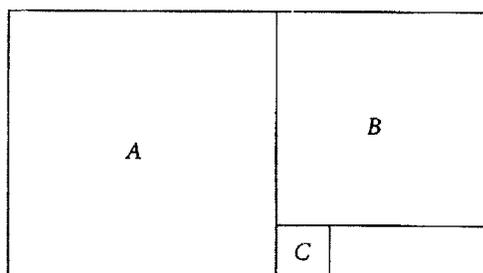
- b. cumulative...average
- c. genetic...stereotypic
- d. homogeneous...general
- e. uniform...individual

Section Three- Quantitative

Figures: The lines shown as straight may be assumed to be straight. Figures lie in the plane of the paper unless otherwise states. Figures that accompany questions are intended to provide useful information. However, unless a note states that a figure has been drawn to scale, you should solve the problems by using your knowledge of mathematics, not by estimation or measurement.

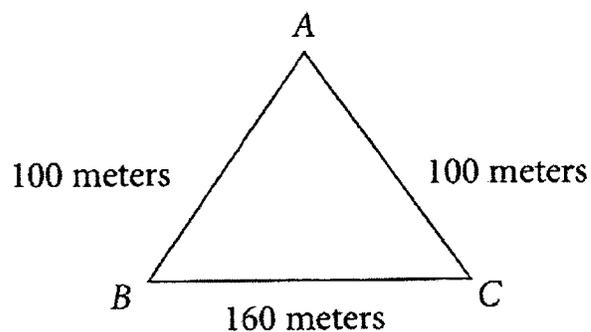
Directions: Questions 1-5 each have five answer choices. For each of these questions select the best of the answer choices given

1. In a certain history class, all except 23 students scored under 85 on a test. If 18 students scored over 90 on this test, how many students are there in this history class?
 - a. 33
 - b. 37
 - c. 39
 - d. 41
 - e. It cannot be determined from the information given



2. In the figure above, there are three square gardening areas. The areas of square A is 81 square meters and the area of square B is 49 square meters. What is the area, in square C?
 - a. 2
 - b. 4
 - c. 9
 - d. 27
 - e. 32
3. If the average of two numbers is $3y$ and one of the numbers is $y - z$, what is the other number, in terms of y and z ?
 - a. $y + z$
 - b. $3y + z$
 - c. $4y - z$

- d. $5y - z$
e. $5y + z$
4. If a certain dentist earns n dollars for each filling she puts in, plus x dollars every 15 minutes she works. If in a certain week she works 14 hours and puts in 21 fillings, how much does she earn for the week, in dollars?
- a. $\frac{7}{2}x + 21n$
b. $7x + 14n$
c. $14x + 21n$
d. $56x + 21n$
e. $56x + \frac{21}{4}n$



5. In the figure above is a triangular field. What is the minimum distance, in meters, that a person would have to walk to go from point A to a point on side BC ?
- a. 60
b. 80
c. 100
d. 140
e. 180

Smith - Anderson Test of Mental Abilities

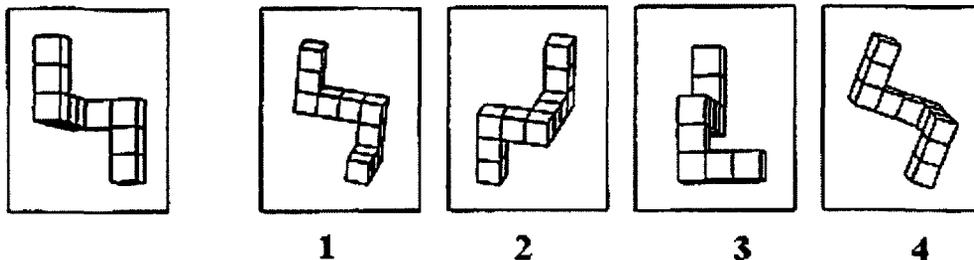
Version: Adult Short Form-B

Do not begin this test until instructed to do so.

Section One- Spatial

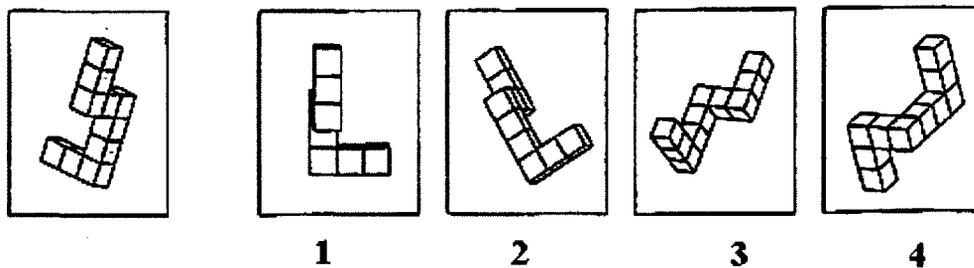
Directions: In this task, you will be presented with a target figure on the far left and 4 alternatives. In each case, you will be required to determine which two of the 4 alternatives are the same as the target except that they have been rotated in space. Remember there are two correct answers.

1.



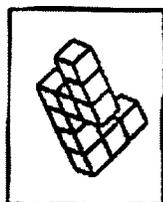
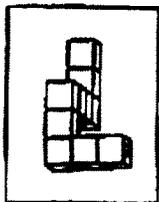
- g. 1 and 2
- h. 1 and 3
- i. 1 and 4
- j. 2 and 3
- k. 2 and 4
- l. 3 and 4

2.

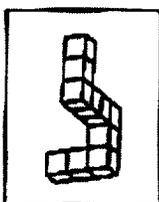


- a. 1 and 2
- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

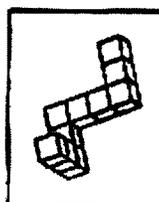
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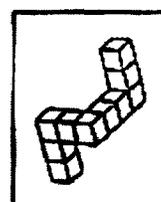
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2



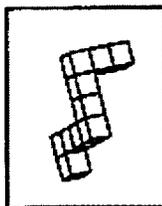
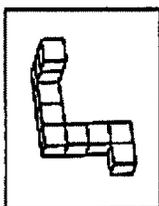
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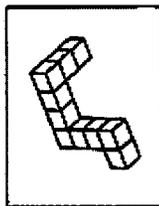
4

- a. 1 and 2
- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

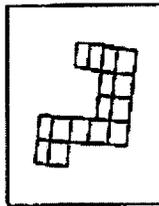
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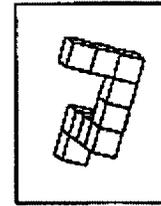
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2



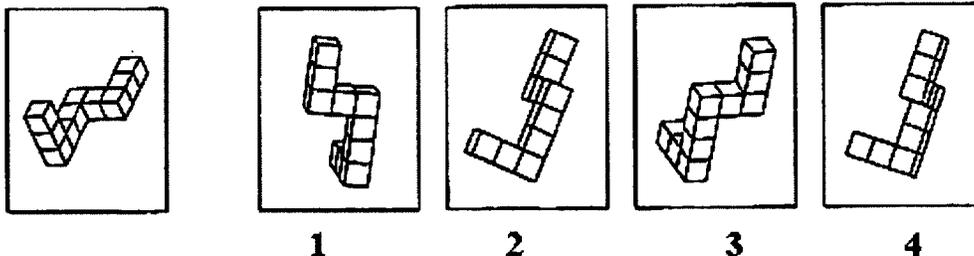
3



4

- a. 1 and 2
- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

5.



- a. 1 and 2
- b. 1 and 3
- c. 1 and 4
- d. 2 and 3
- e. 2 and 4
- f. 3 and 4

Section Two- Verbal

Directions: Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five lettered words or sets of words. Choose the word or set of words for each blank that best fits the meaning of the sentence as a whole.

6. During the Han Dynasty in China, manual work was respected by all; even noblemen felt that they could engage in it without _____.
- a. difficulty
 - b. training
 - c. remuneration
 - d. discomfort
 - e. dishonor
7. The investigative reporters learned that senior citizens all over the country had been _____ out of their life savings by _____ people pretending to be selling real estate.
- a. bilked...unscrupulous
 - b. induced...charitable
 - c. remitted...unprepossessing
 - d. thwarted...dissembling
 - e. assessed...taxing

8. Edward Muybridge's still photographs showing a galloping horse with all hoofs in the air disproved the common _____ that a horse had to have at least one hoof on the ground in order to move
- suspicious
 - attitude
 - disposition
 - assumption
 - observation
9. The _____ were arraigned on charges of graft and corruption, to the consternation of the _____ citizens who had voted for them.
- defendants....beneficent
 - judges...fallible
 - convicts....conniving
 - politicians....fickle
 - officials...law-abiding
10. The basic biblical philosophy of punishment that reads "an eye for an eye" has largely been replaced by a far more _____ approach that exercises multiple variations of retribution based on such _____ concepts as "premeditation" and "degree"
- cogent....fallacious
 - arduous...ludicrous
 - complex...abstract
 - candid...theoretical
 - hateful...impossible

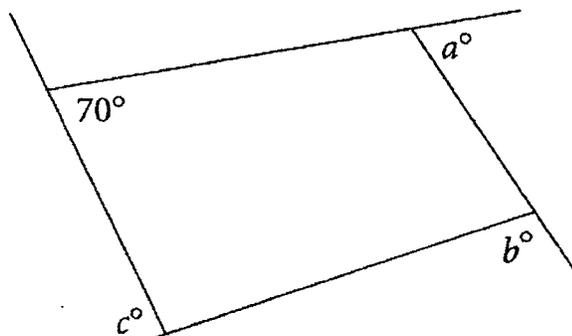
Section Three- Quantitative

Figures: The lines shown as straight may be assumed to be straight. Figures lie in the plane of the paper unless otherwise states. Figures that accompany questions are intended to provide useful information. However, unless a note states that a figure has been drawn to scale, you should solve the problems by using your knowledge of mathematics, not by estimation or measurement.

Directions: Questions 1-5 each have five answer choices. For each of these questions select the best of the answer choices given

1. Jane must select three different items for each dinner she will serve. The items are to be chosen from among five different vegetarian and four different meat selections. If at least one of the selections must be vegetarian, how many different dinners could Jane create?
- 30
 - 40
 - 60
 - 70
 - 80

2.



In the figure above, what is the value of $a+b+c$?

- 110
 - 250
 - 290
 - 330
 - 430
3. Meg is twice as old as Rolf, but three years ago, she was two years older than Rolf is now. How old is Rolf now?
- 11
 - 10
 - 8
 - 7
 - 5
4. John has 4 ties, 12 shirts, and 3 belts. If each day he wears exactly 1 tie, 1 shirt, and 1 belt, what is the maximum number of days he can go without repeating a particular combination?
- 12
 - 21
 - 84
 - 108
 - 144

5. In one class in a school, 30 percent of the students are boys. In a second class that is half the size of the first, 40 percent of the students are boys. What percent of both classes are boys?
- a. 20%
 - b. 25%
 - c. 28%
 - d. 30%
 - e. $33\frac{1}{3}\%$

Please Circle the option which applies

How well do you think you did on the test that you just took?

Really well

Pretty well

Average

Below Average

Poor

IQ Score Results #1:

I have scored your IQ test and you were able to correctly answer 9 of 20 questions. That is a score of 45%. Most people do better than that. I can show you your test at the end of the study, but you will not be able to take it with you. Do you have any questions about your score?

IQ Score Results #2

I have scored your IQ test and you correctly answered ____ out of 20. Do you have any questions?

Informed Consent

The purpose of an informed consent is to ensure that you now understand the true purpose of the study and that you agree to allow your data to be used for research and teaching purposes. Because you were only told of the procedures and not the true purpose of this study at the outset, we are now asking for your consent to allow your data to be used for research and teaching purposes. This study has received clearance by the Carleton University Psychology Research Ethics Board (insert your ethics file number once obtained).

Study Title: Acing the IQ test

Study Personnel: Christine Frank (613-520-2600 ext. 1448) cfrank1@connect.carleton.ca
 Michael Giguere (613-520-2600 ext 1448) mgigue3@connect.carleton.ca
 Danay Novoa (613-520-2600 ext 1448) dnovoa@connect.carleton.ca
 Professor Chris Davis (613-520-2600 ext. 2251) chris_davis@carleton.ca

Purpose: The purpose of this study is to assess the role that preparation strategies have on test performance and mood after receiving negative feedback. In this study, all participants were told that they had performed poorly on the first test. In this study, we are interested in learning how people respond after getting this negative feedback: do they lower their expectations, try harder, or stick with their preferred strategies for preparing for tests? We are examining whether the preparation strategies that people use influence whether they lower their expectations, change strategies, or try harder.

Anonymity/Confidentiality: The data collected in this study are kept anonymous and confidential. The consent forms are kept separate from your responses, with no connection between the two.

Right to withdraw data. You have the right to indicate that you do not wish your data to be used in this study. If you indicate this is your choice, then all measures you have provided will be destroyed. If you have any concerns about this study, you may direct these concerns either to the experimenter, Dr. Chris Davis (faculty, 520-2600 ext 2251; chris_davis@carleton.ca). If you have any ethical concerns, you may direct them to Dr. Monique Senechal, Chair of the Carleton University Ethics Committee for Psychological Research (520-2600 ext 1155; Monique_senechal@carleton.ca) or the Chair of Dept of Psychology, Dr. Janet Mantler (520-2600 ext 2648; janet_mantler@carleton.ca).

Signatures: I have read the above description of the study concerning thinking strategies and its relationship to changes in coping success under testing conditions. The data in the study will be used in research publications and for teaching purposes. My signature indicates that I agree to allow the data I have provided to be used for these purposes.

Full Name (Print): _____

Participant Signature: _____

Date: _____

Researcher Signature: _____

Verbal Debriefing

The study is now complete. Thinking back over the study, can you tell me what you think the study was about? Is there anything that doesn't make sense to you?

What I told you at the beginning of the study wasn't the whole story, and I want to fill you in on what we are trying to do with this study and why we are doing it.

First, it is important to note that the tests that you took were not standard IQ tests, although they were tests of intellectual ability, at least for those who speak English. Longer versions of these tests are used by some universities to evaluate students' aptitude for graduate school. If you are thinking of going to graduate school, you may see tests like these again.

Second, in this experiment, we needed to create a situation where people believe that they have done poorly on something that is important to them. To do this, we provided feedback after the first test indicating that you didn't do as well as you might have expected. We are interested in how people respond to this feedback. We think that how you respond to this feedback is related to how you prepare for tests.

People prepare for tests in different ways. Some people just think about doing well and don't even think about not doing well; others do the reverse: they only think about how difficult the test will be but don't think about doing well. Finally, another group thinks about both the possibility of doing very well and the possibility of doing poorly. In this study, we wanted to see how people with these different orientations to test-taking respond when they get feedback that they did not do well on a test. We want to determine whether preparing with one approach or the other influences the expectations you set for a second test, as well as your performance on the second test. Your actual score on the first test was _____.

Please don't tell other students who may be participating in this research about the deception that we have used today. If they knew about it beforehand, we would not be able to use their results as they could be biased.

If you want to have your tests, I can mail them to you when the experiment is done. If so, please give me your mailing address. (Give participant mailing label to complete and attach it to test with paper clip).

If you have any further questions about the experiment, please come talk to me, or contact any of the people who are listed on the debriefing sheet you have been given.

Written Debriefing

In this research, we are investigating the mindset that people use as they enter a testing situation. Some people go into testing situations only imagining success, whereas others think mostly about how horrible it will be. Others take a more balanced approach: hoping for the best but planning for the worst. We refer to this latter approach as a “Realistic orientation.” In this research, we are testing how these mindsets or orientations influence how people respond when faced with a difficult test.

Prior research in our lab on this topic indicates that people who adopt a realistic orientation tend to cope more successfully with unanticipated stressors, but we do not yet know why. Are they more likely to persist given failure, when others might give up, or do they lower their expectations? These are the questions that we are asking with this research. To find out more about the prior work that we have done on this topic, you can download a copy of the following article, available this fall online through the library:

Davis, C. G., & Asliturk, E. (2010). Toward a positive psychology of coping with anticipated events. *Canadian Psychology*, 52, xxx-xxx.

If you would like to learn more about improving your study skill or exam preparation strategies, we recommend that you attend a workshop sponsored by the Carleton Student Academic Success Centre. Visit their website for descriptions of their various workshops (<http://www2.carleton.ca/sasc/advisingcentre/>). These workshops are free to Carleton students.

If you have any questions or comments about this research, feel free to contact Dr. Chris Davis, Department of Psychology, Carleton University, 613-520-2600 ext. 2251 (chris_davis@carleton.ca) or Christine Frank, Department of Psychology, Carleton University, 613-520-2600 x1448 (cfrank1@connect.carleton.ca).

If you have any ethical concerns about how this study was conducted, please contact Dr. Monique Senechal, Chair of the Carleton University Ethics Committee for Psychological Research, at 520-2600 ext. 1155 (monique_senechal@carleton.ca) or Dr. Janet Mantler, Chair of the Dept of Psychology, 520-2600 ext 2648 (janet_mantler@carleton.ca).

If you are feeling anxious or distressed, you can contact Carleton’s Health and Counseling Services at 613-520-6674 or the Ottawa Distress Centre at 613-238-3311.