

**Is pessimism adaptive? Moderators of the Relationship between Optimistic / Pessimistic  
Bias and Depressive Symptoms**

A Senior Honors Thesis

Presented in Partial Fulfillment of the Requirements for Graduation with Distinction in  
Psychology in the Undergraduate Colleges of The Ohio State University

By

Sheeva Mostoufi

The Ohio State University

May 24, 2006

Project Advisor: Dr. Daniel R. Strunk, Department of Psychology

**Abstract**

Consistent with the cognitive model of depression, previous research has found that depressive symptoms are related to less optimistic / more pessimistic bias in predicting future life events. This study aimed to expand the current model of depression by examining possible moderators of the relationship between bias in judgment tasks and depressive symptoms. Participants were asked to complete two measures of bias: one assessed optimistic / pessimistic bias in predictions of future life events and the second task assessed optimistic / pessimistic bias in predictions of ratings provided by a friend or significant other. Contrary to expectation, the relationship between depressive symptoms and both measures of bias were not significant in this sample. Nonetheless, being of Asian descent was found to act as a moderator of the relationship between depressive symptoms and the bias in life event predictions. A small number of Asian respondents precluded a powerful test of this effect for the prediction of another's ratings. Additional evidence for moderation of the relationship between optimistic / pessimistic bias and depressive symptoms was obtained for reflectivity (as assessed by the Defensive Pessimism Questionnaire). Optimistic / pessimistic bias were related as predicted by the cognitive model of depression for those low in reflectivity, but this relationship was less evident among participants high in reflectivity. These findings suggest that the relationship between depressive symptoms and bias differ as a function of being Asian and that the utilization of reflectivity in defensive pessimism. Implications for the cognitive model of depression are discussed.

Is pessimism adaptive? Moderators of the Relationship between  
Optimistic / Pessimistic Bias and Depressive Symptoms

Cognitive models of depression have generally fared well in explaining the etiology of depression (Alloy, Abramson, Safford, & Gibb, 2005) and in facilitating the development of effective interventions for depression (Clark, Beck, & Alford, 1999). The cognitive model of depression asserts that a pessimistic bias is characteristic of people with high depressive symptoms. This assumed relationship has long been a cornerstone of cognitive models of depression (Beck, 1967). Past research has found that depressed individuals tend to predict more negative life events happening to them (Pyszynski, Greenberg & Holt, 1987) and to exhibit more information processing biases favoring negative information compared to non-depressed individuals (Dozois & Dobson, 2001). However, some basic assumptions of these models have not been adequately tested. One such assumption is that depressed people tend to have inaccurately negative views.

***Depressive Realism and Limitations of Previous Research***

Although the cognitive model has long assumed that depressive symptoms are strongly associated with pessimistic biases, research supporting the depressive realism hypothesis seems to contradict this assumption. In a classic study, Alloy and Abramson (1979) asked college students to either press or not press a button over a series of trials that ended with a green light being lit or not being lit. The participants were randomly assigned into three different problem set groups in which group one had 25% control of the green light coming on, group two had 50% control and group three had 75% control. These groups also contained equal representation of men and women participants and students high and low in depressive symptoms. Participants were then asked to estimate the degree of control they believed themselves to have over the

green light turning on. This study found that participants with relatively high depressive symptoms exhibited more accuracy in judging the amount of control they had over the green light turning on compared to participants with low depressive symptoms that tended to overestimate the amount of control they had over the green light turning on. According to these findings, depressive symptoms are associated with increasing *accuracy* in judgments. This became the central tenet of the depressive realism hypothesis.

Thus, the depressive realism hypothesis makes predictions about the judgments of depressed people that are in conflict with the cognitive model of depression developed by Beck and colleagues. While the depressive realism hypothesis states that as people are more depressed they are less optimistic and more accurate, the cognitive model of depression holds that depressive symptoms are associated with increasing negative *biases*. A number of studies have tested these competing hypotheses. However, one or more of several limitations to this research have characterized the majority of this literature. These limitations include the following: (1) Lack of a measure by which to measure the precision of participants' judgments; (2) Lack of participants adequately representing the full range of depressive symptoms; and (3) investigations of judgments that are not likely consequential or self-relevant (Ackerman & DeRubeis, 1991).

Ackerman & DeRubeis (1991) argue that although a large body of research has been accumulated to support the depressive realism hypothesis, much of this research lacks a standard measure of comparison (by which one could judge the bias or accuracy of judgments). In previous research, bias has been measured either without any measure of the precision of judgments (e.g., endorsing more negative than positive interpretations was taken as a sign of bias) or in some of the studies where standards were used, these standards were likely

contaminated by systematic bias that could have explained the effects observed. For example, Ackerman & DeRubeis discuss the limitations of past studies such as in Golin, Terrel, and Johnson (1977) in which participants were asked to give confidence ratings related to how well they would perform in a dice game. However, in order to assess potential bias in their ratings, probability estimates would have been more appropriate than confidence ratings. These confidence ratings do not render a clear assessment of accuracy because there is no correct or incorrect confidence rating where as a probability can be assessed based on whether an event did or did not occur.

Ackerman & DeRubeis (1991) also argue that the depressive realism literature lacks studies that include people with more severe depressive symptoms (at the level typical of people with clinical depression). For example, within the Alloy & Abramson (1979) study, the majority of the sample was either not depressed or dysphoric. The sample likely either completely lacked or very nearly completely lacked any participants with levels of depressive symptoms typical of clinical depression. This lack of depressed participants renders it potentially inappropriate to generalize the findings of Alloy & Abramson to clinically depressed samples.

An additional criticism of past research is not utilizing measures of bias that are consequential and emotionally relevant to the participant. While the cognitive model of depression made predictions mostly about self-relevant, emotional judgments, studies such as Alloy and Abramson (1979) may have been investigating relatively inconsequential judgments that were not emotionally-engaging to participants. Consistent with this possibility, Pacini, Muir, and Epstein (1998) examined how a trivial and not trivial situation would influence the relationship between bias in judgments and depressive symptoms. The study was conducted by participants engaging in a ratio bias task where participants were asked to choose which tray

would most easily render picking a red jelly bean when one tray had 1 red bean out of ten, while another had 8 red beans out of one hundred. This manipulation was used as a measure of good decision making by exploring the tendency of individuals to assume the probability of an event as more likely when a ratio is presented as two larger numbers (10-in-100) rather than two smaller numbers (1-in-10). A trivial situation was defined by the amount of money that could be won for successfully choosing red jelly beans from a tray when unable to see the tray. This study found that in trivial situations (less financial incentive), participants with higher levels of depressive symptoms made better decisions; however, in consequential situations (more financial incentive), the dysphoric group responded less optimally than the non-dysphoric group. Given this difference among people with low and mild depressive symptoms and inconsequential and only moderately consequential judgments, one might expect this effect to be even greater with clinically depressed people and very consequential judgments. Even prior to this study, reviewers of the depressive realism literature had often noted that evidence for depressive realism was strongest in studies of relatively inconsequential judgments (Ackerman & DeRubeis, 1991).

In one recent study that largely overcame the limitations of previous research (Strunk, Lopez, & DeRubeis, 2006), high levels of depressive symptoms typical of people with clinical depression were associated with negative and inaccurate predictions of future life events. The limitations addressed in this study design include: (1) the use of reports of whether events occurred to measure bias, (2) including participants with the full range of depressive symptoms, and (3) examining judgments that are somewhat consequential and emotionally relevant to the participant. Optimistic / pessimistic bias was measured by a life event prediction task in which participants were asked to predict how likely a given event was to happen within the next 30

days and then followed up to report whether each event did or did not happen. This measure included items that would be relevant to the everyday life of the participant with questions such as, “I will be invited to a party,” and “Will stay up past 4 AM for school or work,” as well as acting as a measure of bias in which there is a clear outcome of whether an event did or did not occur. This study was also successful in recruiting a more comprehensive range of depressive symptoms for their sample with the non-depressed group being 54% of the sample, the dysphoric group being 20% of the sample and the depressed group being 25% of the sample.

In the Strunk et al. (2006) study, participants were recruited to specifically target participants of varying depressive symptoms. Participants were asked to complete the Beck Depression Inventory-II as a measure of depressive symptoms, and to predict the probability of 40 life events occurring within the next 30 days. After the initial assessment, participants were contacted 30 days later and asked to complete an additional questionnaire reporting whether each event for which they made predictions did or did not occur. Optimistic / pessimistic bias was found to be moderately and significantly related to depressive symptoms in that participants exhibiting a pessimistic bias in their predictions tended to exhibit more depressive symptoms. Those with the highest levels of depressive symptoms exhibited a significant negative bias in their predictions. Thus, consistent with the cognitive model of depression, recent evidence appears to support the presence of unrealistically negative views among people with high levels of depressive symptoms.

### ***Optimism, Pessimism and Culture***

Past research has related optimism with many positive outcomes. Research by Carver, Smith, Antoni, Petronis, & Weiss (2005) found that optimism predicts follow up adjustment to cancer. Trait optimism was found to be moderately related to remaining cancer free and that

initial optimism was an indicator of well-being after one year of follow up. Abramson, Alloy, Hogan, Whitehouse, Cornette, Akhavan & Chiara (1999) conducted a 2 and a half year study addressing cognitive style as a risk factor for depression. They found that high cognitive risk (i.e., negative inferential styles) predicted greater vulnerability to develop clinical depression over the two and a half year period. . Taken together, optimism research has shown that optimism is related to lower risk of depression and resilience in the face of illness.

However, there is reason to believe that contrary to general findings, pessimism may be more normative and perhaps more adaptive among people of Asian descent. Very little is known about the generalizability of the relationship between depressive symptoms and pessimistic bias across cultures. But, there is reason to believe that cognitive variables associated with depressive symptoms may vary across cultures. Past studies comparing Asian or Asian American samples with Caucasian American samples have often found that the Asian or Asian American samples report less self enhancing tendencies (Ross, Heine, Wilson & Sugimori, 2005) and greater levels of pessimism (Heine & Lehman,1995; Chang, 2001; Chang, 1996).

Research by Ross, Heine, Wilson, & Sugimori (2005) assessed the utilization of self-appraisals, or how a person evaluates him or herself. Participants were asked to write about themselves three years earlier and the responses were coded for three different kinds of appraisals. Canadians were found to have a stronger self-serving bias while the Japanese group was found to be more even-handed. Chang (1996) reported on samples of Asian American and Caucasian students who were matched on age and sex. In this study, there was a significant interaction between pessimism and ethnicity as predictors of problem-solving. Whereas pessimism was related to less problem-solving coping among Caucasians, pessimism was related to greater problem-solving coping among Asian Americans. Thus, there was some evidence that



pessimism among Asian Americans may be associated with adaptive coping in a way that is not true for Caucasians.

Other studies have assessed the concept of bias more specifically in Asian populations. Heine and Lehman (1995) assessed groups at two universities in Japan enrolled in an introductory psychology course in British Columbia in predicting the likelihood of 15 future life events both desirable and undesirable (e.g., “sometime in the future you will become an alcoholic,” “Sometime in the future you will enjoy your career”). The students were asked to rate how likely these events were to happen to them compared to a same sex student and also to predict the percentage likelihood that a particular event would happen them. The study found that Japanese students generally lacked unrealistic optimism and failed to over predict the likelihood of positive events (self-enhancement) compared to a group of Canadian students. Similarly, Chang (2001) found that European Americans were more likely to attribute positive life events to themselves, while Japanese students tended to attribute the occurrence of positive events to others. Due to these differing expressions of optimism and pessimism in Asian populations, and given the strong relationship between pessimism and depressive symptoms, there is a need to empirically evaluate (and modify if necessary) specific claims of the cognitive model for depression among Asians.

The studies comparing Asian and western samples mentioned above tend to possess many of the limitations in assessing bias discussed in Ackerman & DeRubeis (1991). Many of them lacking a standard by which to compare participants’ judgments that is free of systematic bias. To my knowledge, none have included participants with levels of depressive symptoms typical of clinical depression.

### *Defensive Pessimism*

In addition to culture being an example of a context in which pessimistic bias may be more normative, other such contexts may exist within the European American culture. Research suggests that for people who use a strategy called “defensive pessimism.” The use of their strategy (including their pessimistic views) may be useful in managing psychological distress and performing well. The general construct of defensive pessimism is that individuals who use defensive pessimism set low expectations when pursuing goals and reflect on the possible outcomes for a given situation (Norem & Chang, 2002). This method of coping is considered an effective utilization of pessimistic thinking. Past research has shown that participants engaging in defensive pessimism feel more positive affect when they can reflect on goals and outcomes (Norem & Illingworth, 1993; Norem & Cantor, 1989) and is utilized as an effective method of managing anxiety and developing the ability to tolerate negative affect (Norem & Chang, 2002).

In the current study, the concept of defensive pessimism will be explored by using the Defensive Pessimism Questionnaire (Norem, 2001) as well as by breaking down two separate constructs: pessimism and reflectivity. In a recent factor-analytic study, Wisco and Strunk (2007) reported that a two factor solution best fit data from the Defensive Pessimism Questionnaire. In that study, the sample included 890 undergraduate students at the University of Pennsylvania who completed the Revised Defensive pessimism Questionnaire (DPQ) as well as other measures of cognitive style and anxiety. Exploratory and confirmatory factor analysis concluded that specified items mapped onto the pessimism factors (“I go into these situations expecting the worse, even though I know I will probably do ok”) and the reflectivity factors (“I carefully consider all possible outcomes before these situations”) with two items loading onto both factors. The reflectivity and pessimism factors were not found to be strongly correlated ( $r =$

.22). The DPQ pessimism scale was found to be significantly negatively correlated with other measures of optimistic style such as the Life Orientation Test (LOT-R) but not significantly correlated with other measures of reflectivity. These results suggest that the pessimism items of the defensive pessimism scale are likely measuring pessimism but not reflectivity. The DPQ reflectivity scale was not significantly correlated with the LOT-R but was significantly positively correlated with the reflectivity measure of Planning and Active Coping. The DPQ pessimism scale was also found to be positively correlated with four measures of anxiety while the DPQ reflectivity scale was only correlated with one anxiety measure. These findings suggest that as pessimism increases anxiety does as well, while people high in reflectivity fails to show this relationship. It seems that the reflectivity and pessimistic components of defensive pessimism are measuring different things. Due to anxiety and depression often occurring concurrently (Rohde, Lewinsohn, Seeley, 1991), the factors of defensive pessimism will also be addressed in the context of depression. For the purposes of this study, both reflectivity and pessimism will be assessed in terms of their role in the relationship between depressive symptoms and optimistic / pessimistic bias.

### ***Objectives***

The purpose of this study is three-fold. First, I will attempt to replicate the findings of Strunk et al. (2006) showing that there is a significant negative correlation between optimistic / pessimistic bias in predicting future life events and depressive symptoms. I will also test whether this same relationship is evident in a distinct judgment task (i.e., predictions of ratings from a friend or significant other). This second task is an adaptation of a task used in previous work (Lewinsohn, Mischel, Chaplin, & Barton, 1980) revised based on the limitations identified by Ackerman and DeRubeis (1991). Secondly, I will examine the relationship between

optimistic / pessimistic bias and depression relevant cognitive measures. Finally, I will examine the conditions under which pessimistic bias may be differentially related to depressive symptoms. Specifically, I will examine whether there is less evidence for the relationship between optimistic / pessimistic bias and depressive symptoms in Asian American than in European American samples. Relatedly, I will also examine whether the relationship between optimistic / pessimistic bias and depressive symptoms is less negative among participants high in defensive pessimism.

## **Method**

### ***Research Design***

This study was longitudinal and correlational, with most research questions focusing on either differences between people with different levels of depressive symptoms at a particular time point, or differences between people of different cultural backgrounds.

### ***Participants***

Although 481 participants completed time 1, there were a total of 230 participants that completed both time points. Largely because many participants failed to enlist a friend or significant other to provide ratings of them, there were 73 participants that completed the second judgment task involving having a friend or significant other to rate characteristics about the participant, and the participant predicting the responses of the friend or significant other. Of the full sample of 230, the majority were women (65%). About 85% was recruited through the Research Experience Program (REP) while the remaining 15% were recruited by e-mail. The ages of the whole sample ranged from 17 - 59 ( $M = 23.2$ ,  $SD = 6.3$ ) with 85% of the sample

being under the age of 23. The full sample included participants of European, Asian, and African American descent.

Included in the sample of 230 participants, there were a total of 30 participants of Asian descent. Of those participants, 29 completed the life event predictions task judgment task and only 5 participants completed the rating of personal characteristics judgment task. The ages of the participants of Asian descent ranged from 18 - 55 ( $M = 25.43$ ,  $SD = 9.8$ ). The participants of Asian descent exhibited a similar representation of men and women as the entire sample (69% women, 31% men). Among the participants of Asian descent, 57% were born in the United States and 43% were born outside of the United States.

Within the sample of 230 participants there were also 168 European American participants. Of those participants 168 participants completed the life event predictions task and 61 participants completed the personal rating characteristics judgment task. The ages of the participants ranged from 17 - 59 ( $M = 20.2$ ,  $SD = 5.4$ ). The European American sample also included a larger number of women than men (63% women, 37% men).

The majority of the sample included participants from the Research Experience Program (REP), in which students enrolled in psychology 100 courses are offered the opportunity to obtain course credit for their participation in various research projects in the department in substitution for writing a research paper . Participants recruited through REP were given credit for their participation after completing the first assessment in the study and then offered the opportunity to win a cash prize for participating in the second portion of the study.

Recruitment also took place via e-mail by contacting the listserves of various cultural groups specifically at the Ohio State University and within the United States. Recruitment also

occurred through attending the meetings of university-affiliated organizations, and advertisements were placed at the University Counseling and Consultation services.

### ***Measurement / Instrumentation***

*Depressive Symptoms.* The Beck Depression Inventory - 2<sup>nd</sup> Edition (BDI-II) (Beck, Steer, & Brown, 1996) is the most current revision of the BDI and was utilized to measure depressive symptoms. It is a 21-item self-report instrument used to assess the severity of symptoms of depression.

*Bias.* Adapted from Strunk, Lopez, and DeRubeis (2006), the Life Events -- Prediction and Assessment Questionnaire (LE) is a list of 40 life events which had been judged to be: (a) relevant to the general population; (b) representative of a range of event base rates; and (c) balanced in the proportion of events that are desirable and undesirable. It was used for both event prediction and assessment. This measure was scored to assess predictions of events, outcomes, bias and accuracy. A self-report version of this measure was employed in order to gauge the extent to which participants' predictions of the probability of each event happening to them during the course of the study compared to post-hoc assessments of which events actually occurred. This enabled us to compute an optimistic/pessimistic bias score for each participant with respect to prediction of future life events. This measure was completed by participants as a prediction tool at Time 1 and as an assessment tool at their follow-up assessment.

*Bias.* A second measure of bias was also employed. The Ratings of Personal Characteristics (RPC) questionnaire included a 21-item measure adapted from Lewinsohn, Mischel, Chaplin, and Barton (1980), in order to compare participants' predictions regarding how a significant other would rate them on each of 21 positive personal characteristics (e.g., friendly, popular, assertive) with a significant other's actual ratings. Participants made

predictions, and significant others made ratings of how characteristic each trait was for the participants using a percentile rating. We then computed a bias score for each participant with respect to ratings for personal characteristics based on the extent to which his or her predictions differed from the ratings supplied by his or her significant other.

*Cognitive Style.* The Attributional Style Questionnaire (ASQ; Peterson et al. (1982)) assesses optimistic or pessimistic explanatory style. Respondents were asked to causally interpret 12 hypothetical situations which differ on two dimensions: valence (positive or negative). There were 6 positive and 6 negative situations. Respondents were instructed to think of a cause for each event and then, using a scale from 1 to 7, rate these causes on three dimensions: whether the events were due to internal vs. external causes, stable or unstable causes, and global or specific causes. Separate sums were calculated for positive and negative situations. Higher scores reflected more internal, stable, and global attributions, while lower scores reflected more external, unstable, and specific attributions. A total score was calculated by subtracting the score for negative events from the score for positive events. High scores reflected a more optimistic (or less pessimistic) explanatory style, while low scores reflected a more pessimistic (or less optimistic) explanatory style. Peterson et al. (1982) reported acceptable internal consistency and test-retest reliability for the measure.

*Optimism and Pessimism.* The Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994) is a widely utilized 10-item self-report measure to assess individual differences in optimism versus pessimism in a generalized manner. Four of the ten items are filler items and are not used in scoring. Participants were asked to give the extent of their agreement on a 5-point Likert scale (responses range from “I disagree a lot” to “I agree a lot”). The measure was

scored using a Likert scale of 0 - 4 with scores ranging from 0 - 30. Higher scores reflect higher levels of optimism and lower levels of pessimism.

*Defensive Pessimism.* The Revised Defensive Pessimism Questionnaire (DPQ; Norem, 2001) is a 17-item self-report measure of defensive pessimism. Participants in this study will be asked to consider "performance" situations in making their responses and indicate how representative each item is of them on a scale of 1 to 7. The total score on 12 items has been taken to indicate each participant's level of defensive pessimism. In this analysis, two components of defensive pessimism will be explored based on a previous factor analysis suggesting two that two separate constructs may exist (Wisco & Strunk, 2007): reflectivity and pessimism. The first construct includes the total score of 5 items addressing reflectivity (e.g., "I carefully consider all possible outcomes before these situations") with total scores indicating levels of reflectivity. The second construct involves the total score of 5 items addressing pessimism (e.g., "I go into these situations expecting the worst, even though I know I will probably do ok.") with total scores indicating levels of pessimism

### ***Procedure***

#### *Time 1 Questionnaires*

Participants were contacted via email and invited to participate by completing the LE predictions, the ASQ, the LOT-R, the DPQ, and the Friend/Significant Other Nomination. Participants earned the chance to win a \$100 lottery prize and were then offered the opportunity to be included in a drawing to win one of three additional \$200 prizes if they recommend at least one person (and up to five) friends or significant others to complete a short survey about them. Students also participated through the psychology REP program and were invited through e-mail



based upon their collected depressive symptom information (i.e., REP prescreening data) to participate in the study.

*Significant Other Contact.*

The friends and/or significant others recommended by the participant were asked to complete the RPC measure about the participant who recommended them to the study, the Beck Depression Inventory, and provide demographic information. By participating in the study, these participants had the opportunity to win one of seven \$50 prizes. Friends or significant others of REP participants were also eligible to win the lottery prizes.

*Time 2 (follow up).*

Participants that completed the Time 1 assessment were contacted to complete a follow up questionnaire 30 days later including the LE reports of whether life events had or had not occurred, the RPC measure assessing how they believe their friend or significant other perceived them and the BDI-II. By participating in all aspects of the study, participants were eligible to win one \$300 prize, one of two \$250 prizes, and one of three \$50 prizes.

***Scoring of Bias Measures***

Several steps were utilized to score the main bias measure of interest, the Life Event Predictions measure (LE). First, an average score for the predictions of the likelihood of positive outcomes (i.e., a desirable event occurring or an undesirable event not occurring) occurring was determined. For desirable events (e.g., “Will be invited to a party”), simply the probability score given by the participant was utilized. However, for undesirable events (e.g., “Will be yelled at by a stranger”), the given probability was subtracted from one so as to determine the probability of an undesirable event *not* happening. The average was then taken for the predictions of positive events occurring. This score will be referred to as “predictions”.

Next a score called “outcomes” was determined by assessing the extent which positive outcomes did actually occur over the course of 30 days. All desirable outcomes (i.e., a desirable event occurring or an undesirable event not occurring) were scored as 1 while all undesirable outcomes were scored as 0 and the mean of these event scores referred to the average amount of positive outcomes experienced.

To measure optimistic / pessimistic bias, a difference score was calculated for each item. For desirable events, the participant’s result (whether the event occurred (value of 1) or did not occur ( value of 0)) was subtracted from the probability judgment reported 30 days earlier. Therefore, if a participant predicts that there is a 80% chance that they will be invited to a party in the next 30 days and they are not, then the score for this desirable event (i.e.,  $.8 - 0$ ) would indicate a .8 score of optimism. For the undesirable events the probability judgments would be subtracted from the result report indicating that if a participant predicts that there is a .60 percent chance that they will be yelled at by a stranger and they are not ( $0 - .6$ ), a -.6 score of pessimism would be taken for that item. After the differences are determined for the desirable and undesirable events, an average of these items was taken. This summary score will be referred to as optimistic / pessimistic bias. The range possible on this bias measure extends from -1 to 1 with positive numbers indicating greater optimism, negative numbers indicating greater pessimism, and 0 indicating the absence of bias.

A score of accuracy (how accurate participants were in predicting what future life events occurred) was also determined. The difference scores for each item was determined for desirable and undesirable events similarly to bias, however the absolute value was taken of these scores before taking an average for each participant. The number one was then subtracted from this value to determine a measure of accuracy. This measure of accuracy refers to the average

magnitude of imprecision in the predictions made, as opposed to bias which infers whether a prediction was positive or negative in comparison to the reported result.

Similarly to the LE prediction task, the RPC data were scored using the recommended friend or significant other rating as the standard of comparison score (result) and the participant ratings as the predictions. Since all of the given characteristics assessed are positive (e.g., “friendly,” “popular,”) the ratings by the friend or significant other will be subtracted from the predictions made by the participant. Therefore if a participant says that they would rate themselves as 50% more friendly than the average adult, but their friend rated them as being 80% more friendly, then (50-80) the participant would receive a difference score of -30, indicating pessimism for this particular item. Similarly to the LE bias measure, an average of these difference scores would be taken. This score had a maximum range extending from -100 to 100 with higher positive values indicating greater optimism, lower negative values indicating greater pessimism, and 0 indicating the absence of optimistic / pessimistic bias.

### **Results**

The BDI-II scores in the overall sample ranged from 0 - 59 and were divided into low, middle, and high scoring groups on the basis of the scores. Scores from 0-12 were classified as low, 13-19 were classified as middle, and 20-63 were classified as high. These group divisions were determined based upon published recommendations for interpreting the BDI-II (Dozois, Dobson, & Anberg, 1998). Approximately 75% of the sample was categorized as non-depressed, 13% as dysphoric, and 12% as depressed. The average BDI-II score in this study was found to be significantly lower ( $M = 8.8$ ,  $SD = 9.8$ ) than the scores found by Strunk et al. (2006;  $M = 14.3$ ,  $SD = 11.2$ ;  $z = -7.40$ ,  $p < .0001$ ,  $d = .52$ ). As the  $d$  of .52 suggests, the distribution of depressive symptoms in this sample differed moderately from the Strunk et al.

(2006) study (see Table 1). Due to the inadequate representation of a full range of BDI-II scores, particularly those typical of depressed people, the test of the relationship between depressive symptoms and optimistic / pessimistic bias may have been less powerful than anticipated.

#### *LE and RPC Bias*

The rating of LE bias in this sample was very near zero ( $M = .0003$ ,  $SD = 0.092$ ) as was the mean of RPC bias ( $M = .85$ ,  $SD = 15.6$ ). These results suggest that, on average, the overall sample exemplified a lack of optimistic / pessimistic bias.

#### *Predictions, Outcomes and Depressive Symptoms*

The first relationship examined was that between depressive symptoms and positivity of predictions (see Table 2). The relationship between the LE measure of positivity of predictions (the likelihood of a good event happening and a bad event not happening) and the BDI-II was found to be significant ( $r = -.39$ ,  $p < .0001$ ,  $n = 230$ ), but the relationship was not significant between the RPC measure of bias and the BDI-II ( $r = -.04$ ,  $p = .72$ ,  $n = 73$ ). These results suggest that as people exhibit greater depressive symptoms, they over predict the occurrence of undesirable events while predicting the occurrence of desirable events less. Similarly, although BDI-II scores are not significantly related specifically to the prediction of the 20 desirable events assessed in the questionnaire ( $r = -.07$ ,  $p = .31$ ,  $n = 230$ ), BDI-II scores are significantly related to the prediction of undesirable events ( $r = .26$ ,  $p < .0001$ ,  $n = 230$ ). This latter relationship indicates that people with higher levels of depressive symptoms predicted a greater likelihood of undesirable events occurring. The relationship between the LE outcomes (positive outcomes occurring) and BDI-II scores also yielded a moderate but significant correlation ( $r = -.29$ ,  $p < .0001$ ,  $n = 230$ ), however the relationship between the BDI-II and the RPC outcome (positive ratings of participants) was not significant ( $r = .12$ ,  $p = .29$ ,  $n = 73$ ). In terms of the LE

outcomes measure, it appears that as BDI-II scores increase, participants tend to experience more undesirable events and fewer desirable events.

#### *Depressive Symptoms, Optimistic / pessimistic Bias and Accuracy*

The next aim was to replicate the findings of Strunk et al (2006) by examining the relationship between the optimistic / pessimistic bias measure in the Life Event (LE) Predictions task and the BDI-II measure of depressive symptoms. However, this relationship was found to be not significant ( $r = -.07, p = .29, n = 227$ ) in the current study (See Table 2). The relationship between RPC optimistic / pessimistic bias and the BDI-II ( $r = -.19, p = .10, n = 73$ ) was also not significant (see Table 2). As mentioned previously, a possible explanation for depressive symptoms not being significantly related to pessimistic biases is the limited range of depressive symptoms collected in this sample. However a small, but significant relationship was found between LE optimistic / pessimistic bias of undesirable events and BDI-II scores ( $r = -.15, p = .02, n = 227$ ) suggesting that for undesirable events, as depressive symptoms increase people are more likely to predict that undesirable events will occur. However the relationship between optimistic / pessimistic bias scores with desirable events and BDI-II was not significant ( $r = .08, p = .20, n = 227$ ) suggesting that the relationship between pessimistic biases and depressive symptoms was only evident for undesirable situations.

The relationship between accuracy in the prediction of life events and the BDI-II was also examined and found to be small, but significant ( $r = -.16, p = .02, n = 227$ ), suggesting that people with greater levels of depressive symptoms tend to be less accurate in their predictions. The relationship between accuracy in RPC predictions and BDI-II scores was not significant ( $r = -.15, p = .20, n = 73$ ).

#### *Optimistic / Pessimistic Bias and Depression Relevant Cognitive Measures*

In order to examine how our measures of bias compares to other well-established measures of optimism / pessimism, the relationship between LE optimistic / pessimistic bias and RPC optimistic / pessimistic bias was examined with the LOT-R and the ASQ (See Table 3). First, the relationship between the two optimistic / pessimistic bias measures utilized in this study were examined and found to be significant and moderately correlated ( $r = .34, p = .003, n = 73$ ), indicating some consistency across measures assessing optimistic / pessimistic bias. Significant correlations were found between the LOT-R measure of optimism / pessimism and LE optimistic / pessimistic bias ( $r = .14, p = .04, n = 228$ ) and between the LOT-R and RPC bias ( $r = .36, p = .002, n = 73$ ). A significant and strong relationship was also found between the LOT-R and LE predictions of positive outcomes ( $r = .52, p < .0001, n = 232$ ). A moderate relationship was also found between the LOT-R and RPC predictions ( $r = .41, p = .0003, n = 73$ ). Taken together, the results show that participants who reported greater self-reported optimism strongly tended to predict that positive outcomes were more likely to occur. Participants' endorsement of self-reported optimism was significantly related to optimistic / pessimistic biases.

The relationship between the ASQ with LE and RPC bias was also assessed. Both the relationship between LE optimistic / pessimistic bias and ASQ total score ( $r = .22, p = .002, n = 202$ ) and the relationship between RPC optimistic / pessimistic bias and ASQ total score ( $r = .27, p = .02, n = 67$ ) were significantly positively related. These findings indicate that people with more positive biases (less pessimism or more optimism) are more likely to attribute positive events as being more internal, global, and stable to them. The ASQ negative, or attributional style for negative situations, was also found to be significantly correlated with the LE optimistic / pessimistic bias ( $r = -.15, p = .03, n = 202$ ) and the RPC optimistic / pessimistic bias ( $r = -.31, p$

= .01,  $n = 67$ ). These results imply that as people tend to attribute negative situations to be more internal, stable and global to them, they tend to also exhibit more negative biases. The relationship between ASQ positive, or attributional style toward positive situations, was found to be significantly related to LE optimistic / pessimistic bias ( $r = .18, p = .01, n = 202$ ) but not with RPC bias ( $r = 0.18, p = .14, n = 202$ ). In general, LE and RPC optimistic / pessimistic bias have been found to relate to existing measures of cognition .

The relationship between the ASQ total and LE predictions was found to be significant ( $r = .35, p < .0001, n = 206$ ) as well as the relationship between ASQ total and RPC predictions ( $r = .27, p = .03, n = 67$ ). These findings suggest that as people exhibit more optimistic predictions, they tend to attribute positive events to be more internal, stable and global. The ASQ positive measure was also found to be significantly related to LE predictions ( $r = .31, p < .0001, n = 206$ ) as well as RPC predictions ( $r = .05, p = .64, n = 67$ ). This relationship suggests that as optimistic predictions increase, the tendency to attribute positive situations to more internal, global, and stable. The relationship between the ASQ for negative situations was found to be negatively correlated with LE predictions ( $r = -.21, p = .003, n = 206$ ) and with RPC predictions ( $r = -.32, p = .007, n = 67$ ). These finding suggest that as predictions of positive outcome decrease, negative situations are deemed to be more internal, global, and stable to the self.

#### *Asian background as a moderator of bias and depressive symptoms*

The primary analysis of interest was to assess if ethnicity, specifically being Asian, would act as a moderator of the relationship between LE optimistic / pessimistic bias and the BDI-II. A regression model was utilized with the BDI-II as the dependent variable and LE optimistic / pessimistic bias, ethnicity and the interaction of LE optimistic / pessimistic bias and ethnicity as the independent variables. The interaction between LE optimistic / pessimistic bias

and ethnicity was found to be significant in predicting BDI-II scores ( $t = 2.10, p = 0.038$ ). This result illustrates that the relationship between biases in life event predictions and depressive symptoms is different for people of Asian descent vs. European Americans. To further explore how these groups differ, the relationship between depressive symptoms and bias was assessed separately with the Asian sample and the European American sample. In the Asian sample the relationship between depressive symptoms and bias was not significant, but suggested a trend for those with higher BDI-II scores to exhibit more optimistic or less pessimistic LE bias ( $r = .34, p = .08, n = 29$ ; see Figure 1). Within the European American sample, the relationship between depressive symptoms and bias was significant and consistent with the cognitive model of depression. In European Americans, higher depressive symptoms were related to less optimistic or more pessimistic bias ( $r = -.16, p = .04, n = 167$ ). Although this was a small effect, these results suggest that the relationship between depressive symptoms and bias is broadly consistent with past research with European American participants. However, Asian populations appear to exhibit a different relationship between depressive symptoms and bias.

A similar regression model was utilized to test whether RPC bias and depressive symptoms were related differentially among European Americans and Asian Americans. In this model, BDI-II served as the dependent variable. RPC optimistic / pessimistic bias, ethnicity and the interaction of RPC optimistic / pessimistic bias and ethnicity were entered as independent variables. The interaction term in this model was not significant ( $t = .26, p = .79$ ). Thus, ethnicity, specifically being Asian American (cf. European American), did not moderate the relationship between RPC bias and BDI-II. However, this test was limited by the presence of only five participants of Asian descent who had completed the RPC measure.

*Differences between Asian Americans and European Americans*



To test for differences between Asian Americans and European Americans on measures of optimism / pessimism, a series of t-tests were performed. These tests examined the following variables: LE bias, RPC bias, BDI-II, defensive pessimism and the LOT-R (see Table 4). No significant differences were found.

*Reflectivity as a moderator of depressive symptoms and bias*

Based upon the factor analysis of the DPQ conducted by Wisco & Strunk (2007), pessimism and reflectivity were examined separately. Each of these variables was tested as a potential moderator of the relationship between LE optimistic / pessimistic bias and depressive symptoms. The interaction of the reflective items of the defensive pessimism scale with LE optimistic / pessimistic bias was found to be a significant predictor of BDI-II scores ( $t = 2.64, p = .009$ ). These findings suggest that the relationship between the LE measure of optimistic / pessimistic bias and depressive symptoms varies as a function of the level of reflectivity exhibited by an individual. This interaction is illustrated in Figure 2. As the figure shows, LE bias and depressive symptoms were negatively related (i.e., slope is negative) when reflectivity was high, but LE bias and depressive symptoms were positively related (i.e., slope was positive) when reflectivity was low. These results suggest that the relationship between depressive symptoms and bias is different (i.e., less negative) as individuals are engaging in more reflectivity.

A regression model was also utilized to assess reflectivity as a potential moderator of the relationship between RPC bias and BDI-II. The interaction between reflectivity and RPC bias was not found to be a significant predictor of BDI-II scores ( $t = -.41, p = .68$ ), therefore asserting that the relationship between RPC bias and BDI-II scores does not differ as a function of engaging in more reflectivity.

Pessimism, as assessed by the DPQ, was then examined as a possible moderator of the relationship between LE optimistic / pessimistic bias and depressive symptoms. A regression model was utilized in which BDI-II scores served as the dependent variable. LE optimistic / pessimistic bias, DPQ pessimism and the interaction of LE optimistic / pessimistic bias and DPQ pessimism were entered as independent variables in the model. The interaction term in this model was not a significant predictor ( $t = -1.5, p = .13$ ). This regression model was also assessed with RPC optimistic / pessimistic bias and the pessimism items and the interaction term was not significant ( $t = .14, p = .89$ ).

### **Discussion**

This study failed to replicate the findings of the Strunk et al. (2006) in that a significant relationship between LE optimistic / pessimistic bias and depressive symptoms was not found in the full sample. One possible explanation for this may be the relatively poor representation of the full range of depressive symptoms in our sample. One of the main points discussed by Strunk et al. was the importance of having an adequate representation of the full range of depressive symptoms in a given sample in order to effectively assess the relationship between depressive symptoms and bias. The sample that was recruited in this study more closely resembled a truncated version of the sample discussed in Strunk et al. For illustrative purposes, Strunk et al. truncated their sample to approximate studies that have unselected college students. In this truncated sample, the relationship between depressive symptoms and LE bias was small and not significant ( $r = -.15$ ). The mean BDI-II score in the truncated sample of Strunk et al. ( $M = 8.4, SD = 5.5$ ) was comparable to those of this study ( $M = 8.8, SD = 9.8$ ). Thus, a relatively poor representation of participants with high levels of depressive symptoms likely played a role

in the small and non-significant relationship between LE optimistic / pessimistic bias and depressive symptoms observed in the full sample of this study.

Despite the lack of relationship between LE optimistic / pessimistic bias and depressive symptoms, there was evidence of relationships between LE optimistic / pessimistic bias and commonly used self-report measures of optimism-pessimism. The LE optimistic / pessimistic bias and RPC optimistic / pessimistic bias were also found to be significantly related to each other. LE optimistic / pessimistic bias and the ASQ total score were significantly associated such that the more participants who perceived the cause of positive events to be more internal, stable and global than for negative events, participants tended to have exhibited an optimistic bias (or a less pessimistic bias) in their predictions of life events. The relationship between RPC optimistic / pessimistic bias and the ASQ difference score was similarly positively correlated. In addition, both RPC optimistic / pessimistic bias and LE optimistic / pessimistic bias were positively correlated with the LOT-R measure of optimism / pessimism. The significant relationship between the measures of bias utilized in this sample and other depression relevant measures of optimism / pessimism provide some evidence for the validity of these bias measures. However, it is worth noting that the strongest correlations between self-report optimism and pessimism and the life event predictions were observed for participants' positivity of predictions scores. Thus, measures such as the LOT-R appear to be better reflections of how positive people's predictions of the future are, rather than how overly positive relative to what occurs those predictions are. Thus, the measures of bias used in this study do not appear to simply reflect the same variability seen in participants' responses to commonly used self-report measures of optimism / pessimism.

*The Cognitive Model in Asian Americans*

One of the primary findings of this study was that being of Asian descent (cf. being of European descent) acted as a moderator of the relationship between depressive symptoms and bias. Asian Americans display the relationship between bias and depressive symptoms differently compared to European Americans. It is also interesting to note that when looking at the relationship between optimistic / pessimistic bias and depressive symptoms exclusively in the European American sample, the relationship between optimistic / pessimistic bias and depressive symptoms was significantly negatively correlated. Nonetheless, this correlation was smaller than that reported by Strunk et al. These results contribute to the existing literature that particularly in a European American sample, greater depressive symptoms are related to being more pessimistically biased. However, within Asian populations, a trend was found to suggest that as people of Asian descent become more depressed their biases become more optimistic. There was significant evidence that the model of the relationship of bias and depressive symptoms differed between Asian and European Americans.

This expression of the relationship between LE optimistic / pessimistic bias and depressive symptoms in participants of Asian descent is consistent with past research asserting that the Asian populations display biases differently compared to non-Asian populations (Heine & Lehman, 1995; Chang, 2001). A methodological strength in this study in terms of addressing Asian populations is the attempt made to utilize a measure of bias in which the predictions of the likelihood of events happening are compared to a standard (whether an event did or did not happen), assuming that participants answered truthfully. However, these results entreat further evaluation of how and why this relationship between depressive symptoms and bias differs as a function of being Asian. The utilization of defensive pessimism was explored in this study and

Asians were not found to significantly utilize defensive pessimism differently from non-Asians. To address this issue more fully in the future, a larger sample of people of Asian descent will be required. In addition, a wider range of depressive symptoms to properly assess cultural differences between pessimistic bias and depressive symptoms would be desirable. Future research might consider cultural differences in individualism and collectivism as a potential explanatory variable for the differential relationship between optimistic / pessimistic bias and depressive symptoms among Asian Americans and European Americans. Future studies should assess individualism and collectivism as factors which may be driving differences in the relationship of depressive symptoms and pessimistic bias. It would be important to determine if perhaps it is a collectivistic background that causes this difference rather than simply being of Asian descent.

In addition, research conducted by Chang (1996) suggests that highly pessimistic Asian Americans utilize more problem solving coping strategies in managing stressful situations. Further research could potentially explore problem solving strategies as an explanatory factor of this differing relationship between depressive symptoms and bias in Asians. Past research has also indicated that Asians tend to anticipate more negative interpersonal outcomes (e.g., shaming one's family or friends) and utilize preventative measures to maximize the likelihood of positive interactions (Lee & Bolster, 1991). It would be important to explore if and how these preventative measures are being utilized by people of Asian descent in terms of how they are exhibiting pessimistic biases and developing depressive symptoms.

There is also a need to further explore cultural differences within the Asian community to assess differences in specific ethnic groups. Past research with self-serving attributional bias, the likelihood to attribute positive events to the self and negative events to other causes, has shown

differences within the Asian community. For example, Chinese and Koreans display stronger self-serving bias compared to Indian or Japanese populations (Mezulis, Abramson, Hyde, Hankin, 2004). Thus, it is likely important to consider specific ethnicity within the Asian community when assessing bias and depressive symptoms.

### *Defensive pessimism, bias and depressive symptoms*

Defensive pessimism, specifically the reflectivity measure, also moderated the relationship between depressive symptoms and bias. These results suggest that those who more extensively reflect about the possible outcomes of performance situations differ in terms of their relationship between bias and depressive symptoms. In participants exhibiting low levels of reflectivity, depressive symptoms are related to more pessimistic (or less optimistic) bias. Thus, those low in reflectivity show a pattern of results consistent with the cognitive model of depression. However, in participants exhibiting higher levels of reflectivity, higher levels of depressive symptoms are associated with more optimistic (or less pessimistic) biases. Future research should attempt to address whether pessimistic biases continue to be unrelated to higher depressive symptoms in a more clinically depressed sample, and if so, whether efforts to change pessimistic biases (such as those that are part of cognitive therapy for depression) with highly reflective people would not produce the same benefits that have typically been found for efforts to reduce pessimism (Teasdale & Fennel, 1982).

Finding a relationship between depressive symptoms and bias moderated by the reflectivity scale as opposed to the pessimism scale of the DPQ suggests a need for further evaluation of the defensive pessimism construct and its relationship to depressive symptoms and anxiety. The pessimism scale was also found to have a moderate and significant correlation with LE and RPC optimistic / pessimistic bias where as the reflectivity scale was not. These results

suggest that participants who report greater pessimism on the DPQ tend to report more pessimistic (or less optimistic) bias. Since negative biases have been shown to be related to depressive symptoms (Strunk et al, 2006, Alloy & Abramson, 1979), there is a need to further explore if it is actually reflecting over the possibility of negative outcomes that is a beneficial coping strategy for decreasing anxiety and depression more so than the “pessimism” component of the defensive pessimism construct.

### *Limitations*

In this study, efforts were made to overcome past limitations in studies of bias and depression by using two measures of bias (life event predictions scale and predictions of significant others’ ratings) to assess the relationship between depressive symptoms. A potential limitation with the life event predictions measure is the possibility of participants incorrectly reporting the occurrence of given life events. Of great concern is the possibility of participants exhibiting higher depressive symptoms underreporting the occurrence of positive events and participants with low depressive symptoms underreporting the occurrence of negative events. If this was the case participants would appear to exhibit a more optimistic bias than actually exists, particularly individuals with high depressive symptoms. However, if participants with low depressive symptoms are underreporting positive events, and therefore appearing more optimistic than they actually are, then these individuals may actually exhibit more pessimism in reality than what was assessed by this measure. For future research efforts should be made to decrease systematic errors in the reporting of events occurring or not occurring.

Issues with the RPC measure of bias have been discussed by Ackerman & DeRubeis (1991) in regards to “objective observers.” It would be impossible to have total consistency in the ratings of an individual (the participant) because each rater (friend or significant other)

observes their own individual biases in rating a particular individual. However, past studies have asked participants to rate themselves in dimensions related to social skills, to then later be compared to ratings made by trained observers to ascertain a measure of bias (Lewinsohn, Mischel, Chaplin, & Barton, 1980). However, the participants made predictions about themselves, not what they felt a rater would predict about them rendering comparing a rater and participants responses with each other problematic. This study attempted to remedy this issue by informing participants to rate how they felt a specific friend or significant other would rate them on a number of personality characteristics.

An additional limitation was the use of only one measure of depressive symptoms. In order to truly extrapolate the relationships between depressive symptoms and bias it would be imperative to include more comprehensive diagnostic assessments of symptoms beyond a self report. Diagnostic information would be useful in assessing people optimistic / pessimistic bias in a sample of participants clinically diagnosed with depression.

A final significant limitation in this study is the relatively poor representation of the full range of depressive symptoms in both the Asian and non-Asian group. Also, the limited recruitment of participants of Asian descent was a significant limitation in terms of comparing groups because the Asian group was quite small ( $n = 29$ ). This small sample size of participants of Asian descent limited the ability to look at group differences within the sample. The sample also consisted primarily of college age students who had spent varying amounts of time in the United States. It would be useful to assess differences in the expression of bias and depressive symptoms across different cultures both in and outside of the United States.

### ***Conclusion***



The findings of this project suggest that the relationship between bias and depressive symptoms is different for people of Asian descent than people of European descent. Further research is needed to illuminate more about the ways that Asians differ in their expression of bias and depressive symptoms and why these differences may occur. The findings of this project provide some initial evidence which calls into question the cross-cultural generalizability of a fundamental claim of the cognitive model of depression – the claim that depression is associated with unrealistically negative predictions of future life events. However, future research will need to include more people with severe depressive symptoms to provide a more stringent test. The findings may lead one to wonder whether if pessimistic biases are unrelated to depressive symptoms in people of Asian descent, then would efforts by therapists to alleviate depression through altering pessimistic biases not be the most effective and efficient approach to treatment for these people? This is an important question for future research.

In addition, the findings showed that the relationship between bias and depressive symptoms differed as a function of reflectivity. Only those low in reflectivity showed the negative relationship between optimistic / pessimistic bias and depressive symptoms posited in the cognitive model of depression. But, again, further investigation is needed with a clinically depressed sample. Future research examining moderators of the relationship between bias and depressive symptoms have potential to help refine the cognitive model of depression. Such refinements may ultimately lead to more effective interventions.

Table 1

Beck Depression Inventory (BDI-II) scores for current study compared to Strunk et al (2006)

	Overall			Groups by Severity								
	M	SD	N	Low Non depressed			Middle dysphoric			high dep		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Current Study	8.8	9.8	231	4.4	3.8	173	15.4	2.1	29	29.6	11.1	27
Strunk et al (2006)	14.3	3.9	153	5.1	3.5	83	16.7	2.0	31	30.5	6.9	39

Table 2

Correlations with Bias Measures (Life Event Predictions and Rating of Personal Characteristics) and Beck Depression Inventory (BDI-II)

	Life Event Predictions (LE)			Rating of Personal Characteristics (RPC)		
	r	p	n	r	p	n
Predictions	-.39	<.0001*	230	-.04	.72	73
Desirable	-.07	.31	230	NA	NA	NA
Undesirable	.26	<.0001*	230	NA	NA	NA
Outcomes	-.29	<.0001*	230	.12	.29	73
Bias	-.07	.28	227	-.19	.10	73
Desirable	.08	.20	227	NA	NA	NA
Undesirable	-.16	.02*	227	NA	NA	NA
Accuracy	-.16	.02*	227	-.15	.19	73

*Note.* NA refers to there being no desirable and undesirable subscales for the Rating of Personal Characteristics measure.

\* $p < .05$

Table 3

Correlations between Bias Measures and other measures of cognitive style and optimism / pessimism

	ASQ positive items			ASQ negative items			ASQ total score			LOT-R		
	r	p	n	r	p	n	r	p	n	r	p	n
LE Predictions	.31	<.0001*	206	-.21	.003	206	.35	<.0001	206	.52	<.0001*	232
LE Outcomes	.12	.08	206	-.04	.61	206	.10	.15	206	.34	<.0001*	232
LE Bias	.18	.01*	202	-.16	.03*	202	.22	.001*	202	.14	.04*	228
LE Accuracy	.12	.11	202	-.0003	.99	202	.07	.33	202	.21	.002*	228
RPC Predictions	.05	.64	67	-.32	.007*	67	.27	.03*	67	.41	.0003*	73
RPC Outcomes	-.17	.16	67	.06	.61	67	-.14	.28	67	-.02	.84	73
RPC Bias	.18	.14	67	-.31	.01*	67	.33	.007*	67	.36	.002*	73
RPC Accuracy	-.06	.65	67	-.04	.72	67	.06	.61	67	-.01	.92	73

*Note.* ASQ = Attributional Style Questionnaire; LOT-R = Life Orientation Test –Revised ; LE =Life Event Predictions; RPC = Rating of Personal Characteristics.

\* $p < .05$

Table 4

T-tests of Asians and European Americans examining group differences in measures of Optimism and Pessimism:

	Asians			European Americans					
	M	SD	N	M	SD	N	t	p	d
<b>Predictions</b>									
LE	0.66	0.09	30	0.66	0.08	170	-.74	.46	.06
RPC80.00	8.90	5	5	75.70	12.80	61	-.31	.76	.34
<b>Outcomes</b>									
LE	0.64	0.10	30	0.65	0.08	169	.15	.88	.12
RPC	80.6	18.30	5	74.20	11.90	61	-1.11	.27	.52
<b>Bias</b>									
LE	0.01	0.12	29	-0.002	0.09	169	-.34	.74	.084
RPC	0.58	17.50	5	2.00	15.7	61	.2	.84	.09
<b>Accuracy</b>									
LE	0.68	0.12	29	0.70	0.11	169	.64	.53	.18
RPC	23.30	12.80	5	17.50	8.07	61	-1.5	.14	.69
<b>Symptoms</b>									
BDI	7.2	6.2	29	8.9	10.1	168	1.19	.24	.18
<b>Optimism/Pessimism</b>									
LOT-R	15.00	5.70	30	14.60	5.30	168	-.44	.66	.07
ASQ	0.56	0.92	19	0.65	0.89	159	.43	.67	.10
<b>Defensive Pessimism</b>									
REF	23.4	5.6	29	23.7	5.2	167	.18	.86	.06
PES	19.7	5.7	29	19.5	6.2	167	-.10	.92	.03

*Note.* Cohen (1998) provided the following guidelines for interpreting d: .20 = small-effect size, .5 = medium-effect size, .8 = large-effect size.

LE = Life Event; RPC = Rating of Personal Characteristics bias, BDI-II = Beck Depression Inventory; REF = Defensive Pessimism Reflectivity; PES = Defensive Pessimism Pessimism items; LOT-R = Life Orientation Test –Revised.

\* $p < .05$

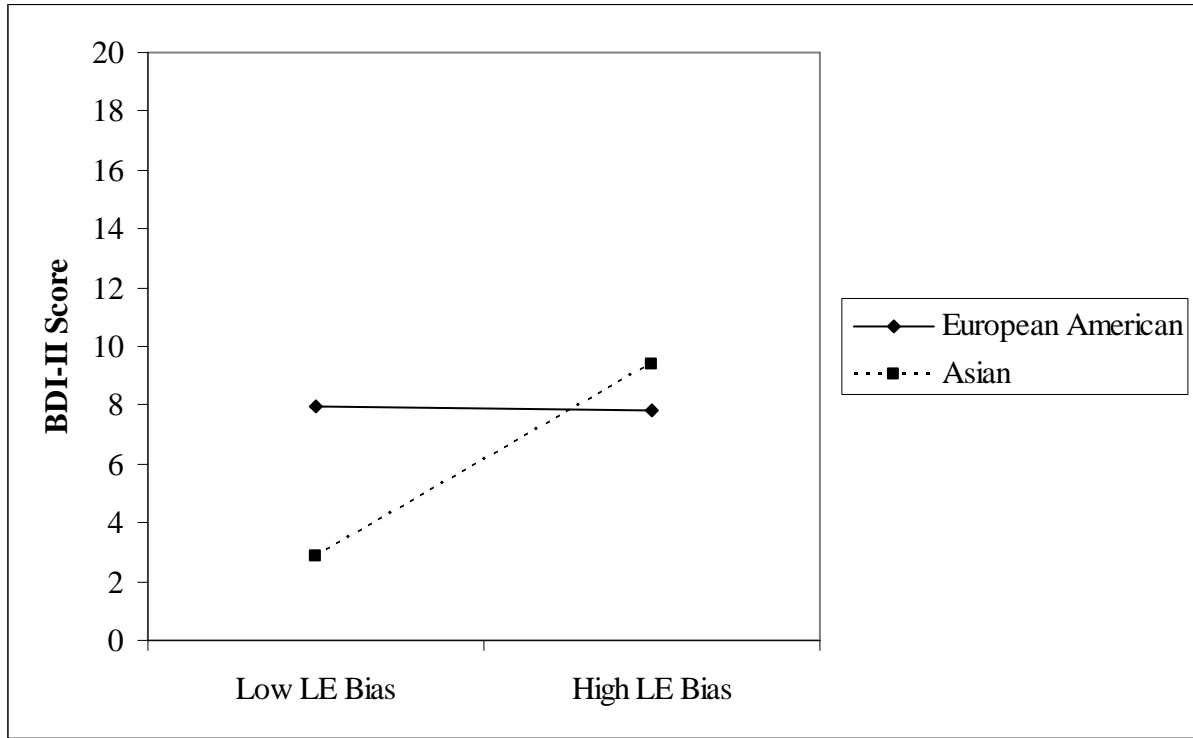


Figure 1. Ethnicity (Asian and European American.) as a moderator of the relationship between depressive symptoms (BDI-II) and optimistic/pessimistic bias (Life Event Predictions (LE) bias). Low LE bias = pessimistic bias, High LE bias = optimistic bias.

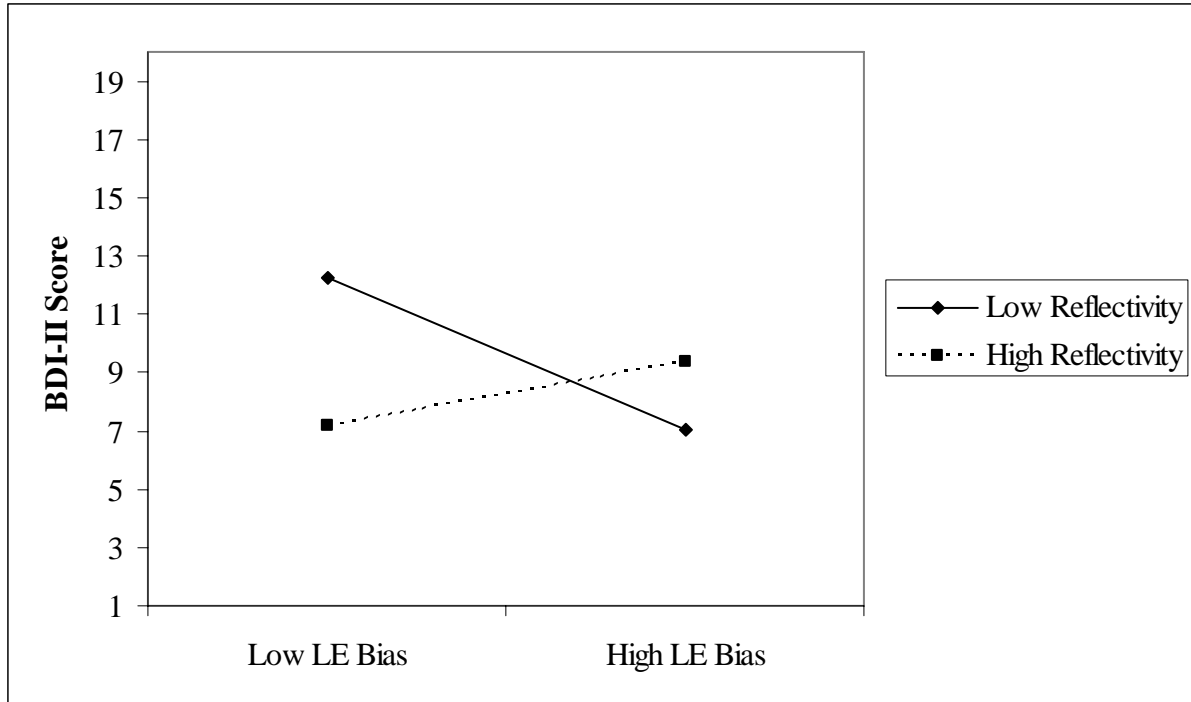


Figure 2: Reflectivity as a moderator of the relationship between depressive symptoms (BDI-II) and optimistic/pessimistic bias (Life Event Prediction Bias (LE)). Low LE bias = pessimistic bias, High LE bias = optimistic bias. Low reflectivity represents one standard deviation below the reflectivity mean, High reflectivity represents one standard deviation above the reflectivity mean.

## References

- Abramson, L.Y., Alloy, L.B., Hogan, M.E.; Whitehouse, W.G., Cornette, M.; Akhavan, S., Chiara, A. (1998). Suicidality and cognitive vulnerability to depression among college students: A prospective study. *Journal of Adolescence*. 21, 473-487.
- Ackermann, R., & DeRubeis, R. J. (1991). Is depressive realism real? *Clinical Psychology Review*, 11, 565–584.
- Alloy, L. B., & Abramson, L. Y. (1979). Judgment of contingency in depressed and nondepressed students: Sadder but wiser? *Journal of Experimental Psychology: General*, 108, 441–485.
- Alloy, L.B., Abramson, L.Y., Safford, S.M., & Gibb, B.E. (2005). The Cognitive Vulnerability to Depression Project: Current findings and future directions. In L.B. Alloy & J.H. Riskind (Eds.). *Cognitive vulnerability to emotional disorders* (pp. 33-61). Hillsdale, NJ: Erlbaum.
- Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. New York: Hoeber. Republished as *Depression: Causes and treatment*. Philadelphia: University of Pennsylvania Press.
- Beck, A.T., Steer, R.A., & Brown, G.K. (1996) "Manual for the Beck Depression Inventory-II". San Antonio, TX: Psychological Corporation Butler.
- Chang, E.C. (1996). Cultural differences in optimism, pessimism, and coping: Predictors of subsequent adjustment in Asian American and Caucasian American college students. *Journal of Counseling Psychology*, 43, 113-123.
- Chang, E. C. (2001). *Optimism & pessimism: Implications for theory, research, and practice*. Washington, DC: American Psychological Association.



Carver, C.S. Smith, R.G., Antoni, M.H., Petroni, V.M., Weiss, S., Derhagopian, R.P. (2005).

Optimistic Personality and Psychosocial Well-Being Among Long-Term Survivors of Breast Cancer. *Health Psychology, 24*, 508-516.

Clark, D. A., Beck, A. T., & Alford, B. A. (1999). *Scientific foundations of cognitive theory and therapy of depression*. Hoboken, NJ: John Wiley & Sons.

Dozois, D.J.A., & Dobson, K.S. (2001). A longitudinal investigation of information processing and cognitive organization in depression: Stability of schematic interconnectedness. *Journal of Consulting and Clinical Psychology, 69*, 914-92

Dozois, D.J.A., Dobson, K.S., & Ahnberg, J.L, (1998). A Psychometric evaluation of the beck depression inventory-II. *Psychological Assessment, 10*, 83-89.

Teasdale, J.D, Fennel, M.J.(1982). Immediate effects on depression of cognitive therapy interventions. *Cognitive Therapy and Research, 6*, 343-352.

Golin, S., Terrel, F., & Johnson, B. (1977). Depression and the illusion of control. *Journal of Abnormal Psychology, 86*, 440-457.

Heine, S., & Lehman, D. (1995). Cultural variation in unrealistic optimism: Does the West feel more invulnerable than the East? *Journal of Personality and Social Psychology, 68*, 595-607.

Lee, H.O. & Bolster, F.J. (1991). Social Information for uncertainty reduction during initial interactions, in Ting-Toomey, S. & Korzenny, F. (Eds) *Cross Interpersonal Communication*, (p. 189-212). London: Sage.

Lewinsohn, P. M., Mischel, W., Chaplin, W., & Barton, R. (1980). Social competence and depression: The role of illusory self-perceptions. *Journal of Abnormal Psychology, 89*, 203–212.

- Mezulis, A.H., Abramson, L.Y., Hyde, J.S., Hankin, B.L.(2004). Is there a universal positivity bias in attributions? A meta-analytic review of individual, developmental, and cultural differences in the self-serving attributional bias. *Psychological Bulletin*, 13, 711-747.
- Norem, J. K. (2001). Defensive pessimism, optimism, and pessimism. In E. C. Chang (Ed.), *Optimism & pessimism: Implications for theory, research, and practice*. (pp. 77-100). Washington, DC: American Psychological Association.
- Norem, J.K. & Cantor, N. (1986) Defensive Pessimism: Harnessing Anxiety as Motivation. *Journal of Personality and Social Psychology*, 51, 1208-1217.
- Norem, J.K., & Chang, E.C. (2002) The Positive Psychology of Negative Thinking. *Journal of Clinical Psychology*, 58, 992-1001.
- Norem, J.K., & Illingworth (1993) S.S. Strategy-Dependent of Reflecting on Self and Tasks: Some Implications of Optimism and Defensive Pessimism. *Journal of Personality and Social Psychology*, 65, 822-835.
- Pacini, R., Muir, F., & Epstein, S. (1998) Depressive Realism From the Perspective of Cognitive-Experiential Self-Theory. *Journal of Personality and Social Psychology*, 74, 1056-1068.
- Peterson, C. et al. (1982). The Attributional Style Questionnaire. *Cognitive Therapy and Research*, 6, 287-300.
- Pyszczynski, T., Greenberg, J., & Holt, K., (1998) Depression, Self-Focused Attention, and Expectancies for Positive and Negative Future Life Events for Self and Others. *Journal of Personality and Social Psychology*, 52, 994-1001.

- Rohde P., Lewinsohn P.M, Seeley J.R. (1991), Comorbidity of unipolar depression: II. Comorbidity with other mental disorders in adolescents and adults. *Journal of Abnormal Psychology*, 214-222
- Ross, M., Heine, S.J., Wilson, A.E., Sugimori, S., (2005) Cross-Cultural Discrepancies in Self-Appraisals. *Personality and Social Psychology Bulletin*, 31, 1175-1188.
- Scheier, M.F., Carver, C.S., & Bridges, M.W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078.
- Strunk, D.R., Lopez, H., & DeRubeis, R.J. (2006). Depressive symptoms are associated with unrealistic negative predictions of future life events. *Behaviour Research and Therapy*, 44, p.861-882.
- Wisco, B.E. & Strunk, D.R. (2005). A Psychometric Evaluation of the revised Defensive Pessimism Questionnaire. Unpublished Manuscript, Yale University.

## Appendix A

**Life Events -- Prediction and Assessment Questionnaire (LE-PAQ) [Participant version, Time 1]**

Please indicate the probability that each of the following items will occur in your life (i.e., the likelihood that each event will happen to you) in the next 30 days. Use a 0 to 100 point scale to indicate your probability estimate. Read the table below carefully to be sure that you understand this scale.

0%	25%	50%	75%	100%
Will <b>absolutely NOT</b> occur; there is <b>NO</b> chance of it occurring.	Will <b>probably NOT</b> occur; there is only a 1 out of 4 chance that it will occur.	It is <b>equally likely</b> that it will occur or that it will not occur.	Will <b>probably</b> occur; there is a 3 out of 4 chance that it will occur.	Will <b>absolutely</b> occur; there is <b>NO</b> chance that it will not occur

Note that you can use any percentage between 0 and 100%; for example, 12%, 67%, and 95% are all acceptable responses. 200% is not an acceptable response.

If you believe the probability is less than 1%, then you may indicate this using a fraction (for example, 1/200 or 1/1000) or a decimal percentage (for example, 0.5% or 0.1%).

Please be sure to answer every item.

- \_\_\_\_\_ 1. Will try out a new hobby, craft, or sport
- \_\_\_\_\_ 2. Will acquire a pet\*
- \_\_\_\_\_ 3. Will be arrested
- \_\_\_\_\_ 4. Will burn something that you are cooking
- \_\_\_\_\_ 5. Will find or receive a gift of a dollar or more\*
- \_\_\_\_\_ 6. Will have a serious headache
- \_\_\_\_\_ 7. Will receive a call from a telemarketer
- \_\_\_\_\_ 8. Will personally compete and win in a competitive game or sport\*
- \_\_\_\_\_ 9. Will have an out of town friend visit you\*
- \_\_\_\_\_ 10. Will end a major relationship
- \_\_\_\_\_ 11. Will successfully teach someone a new skill or concept\*
- \_\_\_\_\_ 12. Will be yelled at by stranger
- \_\_\_\_\_ 13. Will learn a new skill related to work or school\*

- \_\_\_\_\_ 14. Will try out a new food or dish\*
- \_\_\_\_\_ 15. Will have a supervisor or teacher praise your work\*
- \_\_\_\_\_ 16. Will miss or be more than 15 minutes late for an appointment or meeting
- \_\_\_\_\_ 17. Will be the victim of a crime
- \_\_\_\_\_ 18. Will make a purchase in excess of \$50 for your personal enjoyment\*
- \_\_\_\_\_ 19. Will be invited to a party involving at least 6 people\*
- \_\_\_\_\_ 20. Will physically harm someone in anger
- \_\_\_\_\_ 21. Will go out of town for leisure\*
- \_\_\_\_\_ 22. Will bounce a check
- \_\_\_\_\_ 23. Will run into an old friend that you haven't seen in a long time (at least 2 years)\*
- \_\_\_\_\_ 24. Will read and complete a book (100 pages or longer)\*
- \_\_\_\_\_ 25. Will exercise at least twice a week \*
- \_\_\_\_\_ 26. Will write a letter or e-mail to a good friend \*
- \_\_\_\_\_ 27. Will be seriously ill one day because of overdrinking
- \_\_\_\_\_ 28. Will have a serious family argument (not including spouse)
- \_\_\_\_\_ 29. Will donate money or property to a needy person or cause\*
- \_\_\_\_\_ 30. Will stay up past 4 AM for school or work (not as part of a regular routine)
- \_\_\_\_\_ 31. Will have a serious disagreement with a good friend
- \_\_\_\_\_ 32. Will have an injury that requires medical attention
- \_\_\_\_\_ 33. Will get sick or suffer a physical illness
- \_\_\_\_\_ 34. Will forget a major deadline
- \_\_\_\_\_ 35. Will be asked to do an activity with a friend \*
- \_\_\_\_\_ 36. Will have a sexual encounter that you regret
- \_\_\_\_\_ 37. Will get a parking or speeding ticket
- \_\_\_\_\_ 38. Will have a relative win a contest or award\*

\_\_\_\_\_ 39. Will find out that someone you know personally has died

\_\_\_\_\_ 40. Will invite a non-family member to a meal\*

---

Note: \*indicates desirable items. Other items are undesirable

Appendix B

**Ratings of Personal Characteristics (RPC).**

**Judgment and Self-View Accessibility**

Ohio State University  
Department of Psychology

***Ratings of Personal Characteristics (RPC) - Participant version***

---

**General Instructions:**

Think of the significant other to whom you gave the SIGNIFICANT OTHER packet. If we asked this significant other to tell us what you are like by responding to the 21 items listed below, how do you think s/he would respond? That is, how do you think this significant other would rate you on each of the following 21 personality characteristics?

**Scoring instructions:**

For each of the following items, please provide a percentile score (0-100%) indicating where you think your significant other would think you rank relative to all American adults for the given trait. A percentile score of 100% means that you score higher than every other American adult on a given trait, while a percentile score of 0% means that you score lower than every other American adult for a given trait. Use the numbers between 0 and 100 to indicate the proportion of American adults you would score more highly than for each trait.

Please be sure not to rank relative to only people you or your significant other may know. Provide a percentile score indicating rank compared to all American adults. If you are uncertain about how to use a percentile score, hopefully the couple of examples provided below will help.

**Example 1:**

Let's use *friendly*, the trait from Item 1, in an example. a) If your significant other thinks you are friendlier than about 1/4 of American adults, then s/he would respond to Item 1 with a percentile score of 25%. b) If your significant other thinks you are friendlier than about 3/4 of American adults, then s/he would respond with a percentile score of 75%.

**Example 2:**

If you're still unsure how to use a percentile score, here's another way to think of it. If you were standing in a room of 100 randomly chosen American adults, for how many of those people, relative to you, do you think your significant other would think a trait is less characteristic? For example, your significant other thinks you are friendlier than how many of those people?

Put this number in the percentile score (%) column blank following each item.

---

Remember, do not respond to the 21 items below as if you are rating yourself; respond as if you are the significant other rating how characteristic each item is of you relative to all American adults.

	%		%
	(1-100)		(1-100)
Example 1a	<u>25</u>	11. speaks fluently	_____
Example 1b	<u>75</u>	12. open and self-disclosing	_____
1. friendly	_____	13. reasonable	_____
2. popular	_____	14. confident	_____
3. assertive	_____	15. trusting	_____
4. attractive	_____	16. has a positive outlook on life	_____
5. warm	_____	17. notices good experiences	_____
6. communicates clearly	_____	18. intelligent	_____
7. socially skillful	_____	19. a good friend	_____
8. interested in other people	_____	20. a good family member	_____
9. understands what others say	_____	21. a good worker	_____
10. humorous	_____		

## Appendix C

**Defensive Pessimism Questionnaire (DPQ)**

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

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

---

Note:\*indicate items reversed before analysis

Items 1,2,6,15, and 16 scored as pessimism and items 4,8,12,14,17 scored as reflectivity



