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PERCEPTION OF CONTROL: ACCURACY AMONG OPTIMISTS AND PESSIMISTS ON
NONCONTINGENCY AND CONTINGENCY TASKS

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ABSTRACT

The learned helplessness theory asserts that depressed individuals unrealistically believe that they have little to no control over aversive outcomes in their lives. Paradoxically, research on judgment of control has demonstrated that depressed individuals are not necessarily pessimistic, but rather more realistic than non-depressed individuals. Most of the research on depressive realism has investigated individual's perceived control in situations in which they have no actual control. Few studies have investigated perception of control in situations where control is possible. Considering that many circumstances in life are controllable, it is important to examine how different personality variables contribute to accurate judgments of control in controllable situations. In addition, many studies have found a negative correlation between optimism and depression and the positive correlation between depression and pessimism, yet the research on control lacks information on optimistic and pessimistic individuals' perception of control. Using a computerized judgment of control task, the current study examined perception of control in both no-control and control situations among participants classified as either optimistic or pessimistic and as dysphoric or non-dysphoric. Measures of optimism and pessimism used in this study were the Attributional Style Questionnaire and the Life Orientation Test-Revised and the Beck Depression Inventory-II was used to assess depressogenic symptoms. Participants were 88 undergraduate students. It was hypothesized that optimistic participants would exhibit illusory control in both contingent and non-contingent situations, while the pessimistic participants would provide accurate judgments of control in the no-control situation and underestimate control in the

control situations. Additionally, it was hypothesized that dysphoric participants would provide accurate control judgments in the no-control situation and underestimate control in the control conditions. The results provided mixed support for the study's hypotheses. Participants with optimistic explanatory styles provided accurate control judgments in the high contingency task and overestimated control in noncontingent and low contingent tasks. Participants with pessimistic explanatory styles underestimated control in the high contingency task and overestimated in noncontingent and low contingent tasks. Contrary to the depressive realism hypothesis, dysphoric participants did not provide accurate judgments of control regardless of the contingency situation. Dysphoric participants underestimated control in the high contingency situation and overestimated control in noncontingent and low contingent tasks.

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CHAPTER 1

Introduction

Overview

Traditionally, psychological health has been synonymous with a clear sense of reality, while psychological illness has been associated with poor reality testing, irrationality, and other cognitive distortions. This view of mental illness is particularly evident in theories of depression. Cognitive theories of depression have emphasized the role of negatively biased and unrealistic perceptions of themselves and the world.

Beck (1967) asserted that depressed individuals view the world through distorted thinking influenced by a negative cognitive triad consisting of an unrealistic negative view of self, environment, and the future. Ellis (1987) also emphasized the relationship between unrealistic negative perceptions and depression. Both the hopelessness theory and learned helplessness theory of depression assume negative or pessimistic distortions in the interpretation of life events (Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978).

In many ways these theories of depression appear to be valid. Depressed individuals have been found to exhibit more negative automatic thoughts and dysfunctional attitudes about the self and the world compared to non-depressed individuals (Hill, Oei, & Hill, 1989). Depressed people also report more hopelessness and are more likely to have a pessimistic pattern for explaining life events (Peterson & Seligman, 1984). However, there seem to be situations that

contradict the notion that depressed people are unrealistic and inaccurate in their negative views. In some situations depressed individuals do not appear to be pessimistic, but rather realistic in their interpretation of events, while non-depressed persons make distorted and optimistically biased judgments (Ackerman & DeRubeis, 1991).

The phenomenon that depressed persons are more realistic in certain situations is referred to as depressive realism. Depressive realism challenges years of psychological thought that intuitively claimed that mentally healthy people view themselves and the world realistically. It should make sense that people's perceptions are not always realistic considering that human cognition often relies on heuristics and incomplete information. In particular, researchers have argued that illusions are part of normal cognition and that positive illusions such as "unrealistic self-evaluations, exaggerated perceptions of control or mastery, and unrealistic optimism" are actually adaptive for mental health (Taylor & Brown, 1998, p.193). In regards to depression, Ackerman and DeRubeis (1991) claim that self-deception and positive bias protect one's sense of well-being.

Most of the research on depressive realism originates with Alloy and Abramson's (1979) "sadder but wiser" study in which the authors found that depressed participants were more accurate than non-depressed participants in judgments of control. The depressed persons were more accurate in how much control they had in a task where control was not possible, while non-depressed persons exhibited an illusion of control. Considering that perception of control was investigated, one can see the relevance of these findings in relation to how the theory of learned helplessness developed (Maier & Seligman, 1976).

The original study by Maier and Seligman (1976) was an experimental design using dogs as subjects with the intention of investigating avoidance learning. Instead, their study led to the

theory of learned helplessness. It can also be viewed as a study of perceived control. The dogs in the study learned whether they could avoid a shock. The dogs that experienced inescapable shock soon learned that their attempts to avoid the shock were futile. In other words they learned to perceive that they had no control over getting shocked so they stopped trying to avoid the shock. Some dogs were placed in a cage where they could jump to the other side of the cage to avoid the shock. These dogs learned that their behavior of jumping removed them from the aversive stimuli. They could be thought of as perceiving control over the shock.

An interesting component to the studies that relates to the depressive realism and illusion of control literature is that even when these dogs were placed in the inescapable shock situation, they continued attempting to jump away from the shock. The dogs had experiences where they had control over whether they were shocked. One could argue that when introduced to a situation of unavoidable shock, the dogs perceived control, even though it was illusory, and attempted to change their situation. So, while this illusion of control did not help the dogs escape the shock in the unavoidable shock situation, it will have benefits when the dogs can avoid the shock in future situations.

What was learned from animal studies was applied to humans and the learned helplessness theory of depression was developed (Maier & Seligman, 1976; Seligman, & Teasdale, 1978). The theory essentially states that depressed individuals do not expect that their actions have impact on important outcomes. This hopeless and pessimistic outlook of one's control over aspects of life leads to the cognitive, emotional, and motivational symptoms of depression. Pessimism has been associated with depression in many of the cognitive models of depression, and is an essential component to learned helplessness theory (Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978; Beck, 1967).

On the other side, optimism provides cognitive factors that buffer against depression. Results from a meta-analytic review of the research on optimism and depression, suggest that optimism is incompatible with depression (Sweeney, Anderson, & Bailey, 1986). Like optimism, an illusion of control seems to be a protective factor against depression. An illusion of control may even be an aspect of optimism. In fact, Alloy and Clements (1992) refer to illusion of control as illusory optimism, and have used a non-contingent judgment of control task similar to the “sadder but wiser” study in which they characterized participants as “optimists” if they thought they had control whereas those who accurately judged that they had no control were called “realists.” It is as if the authors use the judgment of control task as a measure of optimism. Considering the ties, it is surprising that optimism has not been more fully studied in the illusion of control literature. Likewise, because pessimism is both a symptom of and a risk factor for depression, it is important to investigate possible relationships between pessimism and depressive realism.

Most studies on depressive realism and illusion of control compare depressed individuals to non-depressed individuals and find the most conclusive results in judgment of control tasks similar to Alloy and Abramson’s (1979) design. The current study’s aim was two fold: 1) to address depression in judgment of control tasks where control was possible and 2) to address optimism and pessimism in context of a judgment of control task. Depression was measured using the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). Optimism and pessimism were measured using the Attributional Style Questionnaire (Peterson et al., 1982; Seligman, Abramson, Semmel, & von Baeyer, 1979) and the Life Orientation Test-Revised (Scheier & Carver, 1985). Comparisons between optimism and pessimism were made in regards to perception of control.

Optimism and Pessimism

When Abramson, Seligman, and Teasdale (1978) developed learned helplessness as a theory of depression, a central component was the role of pessimism in the development and maintenance of the disorder. It appeared that pessimistic individuals were more likely to give in to learned helplessness and were at a greater risk for depression. Optimists on the other hand did not give in to learned helplessness and seemed to be buffered from depression (Seligman, 1990). Given the centrality of the constructs of optimism and pessimism in this literature and its application to the current research, it is important to understand these constructs. Two major views of optimism/pessimism have been developed.

Dispositional Optimism. Optimism is often defined as expecting that good rather than bad things will happen with pessimism being the opposite. Using this definition, optimism and pessimism are viewed as dispositional characteristics and are measured in terms of general outcome expectancies. A common measure developed by Scheier and Carver (1985) for dispositional optimism/pessimism is the Life Orientation Test or LOT. The original measure was later revised to remove two items that were found to be more a measure of coping style rather than positive outcome expectancies (Scheier, Carver, & Bridges, 1994). The LOT-R consists of items that ask the participant to indicate the expectations of positive and negative events occurring in their future. The LOT-R is a short measure that uses four positive and four negative outcomes with four filler items. An example of a positive expectancy item is “I’m always optimistic about my future.” An example of a negative item is “I hardly ever expect things to go my way.”

Explanatory Style. Optimism/pessimism can also be defined in terms of one’s explanatory style. That is, the way in which one attributes causality to positive and negative

events in one's life. Explanatory style is measured using the Attributional Style Questionnaire or ASQ (Peterson et al., 1982; Seligman, Abramson, Semmel, & von Baeyer, 1979). The ASQ asks respondents to provide explanations for why certain hypothetical situations happened to them and then rate the causes across three separate dimensions: stability, globality, and internality. The ASQ consists of 12 positive events and 12 negative events that allow for separate composite scores for positive (CP) and negative (CN) events. Responses to the 24 items are added across the three dimensions to determine the CP score and CN score, which are subtracted from each other (CP-CN) to derive an overall composite score of explanatory style as either optimistic or pessimistic. It is important to note that the overall composite score is most frequently used in the research, but to address the possibility that optimism and pessimism may not be uni-dimensional, some researchers have started to use CP and CN separately instead of CP-CN (Reilley, Geers, Lindsay, Deronde, & Dember, 2005).

According to explanatory style theory, optimists and pessimists differ in the manner in which they confront negative events across the three dimensions (Seligman, 1990). Pessimists tend to explain problems in three ways: the problem is stable ("It is going to last forever"), global ("It will affect everything I do"), and internal ("It is all my fault"). Conversely, optimists are more likely to explain negative events as temporary ("This is one time or momentary"), specific ("This is one part of life"), and external ("This is not my fault"). Another interesting finding using explanatory style is that pessimistic individuals tend to explain away their successes in a similar way that optimistic people explain negative events. For example, if a pessimistic individual got an A on a paper he or she would be more likely to view this success as a fluke, believing that it had little to do with their own intelligence or ability to impact the outcome.

Implications of Optimism/Pessimism

The manner in which one chooses to interpret life events has significance beyond the appraisal of those events. A pessimistic style deteriorates one's hope for the future with every troubling life event. Explanations are fatalistic and can lead to learned helplessness. An optimistic style allows for resilience in the face of negative events. The life trials that occur are viewed as challenges to overcome, essentially motivating optimists to invest more in an effort to reach goals which otherwise would be hindered by the obstacles. Research has shown that not only do optimists view and explain negative events differently than pessimists, but they cope with stress in more adaptive ways.

In a study of college freshmen adjusting to college life, optimists were more likely to meet the challenges of exams and forming new relationships by going to class, studying, and actively talking to new people. Pessimist adopted more avoidant strategies such as pretending the problem did not exist, or withdrawal from social events where new relationships are more likely to form (Aspinwall & Taylor, 1992). Regarding judgment of control, it could be argued that the optimistic students perceived they had control over outcomes in their life and actively sought out ways to accomplish the desired outcomes. Pessimistic students may have perceived little control over the new situations of college life, resulting in an attitude of apathy.

As further support for the idea that varying perceptions of control based on explanatory style, one can look to optimism in job performance. One particular study looked at optimism and productivity among life insurance salespersons. Life insurance companies tend to have a high rate of burn out and turnover among their salespeople. Psychologists were hired to examine how to decrease turnover and increase productivity. Newly hired insurance salespeople were evaluated on performance and job satisfaction in relation to their optimistic or pessimistic

outlooks. Those individuals with optimistic outlooks saw setbacks as anomalies or as an indication that they needed to adjust their selling techniques, and were less likely to view rejection as personal. They sold more policies and were half as likely to quit (Seligman & Schulman, 1986).

One explanation for these findings could be that the optimistic employees viewed the desired outcome of selling policies as something that they could control. One can refer back to Seligman's 1976 study on learned helplessness in dogs to understand how the pessimistic salespersons likely perceive control. The pessimistic salespersons view the rejections as aversive and perceive that no matter what is done, the rejections will keep coming. They do have occasional sales, but to them, they seem random and not tied to anything they are doing differently. Because the salespersons perceive little control over getting sales, they may go through the motion of selling without putting forth the extra effort. This discouragement and lack of effort is apparent to those they pitch the sale and the prospective buyer rejects the insurance, thus the pessimistic salespersons are part of a self-fulfilling prophecy of future rejection.

Another example of optimism and performance comes from athletics. In a study of men and women's swim teams, Seligman, Nolen-Hoeksema, Thorton, and Thorton (1990) found significant performance differences among optimistic and pessimistic swimmers following a manipulated defeat. Swimmers completed the ASQ to determine explanatory style. The researchers timed the athletes in their best events and provided the swimmers with false times that were slower than their actual times. This provided a method for testing performance after a negative event, a perceived poorer performance. Following a rest period, each swimmer swam their particular event again and times were compared to their actual time from the first swim.

Results showed that swimmers with an optimistic explanatory style swam as well or better in the second swim, whereas swimmers with a pessimistic explanatory style had performance that deteriorated from their first swim. The authors of the study explained this difference between the optimistic and pessimistic swimmers in terms of voluntary response initiation. Using the theory of learned helplessness, they claimed, “the expectation of future failure works by undermining the incentive to try, thereby lowering the probability of voluntary response initiation” (Seligman, Nolen-Hoeksema, Thorton, & Thorton, 1990, p.145). Stated in terms of control, the pessimistic swimmers explained their defeat as more stable, global, and internal, lessening the perceived control over their own swim times, leading to deflated motivation which in turn, led to a drop in performance. The optimistic swimmers were more likely to view the “slower” time as a temporary setback for which they had some sense of control, possibly increasing effort to achieve a better time.

In regards to health, dispositional optimists are bothered by fewer physical illnesses (Scheier & Carver, 1985), have stronger immune functioning (Rodin, 1986), experience less stress when faced with major surgery (Carver et al., 1993; Fitzgerald, Tannen, Afflect, & Pransky, 1993), show faster rehabilitation following a major surgery (Scheier et al., 1989), and overall, live longer than pessimists (Danner & Snowdon, 2001; Levy, Slade, Kunkel, & Kasl, 2002). Explanations for the relationship between optimism and good health may have something to do with higher perception of control. If one believes that he/she can control certain aspects of their own health and that good health is attainable, then he/she would be more likely to strive toward actions that increase the likelihood of good health. Research shows that optimists tend to be more aware and concerned with actions that contribute to good health (Aspinwall & Burnhart,

1996) and are less prone to self-destructive behaviors such as substance abuse (Carvajal, Clair, Nash, & Evans, 1998), thus increasing optimists' odds for better health.

Peterson and de Avila (1995) found that individuals with an optimistic explanatory style felt that good health can be controlled to some extent through maintenance, prevention, and promotion practices. In fact, an optimistic explanatory style has been found to be correlated with healthy living practices such as moderation in drinking of alcohol, exercising, and better eating habits (Peterson, 1988). In health situations as common as responding to colds, Peterson, Colvin, and Lin (1992) found that those with an optimistic explanatory style were more likely than people with a pessimistic style to take appropriate measures to alleviate the cold such as hydrating, resting, and staying home. In all of these explanations for better health among optimists, one could argue that optimists perceive a sense of control over health outcomes resulting in behaviors that are more conducive with good health.

Across multiple areas including health, employment, athletics, and academics, optimism, either as a dispositional factor or as an explanatory style, has been shown to have beneficial effects. One rationale for these benefits is that optimists tend to use more problem-focused coping strategies while pessimists use avoidant-focused coping strategies. When a given situation, such as a terminal illness, does not lend itself well to problem-focused coping strategies, optimists use emotion-focused coping strategies such as acceptance, humor, and positive reframing. Pessimists in similar situations rely more on overt denial and giving up both mentally and behaviorally as means of coping. Problem-focused coping such as seeking information, active coping, planning, and meaning making allows for more active control of the situation while the avoidant strategies such as self-distraction and resignation imply that not much can be done to change the situation. (Scheier, Carver, & Bridges, 2002).

Optimism, Pessimism and Depression

One area of mental health that is of particular importance with regard to optimism and pessimism is depression. As mentioned earlier, pessimism is a major component in the development of depression according to the learned helplessness theory as well as in the hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978). Research has demonstrated strong links between pessimism and depression, and that optimism and depression are inversely related. Scheier, Carver, and Bridges (1994) showed that dispositional optimism is linked to a positive mood, higher moral, a sense of self-mastery and self-esteem with negative links to depression and anxiety. In a comprehensive review of the literature on optimism, Scheier, Carver, and Bridges (2002) documented less depression among dispositional optimists across several studies using a wide variety of samples including college students, amputation patients, cancer patient care givers, Alzheimer's disease spouse caregivers, professional women, and victims of missile attacks, to name a few. In regards to postpartum depression dispositional optimism has been found to decrease the likelihood of women experiencing depression after childbirth (Carver & Gaines, 1987).

An optimistic explanatory style has been posited as a cognitive invulnerability to depression. To test this hypothesis many researchers have used longitudinal designs investigating levels of optimism and pessimism among individuals deemed to be at high or low risk for developing depression. One such project is a dual-site collaboration between Temple University and the University of Wisconsin called the Temple-Wisconsin Cognitive Vulnerability to Depression (CVD) Project (Abramson et al., 2000). The two sites were important because the Temple site was more of an urban site with high representation of African American and lower SES participants while the Wisconsin site was predominantly Caucasian individuals from more

rural or suburban areas. Freshman college students who were not depressed and had no other forms of psychopathology were studied for five years.

Findings from the CVD project (Abramson et al., 2000) were consistent with much of the research on dispositional optimism in that individuals with an optimistic cognitive style are less likely to develop depressed moods or depressive symptoms. Optimists were less likely than pessimists to have a first onset of major depressive disorder and had half the rate of lifetime prevalence of major depressive disorder compared to pessimists. Of the participants who had a previous history of depression optimists were less likely to have had subsequent depressive episodes (6% vs. 27%). It is important to note that there were no significant differences among the optimists and pessimist on lifetime prevalence rates of other Axis I disorders, suggesting specificity of optimism as an invulnerability factor for depression and conversely that pessimism is a specific risk factor for depression.

Explanatory styles have been shown to be important factors in the treatment of depression. Seligman et al. (1998) studied participants who were receiving cognitive therapy for depression and found that recovery was associated with a shift in explanatory style. Gillham, Shatte, Reivich, and Seligman (2002) report other findings that show that a pessimistic explanatory style is linked to increases in depressive symptoms over time and is predictive of relapse after therapeutic intervention. In addition, preventative programs that elicit change toward an optimistic explanatory style have been shown to protect against depressive symptoms in both adults and children.

Depressive Realism

An interesting caveat to the research on optimism, pessimism, and ultimately depression, that warrants attention deals with the accuracy of judgments of control. As discussed earlier,

learned helplessness theory of depression states that depressed individuals unrealistically believe that they have little to no control over aversive outcomes in their lives. The cognitive theory of depression posed by Beck (1967) asserts that depressed individuals view the world through distorted thinking. Beck's negative cognitive triad consists of an unrealistic negative view of self, environment or world, and the future. According to these two cognitive theories, one would expect that pessimistic and certainly depressed individuals would be less accurate in their perception of themselves and the world.

Some research contradicts the notion that depressed people are unrealistic. Alloy and Abramson (1979) found that depressed individuals were more accurate in their estimations of control than were non-depressed individuals. In the experiment, participants were asked to decide how much control they had over the illumination of a light across different conditions such as whether they were winning versus losing money and level of actual control. Across all conditions, depressed participants were more accurate while non-depressed participants underestimated their control of negative outcomes and overestimated their control of positive outcomes. This tendency for non-depressed individuals to perceive more control than what reality suggests has been termed an illusion of control. It is worth noting that in Alloy and Abramson's (1979) study, participants were categorized as depressed/non-depressed, when a more accurate category might have been dysphoric/non-dysphoric. They divided participants into a "depressed" group based on a cutoff score of nine or above on the Beck Depression Inventory (BDI) which would actually be in the sub-clinical range.

Further research into depressive realism has yielded mixed results. Kapci and Cramer (1999) used a design for judgment of control similar to Alloy and Abramson's and assessed for depressive symptomatology three months following the control tasks. They found that dysphoric

participants were pessimistic rather than realistic in their estimation of control, and that this pessimism about control was predicative of depressive symptomatology in a three month follow-up assessment. Results become even less clear when investigating accuracy in other realms. For example, depressive realism was supported in a task assessing risk accuracy (Keller, Lipkus, & Rimer, 2002) but not in a task of perception of social competency (Chau & Milling, 2006).

Depressive Realism in Future Predictions. There is considerable amount of research on depressive realism in regards to predictions of future life events and again the results are mixed. Non-depressed persons tend to overestimate the probability of experiencing positive events and underestimate the likelihood of experiencing negative events. These results were not found in depressed persons (Weinstein, 1980). Results from a study by Crocker, Alloy, and Kayne (1988) showed that non-depressed individuals exhibited a self-enhancing bias in that they predicted that positive events were more likely to happen to themselves compared to similar others while negative events were predicted to be more likely to happen to similar others compared to themselves. A self-enhancing bias was not seen in the depressed participants. Alloy and Ahrens (1987) also found that non-depressed individuals exhibited a self-enhancing bias; however, based on their results, it was concluded that depressed participants were pessimistic rather than realistic in their predictions for both themselves and others. More recently, Struck, Lopez, and DeRubeis (2006) found that depression was significantly associated with a pessimistic bias rather than accuracy in judgments regarding future events.

Kapci and Cramer (1998), using a college sample, asked participants to predict the occurrence of certain positive and negative events that they would experience in a semester. Over the semester, the participants made daily accountings of the whether the provided events had occurred. Results partly confirmed the depressive realism phenomenon in that dysphoric

participants were more realistic in predicting the negative life events that they would experience and more realistic in predicting which positive life events they would not experience. However the dysphoric participants were less accurate in predicting the negative events they would not experience. An interesting side note from this study was that dysphoric participants reported experiencing more negative life events than non-dysphoric participants.

Dunning and Story (1991) used a prediction of future events task but they also examined a component in which participants rated how confident they were in their predictions. They found that both mildly depressed and non-depressed participants were overconfident in their accuracy of predictions, but the mildly depressed were actually less accurate and therefore more overconfident than the non-depressed participants. Further analyses were run to determine possible reasons for the disparity in accuracy between the groups. It was found that the mildly depressed group was less accurate partly because participants predicted more life events with low base-rates, particularly predicting unfavorable outcomes with low base-rates.

In addition to mixed results, Hancock, Moffoot, and O'Carroll (1996) criticized studies that have investigated depressive realism for using subjects, usually college students, who were not clinically depressed but rather placed into a "depressive" group based on a cutoff score of nine or ten on the BDI. Some argue that clinical depression and self-reported symptoms of depression are separate things while others claim they lie on the same continuum (Joiner, 2000). McKendree-Smith and Scogin (2000) found that severity of depression moderates the effect of depressive realism. They found that non-depressed and mildly depressed participants exhibited a positive bias while moderately to severely depressed participants exhibited a negative bias.

To further test the depressive realism phenomenon, it would be important to use people suffering from major depressive disorder rather than college students in a mildly depressed

range. Using depressed patients, Hancock, Moffoot, and O'Carroll (1996) investigated depressive realism by looking at confidence in decision-making between individuals in one of three groups: those with major depression, those recovered from major depression, and a healthy control group. Participants were to answer 99 general knowledge questions and rate their confidence in their answers. Results showed no differences in accuracy. No differences were found in confidence of incorrect answers between the three groups but individuals in the depressed group were significantly less confident in their correct answers than the healthy control group. Another study by Wood, Moffoot, and O'Carroll (1998) found on a face-recognition task that depressed patients were less confident than controls when they correctly identified the face and found no difference between the two groups in self-confidence when wrong, leading to a conclusion that depressed people are realistic when they were wrong but negatively unrealistic when they were right.

Another critique of the research on depressive realism is that the experiments lack ecological validity. Ackermann and DeRubeis (1991) reported in a review of the literature that studies that rely on artificial lab settings tend to support depressive realism while naturalistic studies fail to do so. Pacini, Muir, and Epstein (1998) provided more detail regarding when depressive individuals might be more realistic. They reported that depressed participants were more realistic in trivial (laboratory) settings because they could access more rational control. In emotionally engaging situations that were personally more consequential, the depressed group was less realistic compared to the non-depressed group.

Sadder but Wiser Experiments

One area in which results on depressive realism appear to be less conflicting is in application to judgment of control tasks similar to those examined in what Alloy and Abramson

(1979) dubbed “sadder but wiser” experiments. In a review of the depressive realism research, Ackerman and DeRubeis (1991) reported that depressive realism is most applicable to judgment of control tasks. Judgment of control tasks are usually completed using a computer task where participants decide to press or not press the space bar followed by the presence or absence of a light (or other target stimuli). Participants are then asked to rate how much control they had over the appearance of the light. The researchers set the probability of the light appearing and an accuracy of judgment of control is obtained by subtracting the actual degree of control from the participants’ perceived control. The initial “sadder but wiser” experiment has been replicated many times (see Alloy & Abramson, 1988, for a review) with similar results leading to the conclusion that positive illusions may be normative whereas depressive thinking is more realistic thinking.

Illusory Control

Abramson et al, (2000) define illusion of control as a belief that one has “control over objectively uncontrollable events” (p. 85). Based on the depressive realism research and the “sadder but wiser” experiments, it would seem that having depression is related to a lack of an illusion of control. To test this, participants from the CVD Project completed a judgment of control task. The participants who had developed major or minor depressive disorder were more realistic in their estimation of control while those classified as invulnerable to depression were overly optimistic and demonstrated illusory control (Abramson et al., 2000). Not only does an illusion of control appear to be negatively correlated with a diagnosis of depression, but it may also be a protective factor against depression. Alloy and Clements (1992) used a judgment of control task in conjunction with a forced failure task, and found that optimism, even when it is illusory, provides protection against depressed mood following failure on an unsolvable block

design. They also found that an illusion of control was protective against depressive symptoms in a one month follow-up.

Current Study

The majority of the depressive realism and illusion of control research has investigated judgment of control in tasks where control is not possible. While it is important to know that people overestimate their control in no control situations, it is also important to understand how people estimate their control in situations that are, at least to some extent, controllable. Situations in which one has no control are considerably less prevalent in day to day living than are situations where one has some degree of control. Even in situations such as being diagnosed with cancer that may seem out of one's control, people can take precautions to decrease cancer risk. Despite the fact that many situations have a degree of control, relatively few studies have focused on illusory control and depressive realism in contingency situations.

A computerized task was used to explore this issue. The use of such tasks to investigate judgment of control has been well established particularly in tasks where control is not possible (Alloy & Abramson, 1988; DeRubeis, 1991). However, Thompson et al. (2007) used a computerized judgment of control task that manipulated levels of actual control to investigate if illusions of control exist in controllable tasks though their study did not assess for depression or optimism/pessimism in their study. The current study investigated the effects of depression (and optimism/pessimism) on accuracy of judgment of control using computerized task similar to the procedure used by Thompson et al. where control is possible. This will be accomplished by using different levels of control: no control (0%), low control (25%), and high control (50%). The various levels of actual control allows for the investigation of perceived control in both

contingent and noncontingent situations as it would be important to know if depressed people underestimate their control in the contingency tasks.

A second purpose of the proposed study was to investigate the role optimism/pessimism might play into one's estimation of control. Most studies on control have categorized participants as depressed or dysphoric and non-depressed or non-dysphoric. These studies have been discussed in terms of depressed people being more realistic and non-depressed demonstrating overconfidence. Since pessimism has been shown to co-exist with depression, it is important to investigate whether perceiving one had no control was due to pessimism rather than to realism. Having various degrees of control will allow for a comparison of accuracy and allow for assessment of whether participants simply perceives less control across tasks (a pessimistic perception of control) or if in fact, depressed individuals are more realistic across tasks.

Because the non-depressed individuals tend to exhibit an optimistic bias of control in judgment of control tasks, they are often described as optimistic. However, studies have failed to measure optimism and pessimism using measures specifically designed for these constructs. Therefore, the current study investigated how optimists and pessimists, as determined by valid measures, perceive control. Without such an investigation, one can only conclude that non-depressed persons demonstrate illusory control. The conclusion that one is optimistic is not valid until it tested. Thus, this study proposes to explore accuracy of control among optimists and pessimists in addition to those who are depressed and non-depressed.

Hypotheses

1. Since research has shown a positive correlation between pessimism and depression, it is hypothesized that participants with high BDI-II scores will also have high pessimism scores.

2. Based on previous research on judgment of control and depression, it is hypothesized that dysphoric individuals will be accurate in the noncontingent task.
3. It is hypothesized that non-dysphoric individuals will exhibit an illusion of control and overestimate control in the noncontingent task.
4. In tasks of contingency, it is hypothesized that dysphoric individuals will underestimate control.
5. In tasks of noncontingency, it is hypothesized that pessimistic individuals will have accurate judgments of control.
6. In tasks of noncontingency, it is hypothesized that optimistic individuals will exhibit an optimistic illusion of control and overestimate control.
7. In tasks of contingency, it is hypothesized that pessimistic individuals will underestimate control.
8. In tasks of contingency, it is hypothesized that optimistic individuals will exhibit an illusion of control and overestimate control.

CHAPTER 2

Methods

Design

The current study utilized an experimental design to test the influence of personality variables (dispositional optimism/pessimism, explanatory style, depression) and the degree of actual control on accuracy of control.

Participants

A total of 95 undergraduates participated in the study. Participants were recruited from psychology classes at Indiana State University. Participation was voluntary and course credit or extra credit were given as an incentive. The only inclusion criterion was that participants be at least 18 years old. Incomplete data was excluded from interpretation, resulting in a final sample of $N = 88$. Participants' ages ranged from 18 to 47 with a mean age of 21.10 years and a $SD = 4.26$. The gender and ethnic makeup of the sample included 84.1% ($N = 74$) female and 15.9% ($N = 14$) male, with 73.9% ($N = 65$) Caucasian, 22.7% ($N = 20$) African American, 2.3% ($N = 2$) Asian American, and 1.1% ($N = 1$) participant identified as multi-racial. Participants were randomly assigned to one of three conditions in which the degree of actual control varied. Table 1 presents the frequencies and percentages of participants by control condition.

Measures

Depressive Symptoms. The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report measure of depressive symptoms. Individuals are asked to respond to each item by marking one of four sentences that best describes the severity of a specific symptom. Each item is scored as a 0, 1, 2, or 3. A total depression score is obtained by adding the scores from each item into a total score with the higher scores corresponding to greater severity. The BDI-II has been validated with other depression scales including the BDI and demonstrated high internal consistency with alpha coefficients of .93 for college students and .92 for outpatients (Beck et al., 1996). Cronbach's alpha in the current study was .90.

Using the BDI cutoff-score established by Allow and Abramson (1979), participants in this study who scored a 9 or above on the BDI-II were categorized as dysphoric and those scoring 8 and below were categorized as non-dysphoric. The term dysphoric rather than depressed was used in this study to avoid any implications of a clinical disorder of depression.

Optimism/Pessimism. The Attributional Style Questionnaire (ASQ; Peterson et al., 1982; Seligman, Abramson, Semmel, & von Baeyer, 1979) is a self-report measure of how one explains positive and negative outcomes within three dimensions: internal/external, stable/unstable, and global/specific (see Appendix A). Individuals are asked to give causal attributions to 24 hypothetical events, half positive and half negative, and then rate on a scale of 1-7 for internality, stability, and globality. Separate composite scores are derived for explanations for positive events (CP) and explanations for negative events (CN); the total score is obtained by subtracting the negative composite score from the positive composite score (CP-CN). Peterson et al. (1992) reported modest internal reliability of the internality, stability, and globality subscales, with Cronbach's alpha ranging from .44 to .69. The same study reported higher levels of internal consistency for the composite scores (.75 for positive events and .72 for

negative events). Analysis of internal reliability for the CP-CN in this study provided an alpha coefficient of .63.

The Life Orientation Test (LOT; Scheier & Carver, 1985) is a self-report measure of generalized expectancies with four positive expectancy items, four negative expectancy items, and four filler items (see Appendix B). Participants rate on a 5-point Likert scale their agreement with the twelve items where 0 = strongly disagree and 4 = strongly agree. Responses to the items determine a dispositional style as either optimistic or pessimistic. A high score is interpreted as optimistic and a low score is interpreted as pessimistic. Scheier and Carver (1985) report an alpha coefficient of .76 and retest reliability of .79. Analysis of internal reliability for the LOT-R in this study provided an alpha coefficient of .86.

Computer Task. The present study used a judgment of control task similar to Alloy and Abramson's (1979) laboratory manipulation of control in which participants rate how much control they have over the presence of a flash of light. However, a computer program, SuperLab Pro for Windows, was used for the presentation of stimuli in the current study as reported in Thompson et al. (2007). Participants sat at an individual computer that presented either a target screen of three green X's or a nontarget screen of three red O's. The judgment of control task consisted of 10 practice trials and 40 actual trials on which participants had the option of pressing or not pressing the space bar. Each session of trials began with a blank computer screen for 5-seconds followed by a screen with the word *begin*. Each trial lasted 3-seconds with the target or nontarget screen appearing at the end of the 3-seconds. At the end of the 40 trials, the participants were asked to judge the degree of control their responses of pushing or not pushing the space bar had on the appearance of the target screen.

Degree of actual control over the target screen was manipulated by fixing the difference between the percentage across all trials that the target screen appeared when participants pressed or did not press the space bar. In some trials, the pressing of the space bar produced the target screen while in other trials refraining from pressing produced the target screen, allowing for both active and passive influence on the target screen. Following the design used by Alloy and Abramson (1979; Experiment 1), degree of control was calculated as the difference between the percentages of getting the target screen when pressing and when not pressing. There were three possible levels of control: 0% for the no-control conditions, 25% for the low control conditions, and 50% for the high control condition.

Judgment of Control Scale. Participants' judgment of control was assessed using a 0-100 scale used by Alloy and Abramson (1979) in their original study (see Appendix C). The scale is divided into units of 5 with 0 being no control, 100 being complete control, and the halfway point being intermediate control. The scale provided a subjective rating of control that was then compared to the level of objective control. For example, a participant rating of 60 when the actual degree of control was 0% would represent an overestimation of control while a rating of 10 when degree of control was 50% would represent an underestimate. This scale allows for the testing of accuracy in perceptions of control and the related constructs of depressive realism and illusory control.

Procedure

After obtaining informed consent, participants were scheduled for individual times to complete tasks. Each participant completed all trials and questionnaires independently during a private lab session. The first task was the computer control task with the judgment of control scale directly following. For the computer task, participants were randomly assigned to one of

three control conditions: high (50%), low (25%), and no-control (0%). Participants were seated in front of an individual computer and given instructions for the computer task. The instructions were taken from previous research using a similar design (Thompson et al., 2007). “Participants were told that their task was to learn their degree of control over the appearance of the “XXX” screen and that during the 3-second period following the “begin”, they could choose to either press or not press the space bar to get the desired outcome” (p. 78). Following the instructions, participants completed the 10 practice trials with the researcher in the room to ensure proper understanding. Following the 10 practice trials the researcher left the room and the participant completed the 40 actual trials.

Participants were given detailed verbal and written instructions of the judgment of control scale following completion of the judgment of control task. The instructions were identical to those used by Thompson et al. (2007) and were as follows:

Complete control means that the onset of the green XXX screen on any given trial is determined by your choice of responses, either pressing or not pressing the space bar. *No control* means that...whether the green XXX screen appears on any given trial is totally determined by factors such as chance or luck, rather than by your choice of pressing or not pressing the space bar. *Intermediate degrees of control* mean that your choice of responses, either pressing or not pressing the space bar, influences the onset of the green XXX screen even though it does not completely determine whether the green XXX screen appears or not (p. 78).

After reading the instructions and giving a written copy of the instructions to the participant, the researcher again left the room and the participants estimated their degree of control on the judgment of control scale ranging from 0 to 100.

The LOT-R, ASQ, and BDI-II were given in a packet after the judgment of control task was completed. Standard instructions for each measure were written on the measure and the participants were encouraged to read each set of instructions carefully. Participants were asked to complete the questionnaires openly and honestly. They were reminded that their responses will be anonymous and told not to put identifying information on any of the questionnaires. Completion of all materials took approximately 45 minutes.

CHAPTER 3

Results

Preliminary Analyses

Table 2 presents overall means scores, standard deviations, and ranges for scales used in this study. The overall mean score on the BDI-II ($M = 12.70$) in the current sample was higher than would be expected and fell in the dysphoric range. As mentioned previously, participants were grouped as either dysphoric or non-dysphoric using the recommended cut-off of score of 9 on the BDI-II. In this sample, 66% of the participants were described as dysphoric ($n = 58$, $M = 16.88$, $SD = 8.28$), while only 34% were non-dysphoric ($n = 30$, $M = 4.63$, $SD = 2.39$). In terms of their of depressive symptoms, the current sample appears dissimilar to other college samples within the judgment of control literature. Whereas previous research in this area has reported samples categorized as predominantly non-depressed or non-dysphoric, the current sample of college students were categorized as predominately dysphoric. Additionally, the BDI-II mean score for those categorized as dysphoric in this sample was on the high end ($M = 16.88$) considering the range of BDI mean scores ($M = 12.73$ - 15.65) of comparable groups found in the literature (Alloy & Abramson, 1979; Alloy & Clements, 1992; Bennasi & Mahler, 1985; Kapci & Cramer, 1999).

In order to test hypotheses related to the variable of optimism/pessimism, a median split was used to group participants according to their scores on the LOT-R and ASQ. Participants

were grouped as dispositional optimists or pessimists based on their LOT-R score and as having an optimistic or pessimistic explanatory style based on their ASQ score. In terms of optimism and pessimism, the sample was more evenly distributed between the optimism/pessimism categorizations than it was for dysphoric/non-dysphoric categorization (See Table 3).

Correlational Analyses

Correlational analyses were conducted to examine the relationships between demographic variables and the main variables of interest. Analyses showed no significant relationships between demographic variables and the measures of interest (ASQ, LOT-R, BDI-II, and JoCS). Therefore demographic variables were not included in subsequent analyses.

Table 4 presents zero order correlations between the variables of interest. As predicted by the first hypothesis, depressive symptomatology (BDI-II) was negatively associated with optimism/pessimism as measured by the LOT-R ($r = -.43, N = 88, p < .000$, two-tailed); however, there was no significant relationship when comparing depressive symptomatology to optimistic or pessimistic explanatory styles (ASQ). It was expected that the ASQ and LOT-R would be correlated considering previous studies investigating the correlation between the LOT or LOT-R and ASQ have ranged from the high teens to .77 (Gillham, Shatte, Reivich, & Seligman, 2002). However, in this sample, scores from the ASQ were not significantly correlated with the LOT-R.

Depression and Accuracy Analyses

A 2x3 ANOVA was employed to examine the effect of BDI scores (Dysphoric, Non-Dysphoric) on accuracy of control judgments across the control conditions (0%, 25%, 50%). There was a significant main effect of the control condition on accuracy ($F(2,82) = 19.51, p = .000, \eta^2 = .32$). Employing the Bonferroni post-hoc test, significant differences were found

between the 50% control condition and the 0% control condition ($p = .000$), and between the 50% control condition and the 25% control condition ($p = .000$). The mean accuracy score in the 50% (mean = -18.85) control condition tended to be underestimations of control compared to the mean accuracy scores in the 0% (mean = 41.90) and 25% (mean = 24.09) control conditions, which tended to be overestimations of control. There was not a significant difference between the 25% control condition and the 0% control condition ($p = .104$). The main effect for the BDI was not significant and there were no significant interactions between the control condition and the BDI grouping (Table 5).

In order to test hypotheses specific to depressive symptomatology, subsequent single sample t-Tests were conducted. For each control condition (0%, 25%, 50%) the accuracy of control score from the dysphoric and non-dysphoric groups were compared to zero (0 = Accurate). Zero was used because an accuracy score of zero represents no discrepancy between the degree of actual control and perceived control; in other words, realistic or accurate judgment of control. Each analysis and the results will be discussed as they relate to the specific hypothesis.

Hypothesis 2 and 3 were based on previous findings that “depressed” participants were more realistic in their judgments of control in tasks where no control is possible while “non-depressed” participants overestimated their degree of control. By grouping participants as either dysphoric or non-dysphoric based on the recommended BDI cut-off score of 9, single sample t-Tests could be run to test these two hypothesis. Findings contradict previous research that showed “depressed” participants to be more realistic. In the non-contingent task, the mean score (mean = 43.18) on accuracy of control for the dysphoric group was significantly higher than a perfectly accurate score of zero ($t(21) = 6.18, p = .000$). Additionally, the non-dysphoric group

had a mean score (mean = 37.86) significantly higher than accurate ($t(6) = 4.82, p = .003$); thus both the dysphoric and non-dysphoric groups overestimated their degree of control when control was not possible (Table 8). Thus, hypothesis 2 was not supported while hypothesis 3 was supported.

Hypothesis 4 stated that dysphoric individuals would underestimate their degree of control or have a pessimistic judgment of control in tasks where control was contingent. Separate single sample t-Tests were run to test this hypothesis in the two conditions where control was contingent (25% control, 50% control). The accuracy of control judgment mean score for the dysphoric group was again compared to zero because an accuracy score of zero represents no discrepancy between the degree of actual control and perceived control. In contingency tasks with 25% control, the dysphoric group overestimated their degree of control (mean = 33.16, $t(18) = 3.19, p = .001$) while in contingent tasks with 50% control they underestimated their degree of control or demonstrated a pessimistic judgment of control (mean = -20.59, $t(16) = -2.64, p = .018$). Both of these mean differences were significant but in different directions, thus the hypothesis was partially supported. In situations where the most control (50%) was possible, the dysphoric group demonstrated a pessimistic perception of control but they overestimated their degree of control in tasks with moderate control (25%). Additionally, the non-dysphoric group was found to be accurate in their judgments of control in both contingent situations (Table 8).

Optimism/Pessimism and Accuracy Analyses

The same process used for testing the hypotheses related to depressive symptomatology was used for analyses related to the measures of both dispositional optimism/pessimism (LOT-R) and optimistic/pessimistic explanatory style (ASQ). First, an ANOVA was conducted to investigate the role of control condition (0%, 25%, 50%) and the LOT-R grouping (Optimistic,

Pessimistic) on accuracy of control judgments. There was a significant main effect of the control condition on accuracy ($F(2,82) = 21.38, p = .000, \eta^2 = .34$). Employing the Bonferroni post-hoc test, significant differences were found between the 50% control condition and the 0% control condition ($p = .000$), and between the 50% control condition and the 25% control condition ($p = .000$). The mean accuracy score in the 50% (mean = -18.85) control condition tended to be underestimations of control compared to the mean accuracy scores in the 0% (mean = 41.90) and 25% (mean = 24.09) control conditions, which tended to be overestimations of control. There was not a significant difference between the 25% control condition and the 0% control condition ($p = .107$). The main effect for optimism/pessimism in the LOT-R was not significant and there were no significant interactions between the control condition and the LOT-R grouping (Table 6).

A second ANOVA was conducted to investigate the impact of the control condition (0%, 25%, 50%) and the ASQ grouping (Optimistic or Pessimistic Explanatory Style) on accuracy of control judgments. There was a significant main effect of the control condition on accuracy of control on accuracy ($F(2,82) = 29.64, p = .000, \eta^2 = .42$). Employing the Bonferroni post-hoc test, significant differences were found between the 50% control condition and the 0% control condition ($p = .000$), and between the 50% control condition and the 25% control condition ($p = .000$). The mean accuracy score in the 50% (mean = -18.85) control condition tended to be underestimations of control compared to the mean accuracy scores in the 0% (mean = 41.90) and 25% (mean = 24.09) control conditions, which tended to be overestimations of control. There was not a significant difference between the 25% control condition and the 0% control condition ($p = .086$). There was a main affect of explanatory style on accuracy of control ($F(1,82) = 7.33, p = .008, \eta^2 = .08$). Overall, across control conditions, individuals with a

pessimistic explanatory style provided lower accuracy mean scores (mean = 5.13) compared to individuals with an optimistic explanatory style (mean = 23.98). There were no significant interactions between the control condition and explanatory style (Table 7).

In order to test hypotheses specific to optimism/pessimism, subsequent single sample t-Tests were conducted. Each analysis and the results will be discussed as they relate to the specific hypothesis.

Hypothesis 5 stated that pessimistic individuals would have accurate judgments of control in noncontingent tasks. Hypothesis 6 stated that optimistic individuals would overestimate control. These hypotheses were tested with two different measures of optimism and separate single sample t-Tests were run: one measuring dispositional optimism (LOT-R) and one measuring explanatory style (ASQ). In testing the mean difference in accuracy among dispositional pessimists, it was found that their mean accuracy (mean = 34.55) score was significantly higher than accurate ($t(10) = 5.16, p = .000$). The mean accuracy score (mean = 46.39) among dispositional optimists was also significantly higher than accurate ($t(17) = 5.83, p = .000$); thus both dispositional pessimists and optimists overestimated their degree of control in noncontingent tasks (Table 9). In testing the mean difference in accuracy among those with a pessimistic explanatory style, it was found that their mean accuracy score (mean = 28.75) was significantly higher than accurate ($t(15) = 6.73, p = .000$). The mean accuracy score (mean = 58.08) among those with an optimistic explanatory style was also significantly higher than accurate ($t(12) = 5.98, p = .000$); thus both groups, regardless of explanatory styles, overestimated their degree of control in the 0% control condition (Table 10). Regardless of the measure, both optimistic and pessimistic groups demonstrated an illusion of control and overestimated control. Thus the hypothesis that pessimistic individuals would be accurate in their

judgments of control in noncontingent tasks was unsupported in this sample. The hypothesis that optimistic individuals would overestimate their degree of control in the 0% control condition was supported by these findings.

Hypothesis 7 stated that pessimistic individuals would underestimate their degree of control in tasks where some degree of control was afforded. As before, because there were two measures of optimism/pessimism, separate t-Tests were run using each measure of pessimism (LOT-R, ASQ). The mean accuracy score (mean = 18.53) among dispositional pessimists was a significant overestimation of control ($t(16) = 2.46, p = .001$), rather than the expected underestimation, in the 25% control condition. In contingent tasks with 50% control, dispositional pessimists demonstrated relatively accurate judgments of control (mean = -11.00). Please refer to Table 9 for further details. In terms of explanatory style, the mean accuracy score (mean = 23.53) among pessimists was a significant overestimation ($t(16) = 2.88, p = .011$) while they significantly underestimated their control in contingent tasks with 50% control (mean = -36.88, $t(7) = -5.52, p = .001$). See Table 10 for further details. The hypothesis was partially supported in that the pessimistic group underestimated control in certain situations (high control or 50% control) if measuring optimism/pessimism as an explanatory style. The same finding was not found when measuring the construct as a dispositional trait.

Hypothesis 8 stated that optimistic individuals would exhibit an illusion of control and overestimate control in tasks where control was possible. The mean accuracy score (mean = 30.00) among dispositional optimists was a significant overestimation of control in the 25% control condition ($t(15) = 3.22, p = .006$) and an underestimation in the 50% condition (mean = -23.75, $t(15) = -2.83, p = .013$). Refer to Table 9 for more details. In terms of explanatory style, the mean accuracy score (mean = 24.69) among optimists was a significant overestimation of

control in the 25% control condition ($t(15) = 2.76, p = .015$). In contingent tasks with 50% control, those with an optimistic explanatory style had a mean accuracy score that was not significantly different suggesting accurate judgments of control (mean = -10.83). See Table 10 for more details. The hypothesis that optimistic individuals would demonstrate an overestimation of control was supported in the 25% control condition regardless of how optimism was measured; however depending on the measure of optimism, the hypothesis was not supported in the 50% control condition.

CHAPTER 4

Discussion

The aim of this study was two-fold: 1) to investigate the control conditions in which depressive symptoms contribute to realistic or accurate judgments of control and 2) to examine optimism and pessimism and their influence on accuracy of judgments of control. Eight hypotheses were tested related to these aims. As reported, these hypotheses garnered mixed support. The results of these analyses and their implications and limitations will be discussed below.

Depression and Accuracy of Control Judgments

A major critique of previous research that supports the depressive realism hypothesis was that accuracy of judgments was being determined using only noncontingent situations. When a person is placed in an experimental situation where personal control is not possible, it would be an error to state that the person who accurately reports he/she has no control is realistic. Using only a noncontingent task, one would be unable to distinguish realistic from pessimistic judgments of control. Thus, to claim that depressed individuals are more realistic without using a task of contingency to assess for underestimations of control would be in error. By manipulating the degree of control, the present study attempted to investigate the depressive realism phenomenon further and differentiate realistic judgments from pessimistic judgments among

depressed participants. However, the current study did not replicate original research on depression and judgments of control.

The present study failed to demonstrate the depressive realism phenomenon. Participant's endorsement of depressive symptoms as measured by the BDI-II was not significantly related to accuracy of judgment. Even as the analyses were changed to only include the condition where control was not possible (as most studies investigating depression and judgments of control have done), the "depressed" participants were no more accurate than the "nondepressed." In no control conditions were dysphoric participants accurate, whereas the non-dysphoric participants were accurate in their judgments of control in both contingent tasks. Thus the hypothesis that dysphoric participants would be more accurate or realistic in their judgments of control was not supported. Similar non-findings have been reported. Ackermann and DeRubies (1991) reported in a meta-analytic review on 33 studies that included some appraisal of the accuracy of participant's judgment. Nineteen studies provided results supporting the depressive realism hypothesis while 14 produced contradictory findings.

A possible explanation for not finding the dysphoric group to be accurate could be related to the level of depressive symptomatology. Studies using participants diagnosed with clinical depression rather than a student population grouped as "depressed" by a cutoff score on the BDI tended to be less supportive of the depressive realism hypothesis. Dobson and Pusch (1995) using a noncontingent judgment of control task found that clinically depressed patients actually overestimated their degree of control compared to non-depressed and remitted depressed patients. Although, the current study did not use a clinical sample diagnosed with depression, the results were similar to Dobson and Pusch in that the dysphoric participants tended to overestimate their degree of control in situations where there was no control or little control. The

similarities in results between the current study and Dobson and Pusch's study could be due to the higher BDI mean score ($M = 16.88$). Comparable studies that support the depressive realism hypothesis reported lower BDI means ($M = 12.73-15.65$) in their samples (Alloy & Abramson, 1979; Alloy & Clements, 1992; Bennis & Mahler, 1985; Kapci & Cramer, 1999).

In the current study, as the amount of control increased to the point where the participants had control over the presence of the target screen half of the time, the dysphoric participants then switched from overestimating control to underestimating their control. This underestimation of control in the 50% control condition supported the hypothesis that dysphoric individuals would underestimate control or have pessimistic perceptions of control in contingent situations.

McKendree and Scogin (2000) found that the severity of depressive symptoms moderated the effect of depressive realism with severely depressed individuals demonstrating a negative bias. Again, the current study did not use a clinically sample, yet there was a broad range of severity of symptoms endorsed on the BDI-II. In the present study, dividing participants by severity of depressive symptoms did not alter the results in tasks of noncontingency or low contingency (25% control). However when participants who scored in the moderate to severe range on the BDI-II (scores above 18) were excluded from analysis, the dysphoric group was found to be accurate instead of underestimating control in the 50% control condition ($t(8) = -1.18, p = .271, n.s.$).

Optimism/Pessimism and Accuracy of Control Judgments

There is a wealth of literature on depression and judgments of control that has given rise to the depressive realism hypotheses (see meta-analytic review by Ackerman and DeRubeis, 1991). Within this line of study, researchers often report that people devoid of depressive symptoms are less realistic or demonstrate an illusion of control. Alloy and Clements (1992)

refer to this illusion of control in non-depressed people as illusory optimism. Kapci and Cramer (1999), while investigating judgment of control, characterized participants as optimists, realists, and pessimists based on their judgments of control. Despite these references to optimism, there is a dearth of information actually measuring optimism/pessimism in the judgment of control and depressive realism literature.

The present study examined the relationship between optimism and pessimism on judgments of control and found somewhat conflicting results. Whether one is optimistic or pessimistic appears to have a variable influence on the accuracy of control judgments depending on how one measures optimism/pessimism. When analyzing the effect optimism/pessimism had on accuracy of control across all three control conditions (0%, 25%, 50%), only explanatory style (as measure by the ASQ) demonstrated a main effect. Examining the different measures of optimism and pessimism on accuracy of control in each control condition provides further details regarding the influence of explanatory style. Regardless of how optimism/pessimism was measured (LOT-R or ASQ), both optimists and pessimists overestimated their degree of control when the control condition was either non-contingent or of low contingency (25% control). However, in the high contingent situation (50% control), the relationship between the two measures of optimism/pessimism and accuracy of control judgments varied greatly. When afforded a high degree of control, dispositional optimists provided underestimates of control and the dispositional pessimists provided relatively realistic judgments of control. In the same 50% control condition, the relationship between explanatory style and accuracy of control was opposite of that found with dispositional traits. Those with optimistic explanatory styles provided relatively realistic or accurate judgments of control and those with pessimistic explanatory styles provided underestimates or pessimistic judgments of control.

A possible explanation for this discrepancy in findings between two measures of optimism/pessimism could be related to how optimism and pessimism are measured by the ASQ versus the LOT-R. Certainly, the creators of the measures operationally defined optimism/pessimism differently. Scheier and Carver (1985) emphasized generalized outcome expectancies while Peterson et al. defined optimism/pessimism by how one explains causes for good and bad events.

The differing theoretical and measurement methods by the ASQ and LOT-R likely contribute to unique predictive properties. In a study examining the convergent and predictive ability of optimism/pessimism measures, Reilley, Geers, Linday, Deronde, and Dember (2005) found that the LOT and ASQ were modestly related and that the future expectancy component of the LOT was more predictive of physical health, depression, and coping than was the explanatory component of the ASQ. Thus, in the present study the opposite appears to be true. In the study the participants were asked to judge the degree of control they had after they had completed the computer task. This was a retrospective task that was less dependent upon one's expectancy for future events; therefore, dispositional optimism was not as influential on providing accurate judgments of control.

The ASQ, however, is measuring one's relatively persistent pattern of explaining life events, retrospectively. The manner in which one provides causal attributions might be expected to reflect their judgments of control. For instance, pessimistic people who routinely offer the internal explanation of "its all my fault" when bad things happen are in a way saying they had some influence or degree of control over the negative event. Yet these same individuals will often offer an external explanation, believing they had little influence or control, when positive events occur. Optimistic individuals have an inverse attributional pattern to pessimistic

individuals in that they attribute external causes when things go wrong and give internal explanations when things go right. So individuals with optimistic explanatory styles could be viewed as believing they influence their successes and that something outside of their control results in their failures. Though artificial, the computer task in the present study may have acted as a series of mini successes (target screen appeared) and failures (did not appear), allowing participants to project their pattern of explaining life events. This may explain why individuals with a pessimistic explanatory style underestimated their degree of control in the judgment task where they actually had the highest degree of control and why individuals with an optimistic explanatory style were accurate in the 50% control condition.

Unfortunately, this pattern of accuracy among individuals with an optimistic explanatory style and the pattern of underestimation or pessimistic judgments of control among individuals with a pessimistic explanatory style were not consistently found across the various control conditions (i.e., both styles overestimated control in the 0% and 25% control tasks). Similar findings were apparent in comparing dysphoric and non-dysphoric participants across the various control conditions. It was only in the high contingency condition (50% control) that the expected outcome occurred: the dysphoric group underestimated control and the non-dysphoric group was relatively accurate. As mentioned before the dysphoric group overestimated control in the other two control conditions. So across all personality variables, participants overestimated control in the noncontingent and low contingent situations and only in the high contingency situation were differences found among groups. An explanation could be related to the point at which one can recognize personal influence. Possibly, only at 50% control could participants begin to discriminate between when their action elicited the target screen versus when the target screen randomly appeared. Once able to begin discriminating between randomness and personal

control, participants' characterological pattern of viewing and explaining events may have been engaged. Thus in the high control condition, the negative schemas associated with depressogenic symptoms and pessimistic explanatory styles may have interfered with perception of control, leading to pessimistically inaccurate judgments of control.

Limitations and Future Directions

There are important limitations based on the sample to consider when extrapolating from the results of this study. First, the sample size was small (N=88) and a larger sample size would improve generalizability and provide greater power for analyses. Second, the sample had a disproportionate number of dysphoric participants (66%). Third, the sample was comprised of predominately female participants (84%), thus the results can likely only be generalized to women. Lastly, because the sample was comprised of university students, the legitimacy of generalizing the results across age ranges within the general population may not be appropriate. Despite having a broad range of scores on the BDI-II, the participants were not diagnosed as clinically depressed; therefore it would be difficult to generalize the findings to a clinical sample. However, since the aim of the study was to investigate the influence of optimism and pessimism (rather than depression) on judgments of control, the findings were not intended to be directly applied to individuals diagnosed with clinical depression. Instead the findings from this study add to the current literature on depressive realism, illusion of control, and judgments of control by illuminating the relationship that optimistic and pessimistic explanatory styles have on accuracy of control judgments.

Another limitation of this study is one that is apparent throughout research in the field of depressive realism. It is the extent to which the findings can be generalized to real life situations. Because few situations in a person's life are absolutely uncontrollable, one could argue that by

manipulating the degree of control, the current study improved the ecological validity from previous research on judgment of control that utilized strictly noncontingent tasks. However, even with the addition of contingent conditions, a computerized task conducted in a lab setting may not generalize to everyday situations, particularly situations that are emotionally laden. Future research in this area should focus on methodology utilizing real-life judgments of control.

A review by Alloy and Abramson (1998) found less evidence for the depressive realism hypotheses when using methodologies other than judgment of control tasks. The same may be true for the research on optimism and judgment of control. Therefore, the extent to which optimism related to accuracy in this judgment task may not generalize to accuracy in other areas where depressive realism has been demonstrated (i.e., prediction of life events, accuracy of general knowledge questions, and accuracy of perceptions in social situations). Future research could include measures of optimism/pessimism when investigating the depressive realism hypothesis in different domains.

Summary

Results of the current study add to the body of psychological research in the area of depressive realism and judgment of control. By manipulating the degree of control, this study could test the premise that depressed people are more accurate or realistic in their judgments of control across situations of varying contingencies. Overall, the results did not support the depressive realism hypothesis. Results did show that the degree of actual control one has effects their perception of control; therefore research on judgment of control would benefit from inclusion of both noncontingent and contingent tasks in future studies. Additionally, this study provided novel information regarding the role of optimism and pessimism that was missing in the judgments of control literature. Considering the theoretical and correlational ties between

optimism, pessimism, and depression it would be important to further investigate the role of optimism/pessimism in research pertaining to depressive realism and judgments of control, particularly in clinically depressed populations. The current study provided evidence that people with substantial depressive symptoms have pessimistic perceptions of control in situations where control was afforded them. Findings also demonstrated that in those same situations where control was possible, individuals with an optimistic explanatory style were relatively accurate in their judgments of control. Gaining a greater understanding of the variables that contribute to perceptions of control, especially if those perceptions are negativistic and inaccurate could have great therapeutic implications for those suffering from depression.

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APPENDIX A

Demographic Questionnaire

Please respond to the following questions about yourself.

Age: _____

Gender: _____

1. Male
2. Female

Race: _____

1. White/Caucasian
2. Black/African American
3. Hispanic/Latino(a)
4. Native American
5. Indian Asian/Asian American
6. Other (please specify) _____

APPENDIX B

Attributional Style Questionnaire

Directions:

1. Read each situation and vividly imagine it happening to you.
2. Decide what you believe to be the one major cause of the situation if it happened to you.
3. Write this cause in the blank provided.
4. Answer the four questions about the cause by circling one number per question. Do not circle the words.
5. Go on to the next situation.

SITUATIONS**YOU MEET A FRIEND WHO COMPLIMENTS YOU ON YOUR APPEARANCE.**

1. Write down the one major cause: _____

2. Is the cause of your friend's compliment due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

3. In the future, when you are with your friend, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

4. Is the cause something that just affects interacting with friends, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOU HAVE BEEN LOOKING FOR A JOB UNSUCCESSFULLY FOR SOME TIME.

5. Write down the one major cause: _____

6. Is the cause of your unsuccessful job search due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

7. In the future, when looking for a job, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

8. Is the cause something that just influences looking for a job, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOU BECOME VERY RICH.

9. Write down the one major cause: _____

10. Is the cause of your becoming rich due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

11. In the future, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

12. Is the cause something that just affects obtaining money, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

A FRIEND COMES TO YOU WITH A PROBLEM AND YOU DON'T TRY TO HELP HIM/HER.

13. Write down the one major cause: _____

14. Is the cause of your not helping your friend due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

15. In the future, when a friend comes to you with a problem, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

16. Is the cause something that just affects what happens when a friend comes to you with a problem, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOU GIVE AN IMPORTANT TALK IN FRONT OF A GROUP AND THE AUDIENCE REACTS NEGATIVELY.

17. Write down the one major cause: _____

18. Is the cause of audience's negative reaction due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

19. In the future, when you give talks, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

20. Is the cause something that just influences giving talks, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOU DO A PROJECT WHICH IS HIGHLY PRAISED.

21. Write down the one major cause: _____

22. Is the cause of your being praised due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

23. In the future, when you do a project, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

24. Is the cause something that just affects doing projects, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOU MEET A FRIEND WHO ACTS HOSTILELY TOWARDS YOU.

25. Write down the one major cause: _____

26. Is the cause of your friend acting hostile due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

27. In the future when interacting with friends, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

28. Is the cause something that just influences interacting with friends, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOU CAN'T GET ALL THE WORK DONE THAT OTHERS EXPECT OF YOU.

29. Write down the one major cause: _____

30. Is the cause of you not getting the work done due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

31. In the future when doing work that others expect, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

32. Is the cause something that just affects doing work that others expect of you, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOUR SPOUSE (BOYFRIEND/GIRLFRIEND) HAS BEEN TREATING YOU MORE LOVINGLY.

33. Write down the one major cause: _____

34. Is the cause of your spouse (boyfriend/girlfriend) treating you more lovingly due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

35. In future interactions with your spouse (boyfriend/girlfriend), will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

36. Is the cause something that just affects how your spouse (boyfriend/girlfriend) treats you, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

**YOU APPLY FOR A POSITION THAT YOU WANT VERY BADLY
(E.G. IMPORTANT JOB, GRADUATE SCHOOL ADMISSION, ETC.)
AND YOU GET IT.**

37. Write down the one major cause: _____

38. Is the cause of your getting the position due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

39. In the future when you apply for a position, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

40. Is the cause something that just influences applying for a position, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOU GO OUT ON A DATE AND IT GOES BADLY.

41. Write down the one major cause: _____

42. Is the cause of the date going badly due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

43. In the future when dating, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

44. Is the cause something that just influences dating, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

YOU GET A RAISE.

45. Write down the one major cause: _____

46. Is the cause of you getting a raise due to something about you or something about other people or circumstances?

Totally due to other people or circumstances	1 2 3 4 5 6 7	Totally due to me
---	---------------	-------------------

47. In the future on your job, will this cause again be present?

Will never again be present	1 2 3 4 5 6 7	Will always be present
--------------------------------	---------------	------------------------

48. Is the cause something that just affects getting a raise, or does it also influence other areas of your life?

Influences just this particular situations	1 2 3 4 5 6 7	Influences all situations in my life
---	---------------	---

APPENDIX C

Life Orientation Test-Revised

Please place the appropriate number, either, 0, 1, 2, 3, or 4 on the line beside each statement that corresponds to the extent of agreement or disagreement with each. Please be honest as you can. There are no right or wrong answers, just your judgment about you.

0 = strongly disagree

1 = disagree

2 = you are neutral about the statement

3 = agree

4 = strongly agree

Remember place the number 0, 1, 2, 3, or 4 on the line next to each statement.

1. In uncertain times I usually expect the best. _____
2. It's easy for me to relax. _____
3. If something can go wrong for me, it will. _____
4. I'm always optimistic about the future. _____
5. I enjoy my friends a lot. _____
6. It's important for me to keep busy. _____
7. I hardly ever expect things to go my way. _____
8. I don't get upset too easily. _____
9. I rarely count on good things happening to me. _____
10. Overall, I expect more good things to happen to me than bad. _____

APPENDIX D

Judgment of Control Scale

Instructions

Please read the provided instructions and detailed description of what control means.

Complete control means that the onset of the green **XXX** screen on any given trial is determined by your choice of responses, either pressing or not pressing the space bar.

No control means that...whether the green **XXX** screen appears on any given trial is totally determined by factors such as chance or luck, rather than by your choice of pressing or not pressing the space bar.

Intermediate degrees of control mean that your choice of responses, either pressing or not pressing the space bar, influences the onset of the green **XXX** screen even though it does not completely determine whether the green **XXX** screen appears or not.

Having read the above description, please mark an **X** on the scale below that corresponds with your estimation of the amount of control you had over the onset of the green **XXX** screen.

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

No Control

Intermediate

Complete

APPENDIX E

Informed Consent

Personality Variables, Reinforcement, and Control Judgment

1. You are invited to participate in a research study of the impact personality characteristics and reinforcement on control judgments conducted by Spencer Baum of the Psychology Department at Indiana State University. It is intended to understand the links between different personality characteristics and aspects of psychological functioning.
2. The study will involve the completion of four questionnaires and a computer task and will take approximately 30 minutes. You will receive a participation sheet for your involvement, documenting the amount of time you spent in the study.
3. If you agree to participate in this study, you will be asked to fill out four questionnaires. These include questionnaires regarding demographic information, personality characteristics, and psychological functioning.
4. The risks associated with your participation are minimal, but may include slight discomfort with thinking about your personal psychological well-being. If you develop concerns while completing these questionnaires, you can contact the Student Counseling Center at 237-3939 or the ISU Psychology Clinic at 237-3317. The benefits of your participation are greater understandings of psychological research that you may hear about in your psychology classes.
5. For your privacy, you will be assigned a “participant number” that will substitute for a name in our data files, and no record will be kept that will link any of your answers to your name. **DO NOT PUT YOUR NAME ON THIS FORM OR ON ANY OTHER FORM.**
6. You are under no obligation to participate. If you agree to participate, you can skip any items that you cannot comfortably answer. You may also discontinue your participation at any time and you will suffer no penalty for doing so.
7. If you have any further questions about this study and your participation, you may contact Spencer Baum in the Department of Psychology via email at sbaum@indstate.edu.
8. If you have any questions about your rights as a research participant, contact Indiana State University’s Institutional Review Board at 812-237-8217 or irb@isugw.indstate.edu.

To help maintain confidentiality, you do not need to sign this form. Your verbal consent to participate a) indicates that you have read the above information describing your rights and

responsibilities as a participant, b) that you are at least 18 and have freely chosen to participate in this project, c) that you have been given a copy of this consent form to keep, and d) that all questions have been answered to your satisfaction.

This study was reviewed and approved as “exempt” from further review by the Indiana State University Institutional Review Board (IRB # _____) on (DATE).

Table 1

Frequencies and Percentages of Participants in Each Control Condition

Condition	<i>N</i>	Percentage
0% Control	29	33%
25% Control	33	37.5%
50% Control	26	29.5%
Total	88	100%

Table 2

Descriptive Statistics for Scores on all Study Measures

Variable	Range of Measure	Range of Scores	Mean	Standard Deviation
BDI-II	0-63	0-55	12.70	8.99
LOT-R	0-24	2-24	15.06	5.19
ASQ	(-)18-(+)18	(-)1.83- (+)11.33	3.13	2.42
JoCS	0-100	0-100	41.42	33.16

Note. BDI-II = Beck Depression Inventory-II, LOT-R = Life Orientation Test-Revised, ASQ = Attributional Style Questionnaire, JoCS = Judgment of Control Scale

Table 3

Frequencies and Descriptive Statistics for Scores by Variable Grouping

Variable	High Scores Group				Low Scores Group			
	<i>N</i>	%	<i>M</i>	<i>SD</i>	<i>N</i>	%	<i>M</i>	<i>SD</i>
BDI-II	30	34	4.63	2.39	58	66	16.88	8.28
LOT-R	50	57	18.70	2.38	38	43	10.26	3.77
ASQ	47	53	4.88	1.68	41	47	1.13	1.35

Note. High BDI-II = Dysphoric, Low BDI-II = Non-dysphoric, High LOT-R = Dispositional Optimist, Low LOT-R = Dispositional Pessimist, High ASQ = Optimistic Explanatory Style, Low ASQ = Pessimistic Explanatory Style

Table 4

Zero-order Correlations for All Study Variables

	BDI-II	LOT-R	ASQ	JoSC	Acc. Judge
Control	.050	-.047	.089	-.123	-.588**
BDI-II		-.431**	-.094	-.016	-.038
LOT-R			.173	.026	.044
ASQ				.296**	.198
JoCS					.875**

Note. ** $p < .01$, two tailed. Control = Percent of Actual Control, BDI-II = Beck Depression

Inventory-II, LOT-R = Revised Life Orientation Test, ASQ = Attributional Style Questionnaire,

JoCS = Judgment of Control Scale, Acc. Judge = Accuracy of Control Judgments

Table 5

Two-Way Analysis of Variance for Accuracy of Control Judgments as a Function of Depressive Symptomatology and Control Condition

Variable	SS	MS	F	p	η^2
BDI Grouping	973.11	973.11	.92	.341	.01
Control Condition	41378.28	20689.14	19.51	.000	.32
BDI Grouping by Control Condition	2464.06	1232.03	1.16	.318	.03

Note. The degrees of freedom were (1, 82) for main effect of BDI Grouping, (2, 82) for Control Condition, and (2, 82) for the interaction between BDI Grouping and Control Condition.

Table 6

Two-Way Analysis of Variance for Accuracy of Control Judgments as a Function of Dispositional Optimism/Pessimism and Control Condition

Variable	SS	MS	F	p	η^2
LOT-R Grouping	259.36	259.36	.242	.624	.00
Control Condition	45852.75	22926.38	21.38	.000	.34
LOT-R Grouping by Control Condition	2599.73	1299.87	1.21	.303	.03

Note. The degrees of freedom were (1, 82) for main effect of LOT-R Grouping, (2, 82) for Control Condition, and (2, 82) for the interaction between LOT-R Grouping and Control Condition.

Table 7

Two-Way Analysis of Variance for Accuracy of Control Judgments as a Function of Explanatory Style and Control Condition

Variable	SS	MS	F	p	η^2
ASQ Grouping	7240.54	7240.54	7.33	.008	.08
Control Condition	58567.59	2983.80	29.64	.000	.42
ASQ Grouping by Control Condition	3608.23	1804.11	1.83	.168	.04

Note. The degrees of freedom were (1, 82) for main effect of ASQ Grouping, (2, 82) for Control Condition, and (2, 82) for the interaction between ASQ Grouping and Control Condition.

Table 8

Accuracy Differences Between Dysphoric and Non-dysphoric Across Varying Degrees of Control

Control	Dysphoric					Non-dysphoric				
	M	SD	t	df	p	M	SD	t	df	p
0%	43.19	32.75	6.18	21	.000	37.86	20.79	4.82	6	.003
25%	33.16	36.90	3.19	18	.001	11.79	26.57	1.66	13	.121
50%	-20.59	32.20	-2.64	16	.018	-15.56	38.03	-1.23	8	.255

Table 9

Accuracy Differences Between Dispositional Pessimists and Optimists Across Varying Degrees of Control

Control	Pessimists					Optimists				
	M	SD	t	df	p	M	SD	t	df	p
0%	34.55	22.19	5.16	10	.000	46.39	33.77	5.83	17	.000
25%	18.53	31.01	2.46	16	.001	30.00	37.33	3.22	15	.006
50%	-11.00	34.06	-1.02	9	.334	-23.75	33.54	-2.83	15	.013

Table 10

Accuracy Differences Between Pessimistic and Optimistic Explanatory Styles Across Varying Degrees of Control

Control	Pessimistic Explanatory Style					Optimistic Explanatory Style				
	M	SD	t	df	p	M	SD	t	df	p
0%	28.75	17.08	6.73	15	.000	58.08	35.03	5.98	12	.000
25%	23.53	33.17	2.88	16	.011	24.69	35.75	2.76	15	.015
50%	-36.87	18.89	-5.52	7	.001	-10.83	36.02	-1.28	17	.219