Abstract Structural equation modeling was used to examine the relations among attributional style, outcome expectancies for future life-events, depression, and self-esteem in an undergraduate population (N = 195). Consistent with the hopelessness and self-regulation theories of depression, the first series of models illustrated that positive attributional styles (PAS) and negative attributional styles (NAS) had direct influences on expectancies, and that expectancies had a direct influence on depression. However, contrary to predictions of self-regulation theory, a NAS influenced depression independent of one's expectancies for the future. A second series of models, which included the latent construct of self-esteem, showed that the previously modeled relations showing a PAS and a NAS having direct influence on expectancies and expectancies having a direct inverse effect on depression remained consistent. As suggested by self-regulation theory, a PAS had an indirect positive influence on self-esteem via expectancies. However, a PAS also had a direct positive effect on self-esteem, an unexpected finding according to self-regulation theory. The final model also showed that self-esteem was inversely influenced by depression. Results are discussed in terms of pertinent theory and methodological limitations. Research and theory on the role of cognition in depression suggests that individuals who routinely employ negatively biased self-referent cognitions in their attempts to understand life-events have higher risk of future depression than those who employ more positive self-referent explanations (e.g., Beck, 1967; Beck, Shaw, Rush, & Emery, 1979; Olioff, Bryson, & Wadden, 1989; Seligman, 1975). The reformulated theory of learned helplessness (Abramson, Seligman, & Teasdale, 1978), its successor, the hopelessness theory of depression (Abramson, Alloy, & Metalsky, 1988; Abramson, Metalsky, & Alloy, 1989), and self-regulation theory (Carver & Scheier, 1981; Scheier & Carver, 1988) are the theories that most explicitly posit a causative relation between negative self-referent explanatory style and depressive symptoms. The reformulated theory of learned helplessness (Abramson et al., 1978) suggests that people differ in their attributional style, and that differences in attributional style determine emotional responses to uncontrollable life-events. According to Abramson et al. (1978), individuals with a negative attributional style will attribute negative life-events to internal ("It's my fault"), stable ("It will happen again"), and global ("It's in everything I try to do") causes, whereas positive life-events are causally attributed in the opposite manner (i.e., external, unstable, and specific). Individuals with a positive attributional style explain negative life-events...
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Hopelessness expectancy is "an expectation that highly desired outcomes are unlikely to occur or that highly aversive outcomes are likely to occur and that no response in one's repertoire will change the likelihood of occurrence of these outcomes" (Abramson et al., 1988, p. 7). The self-regulation model (Carver & Scheier, 1981; Scheier & Carver, 1988) argues that attributions have effects on emotional outcomes only because of their effects on one's expectancies for future events. Further, this model contends that an individual's expectancies mediate all influences that an attributional style has on affect. In particular, the prediction of behavior does not depend directly upon the attributions themselves. Behavior follows from the perception that responses will not produce desired outcomes... Outcome expectancy is the critical parameter, and how that expectancy is determined is unimportant (Carver & Scheier, 1981, p. 254). Hull and Mendolia (1991) used structural modeling procedures to address the mediational role of expectancies between attributional style and depression. These authors first addressed issues related to different measurement approaches (i.e., a single latent variable versus separate latent variables for positive and negative attributions) in the assessment of attributional style based on the Attributional Style Questionnaire (ASQ; Peterson, Semmel, von Baeyer, Abramson, Metalsky & Seligman, 1984). Hull and Mendolia (1991) recommend the separate specification of positive and negative attributional styles based on their findings of statistical parsimony for this measurement model and the relevant theoretical arguments presented in the literature. For example, Perloff and Persons (1988) argued that using a total ASQ score equates to assigning equal weighting to the subcomponents of the ASQ resulting in biased estimate effects. Similarly, Carver (1989) suggests that employing a total score approach for the ASQ may effectively limit exploration of the relationship between attributional style and depression because an ASQ composite obscures the differential effects of its subcomponents across studies. Hull and Mendolia's (1991) results agreed with the hopelessness and self-regulation models and showed that both a negative and a positive attributional style had direct influence on expectancies for future life events. In turn, these expectancies were shown to directly influence depression, supporting the mediational hypothesis of expectancies in depression. However, in contrast to the statements of both theories, a negative attributional style also had direct influence on depression. This unexpected result suggests a model where expectancies are not the final common pathway to cognitive variables influencing depression, as suggested by the hopelessness and self-regulation theories. One aim of the present study is to replicate the mediational model obtained by Hull and Mendolia (1991). Although Hull and Mendolia (1991) provide support for the mediational role of expectancies in the relation between attributions and depression, replication of their model is necessary to show robustness or usefulness. As communicated by Hoyle (1994), replication of structural models is particularly warranted when the derived empirical model provides evidence contrary to predictions of the theoretical model being examined (i.e., that a negative attributional style has a direct influence on depression). An additional aim of the present study is to examine the role of positive thinking in models of cognition-based depression. Impetus for extending the model of Hull and Mendolia (1991) is drawn from sources emphasizing how positive automatic thinking may be associated with increased positive self-referent constructs like self-esteem (e.g., Beck, 1967; Heimberg, Bruch, Hope, & Dombeck, 1990; Lewinsohn, Mischel, Chaplin, & Barton, 1980; Lightsey, 1994a). Critiques of cognition-based models for depression may be timely because a growing literature has theoretically and empirically positioned positive thinking as a salient factor in expectancy-mediated affective states such as depression and positive states of mind like self-esteem. For example, as described by Beck in his early writings, positive thinking or attitudes "form the basis for healthy personality" (Beck, 1967, p. 276). In fact, empirical evidence shows that positive schemas, or positive automatic cognitions, may have an inverse association with depressive states (Lightsey, 1994a). A positive attributional style may give non-depressed people a self-enhancing cognitive bias, allowing them to perceive themselves more positively (Lewinsohn et al., 1980). Furthermore, nondepressed people have been distinguished from depressed by the ratio of positive to negative self-referent cognitions employed to understand various life-events (Heimberg et al., 1990). Positive thinking has also played a central role in clinical approaches to the treatment of depression. For example, cognitive approaches to depression have emphasized the therapeutic impact of focusing on positive dispositional attributes, reinterpreting the meaning of life events in a positive manner, and re-attributing life-events with a focus on the positive (e.g., Beck et al., 1979). Clinical writers have pointed to the resiliency effects of positive thinking in the face of negative or stressful life circumstances (e.g., Klerman, Weissman, Rounsaville, & Chevron, 1994). Thus, from both empirical and clinical literatures, there is a strong basis for advocating the inclusion of positive thinking in cognition-based models of depression. The effects of positive thought have been directly addressed by the self-regulation model. In particular, it is suggested that positive thinking, or a positive attributional style, influences one's self-esteem mediated by expectancies.
for the future. In fact, Scheier and Carver (1992) argue that expectancies mediate the entire influence that a positive attributional style may have regarding self-esteem. The self-regulation model states that a person's outcome expectancy determines the general tone emotion that is experienced --, i.e., positive or negative. But the specific nature of the affect is determined by other considerations. These additional considerations may be viewed most simply as comprising an attributional analysis of the basis for outcome expectancies... If the expectancy is viewed as a product of one's own efforts or abilities, the feeling is one of heightened self-esteem" (Scheier & Carver, 1992, p. 199).

Although the antagonistic relationship between depression and self-esteem has been discussed elsewhere (e.g., Beck et al., 1979; Showers, 1992), the hopelessness theory of depression (Abramson et al., 1988) has suggested that when negative life-events are attributed to internal and also stable, global causes, the resultant depressive reaction may negatively influence self-esteem. As a final consideration, the present study will examine this suggestion. Combining both the theoretical and empirical statements of variable influences, a model of cognition-based depression that also examines the effect of positive thinking is proposed. As shown in Figure 1, the present model predicts that a positive attributional style will have a positive influence on expectancies and a negative attributional style will have a negative influence on expectancies (e.g., Abramson et al., 1988; Abramson et al., 1989; Carver & Scheier, 1981; Scheier & Carver, 1988). A negative attributional style will have an indirect effect on depression mediated by expectancies (e.g., Scheier & Carver, 1992) and depression will have a negative influence on self-esteem (e.g., Abramson et al., 1988). METHOD Participants Undergraduates received extra credit in introductory psychology for participating. Data from four participants failing to complete scale items were excluded from analyses. Analyses were therefore conducted with data from 195 participants. Participants completed a coded questionnaire package after being instructed on the rights of research participants. Measures Attributional Style. The Attributional Style Questionnaire (ASQ; Peterson et al., 1982) is a 48-item self-report instrument designed to assess an individual's attributional style as either positive or negative, across a variety of hypothetical situations (Peterson & Seligman, 1984). Based on the subscales that contain six of the twelve items in the questionnaire, internal consistency for the ASQ ranges from .44 to .69, with a mean of .54 (Peterson et al., 1982). When the subscales are combined, higher reliabilities result (.75 and .72) (Peterson et al., 1982). Our internal consistency figures for the subscales of internality, stability, and globality for a negative attributional style were .35, .54, and .60. Also, internality, stability, and globality for a positive attributional style were .44, .45, .47. The ASQ has satisfactory criterion (Eaves & Rush, 1984; Zullow & Seligman, 1985), convergent (Blaney, Behar, & Head, 1980), and discriminant validity (Raps, Peterson, Reinhard, Abramson, & Seligman, 1982). Other studies have also linked the ASQ to measures of depression in various populations and settings (e.g., Kamen & Seligman, 1987a, 1987b; Peterson & Seligman, 1984; Sweeney, Anderson, & Bailey, 1986). Outcome Expectancies. The Life Orientation Test (LOT; Scheier & Carver, 1985) is a measure of dispositional, generalized, outcome expectancies about future life events. The internal consistency of the LOT is reported as .76 (Scheier & Carver, 1985) and a four-week test-retest as .79 (Scheier & Carver, 1985). Our LOT internal consistency was .83. Research using the LOT supports the hypothesis that generalized outcome expectancies are related to depression, suggesting convergent and discriminant validity (e.g., Carver & Gaines, 1987; Scheier & Carver, 1985; Scheier, Weintraub, & Carver, 1986; Strack, Carver, & Blaney, 1987).

Depression. The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a 21-item test presented in a multiple-choice format that purports to measure depressive symptomatology in adolescents and adults. Internal consistency for the BDI has been reported at .86 with a Spearman-Brown coefficient of .93 (Beck et al., 1961). Our BDI internal consistency was .87. The BDI correlates (r = .77) with psychiatric ratings using university students (Bumbery, Oliver, & McClure, 1978) and psychiatric patients (r = .66). Self-Esteem. The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) is a 10-item scale presented in a multiple-choice format assessing "global self-esteem." It has good internal consistency (Byrne & Shavelson, 1986; .87; Schmitt & Bedeian, 1982; .83) and test-retest reliability (Byrne, 1983; .85; Silber & Tippett, 1965; .60). Our internal consistency was .89. The RSE is unidimensional (e.g., Hensley, 1979; O'Brien, 1985; Rosenberg, 1965) with evidence of good convergent and discriminant validity (Byrne & Shavelson, 1986) and construct validity (Coopersmith, 1981). RESULTS Causal Modeling Analysis Replication models. As in Hull and Mendolia (1991), the initial replication model(f.1) (R-model 1) specified that a positive attributional style would have a positive influence on expectancies, that a negative attributional style would have a negative influence on expectancies, and that a negative attributional style would exhibit both a direct influence on depression and indirect influence on depression via expectancies. Although R-model 1 represented an improvement on the null model (change in x2 = 108.39; p < .001), it did not provide an adequate fit to the observed data (see Table 1). The Bentler-Bonett Index (BBI = .76; Bentler & Bonett, 1980), Tucker-Lewis Index (TLI = .81; Tucker & Lewis, 1973), Incremental Fit Index (IFI = .86; Bentler, 1990), and the x2/df index = 2.01 (Joreskog & Sorbom, 1989) all suggested that R-model 1 could be substantially improved(f.2). The modification indices (MIS) for R-model 1 suggested a direct path from negative attributional style to depression. The addition of this new path, R-model 2, offered a better fit to the observed data than...
depression may be associated with lower self-esteem. As previously suggested by Abramson et al. (1978), low self-esteem is directly related to depression independent of expectancies. This relation shows that the more negative one’s expectancies, the more likely one is to be depressed. Also, a negative attributional style directly influences expectancies (gamma = -.28, p < .001), and directly influences depression (gamma = .29, p < .001). Full-models. Full-model 1 (see Table 2) provided an adequate fit of the data and improved model fit over the null (change in x² = 293.14, p < .001). However, the MIs of Full-model 1 suggested a direct path from a positive attributional style to self-esteem. Adding this path, Full-model 2, improved the fit over Full-model 1 (change in x² = 9.23, p < .01). Full-model 2 (see Figure 3) represents the final model in which: 1) negative attributional style is indirectly, via expectancies (beta = -.45, p < .001), and directly associated to depression (gamma = .29, p < .001); 2) a positive attributional style has both an indirect, via expectancies (beta = .28, p < .001), and a direct influence on self-esteem (gamma = .17, p < .001); and 3) depression has a direct negative influence on self-esteem (beta = -.53, p < .001). DISCUSSION The present results replicate and augment the structural model of Hull and Mendolia (1991). In the final model, expectancies are shown to have a mediational role between attribution styles and depression. Although all hypotheses were supported in the full model, unexpected findings of theoretical interest were also shown. Each of the major findings will be considered in turn. A positive attributional style had a positive influence on expectancies while a negative attributional style had a negative influence on expectancies. This finding is consistent with the hopelessness model of depression (Abramson et al., 1988; Abramson et al., 1989) and the self-regulation model (Carver & Scheier, 1981; Scheier & Carver, 1988). Basically, individuals who engage in positive cognitions for life-events are more likely to have more positive expectancies for future life-events, whereas those employing negative cognitions are more likely to develop negative expectancies for future life-events. A negative attributional style had an indirect effect on depression mediated by expectancies. These results support Carver and Scheier’s (1981; Scheier & Carver, 1988) contention that expectancies are directly related to depression. This relation shows that the more negative one’s expectancies, the more likely one is to be depressed. Also, a negative attributional style was found to have a direct positive influence on depression external to the mediation of expectancies. Although this finding runs contrary to the statements of Carver and Scheier (1981; Scheier & Carver, 1988), this finding supports the model presented by Hull and Mendolia (1991). Generally, attributions may be described as internal, self-directed “explanations” where negative life-events have meaning beyond the possibility that these events will or will not happen again. In fact, some suggest that a negative attributional style may be associated with innersanctioned feelings of “blame” and these sanctions may play a causal role in the development of dysphoric mood external to a negative attributional style (Wollert & Rowley, 1987). Research has shown that individuals who engage in self-blame after task failures tend to become more dysphoric than others (Mittelstaedt & Wollert, 1991), that self-blame and self-devaluation are strong positive correlates of loneliness (Jackson & Cochran, 1991), and that behavioral and characterological self-blame contributes uniquely to both loneliness and depression (Anderson, Miller, Riger, Dill, & Sedikides, 1994). Perhaps this postulation explains why negative attributions are directly associated with depression independent of expectancies. A positive attributional style was shown to have effects on self-esteem mediated by expectancies. This finding is consistent with statements of Scheier and Carver (1992). This relation shows that the more positive the expectancies, the more likely we are to have higher self-esteem. A positive attributional style was also shown to have a direct effect on self-esteem independent of the mediational effects of expectancies. This finding runs contrary to the self-regulation model in that expectancies are described as mediating the effects of a positive attributional style (e.g., Scheier & Carver, 1992). However, if negative attributions are to be described as internal, self-directed “explanations” that give negative life-events meaning beyond the possibility that these types of events will or will not recur in an individual’s future, the same reasoning might be applied to positive thinking as well. Wollert and Rowley (1987) stated that a positive attributional style may be associated with innersanctioned feelings of “credit” and that these sanctions may play a causal role in the enhancement of positive mental schemas (e.g., self-esteem). Perhaps these statements explain why a positive attributional style is associated with self-esteem independent of expectancies. Self-esteem may be mediated by self-sanctioned credit. Viewing self-esteem as an affective component of the self may also explain the direct influence of a positive attributional style on self-esteem. As communicated by several authors (see Baumeister, 1993), the self may be regarded as a person’s general / specific and positive / negative self-evaluations. In contrast to self-concept, which reflects our beliefs and cognitions regarding the self, self-esteem is more emotionally oriented and is not a unidimensional construct in nature. In concordance with these statements, the positive emotions associated with self-credit may affect self-esteem beyond the mediational effects of expectancies. Depression was found to have a direct negative influence on self-esteem. As suggested by Abramson et al. (1988), when negative life-events are attributed to internal, stable, and global factors, the resulting depression may be associated with lower self-esteem. As previously suggested by Abramson et al. (1978), low self-esteem may be associated with lower self-esteem. As previously suggested by Abramson et al. (1978), low self-esteem...
esteem is not a necessary condition for the occurrence of depression. In agreement with this position, Blatt, Quinlan, Chevron, McDonald, & Zuroff (1982) have shown that dysphoria can occur without the loss of self-esteem. In agreement with these suggestions, our model shows that depression has a direct negative influence on self-esteem.

Model Implications One function of examining our model of the cognitive antecedents to depression and self-esteem is to illustrate the feasibility of predictions concerning possible therapeutic interventions. In delineating how a specific set of cognitive constructs interacts to result in various affective states (i.e., depression), we envision our model's points of intersection as a relevant area for theory in clinical intervention. Several therapies for depression attempt to reduce the frequency of the client's negative self-referent cognitions for life-events (e.g., Beck et al., 1979; Klerman et al., 1994). While sounding straightforward enough, therapists are cautioned not to envision depression as existing in a vacuum of negative cognition. In fact, Lightsey (1994a) argued that depression may be influenced by positive thinking, social support, and interpersonal experiences of clients. From our model, the adjustment of a negative attributional style is an important factor in reducing depression. However, our model also suggests that adjusting self-referent cognitions towards a positive attributional style may work to increase feelings of self-esteem. In agreement with our data, Showers' (1992) research suggests that if a person tends to compartmentalize the self-concept based on positive and negative self-information, this cognitive style contributes to high self-esteem and low amounts of depression when positive self-aspects are more frequently accessed in memory than the negative ones. Although not addressed in our model, others have suggested that positive automatic cognitions have an inverse relationship with depression (Ingram, Atkinson, Slater, Saccuzzo, & Garfin, 1990) and with other clinical conditions like anxiety (Heimberg, Acerra, & Holstein, 1985). Furthermore, Lightsey (1994b) suggested that positive thinking may serve as a depression-buffer. In particular, he reported that the frequency of positive thinking was inversely associated with dysphoria and that, for higher levels of positive thinking, negative life stress had a reduced association with dysphoria. Although these studies offer a mixed collection of theory suggesting various effects for positive cognitions, they present clear evidence that the role of positive thought in depression models must be more closely examined. Measurement Issues of Attributional Styles In spite of the general support for the relations between attributional style and depression, there is considerable disagreement regarding its measurement. As highlighted by Hull and Mendolia (1991), a latent-variable approach that models the negative and positive components of attributional styles separately yields acceptable solutions, and compared to the single variable approach, corresponds to empirical evidence (e.g., Sweeney et al., 1986), and more appropriately addresses methodological concerns (e.g., Perloff & Persons, 1988; Carver, 1989). In our model, each of the six subscales of the ASQ were significantly related to either positive or negative attributional styles. Also, for the most part, these subscales were related to each other via their connection to the latent construct. The two exceptions were the globality subscales and the negative internality and stability scales. As in Hull and Mendolia (1991), our globality subscales were allowed to correlate and not viewed as more than method variance because their effects were outside the latent model of interest. However, the relationship between the negative internality and stability subscale may show that these ASQ scales are not orthogonal. Although these effects are permitted in our model and not viewed as damaging to the latent model because they exist outside its specification, these findings echo the literature's contention that the ASQ is fraught with theoretical and methodological problems. Hill and Larson (1992) suggested that the measurement of attributional style needs refinement. In particular, the assessment of attributional styles must take into account when attributions are assessed in relation to outcome events, use real life examples, and move to indirect solicitation of the attributions. Study Limitations We employed a common depression sampling strategy in accessing an undergraduate student sample. Some would suggest this seriously affects the generalizability of the obtained results because of the quality of the comparisons between clinically depressed patients and students (see Vredenburg, Flett, & Krames, 1993). Although studies using clinically depressed individuals are becoming more common, clinical subjects are still difficult to access in large numbers. This issue of access is especially problematic when examining research questions of mediation because appropriate analyses require large samples to ensure the relations between constructs are more stable. Although the advantages to structural equation modeling may overshadow its shortcomings, there are limitations (see Hoyle, 1994). In particular, it should be made explicit that structural modeling does not provide evidence of causality. However, although random assignment to conditions does increase control compared to survey methods, random assignment is neither practical nor ethical in depression research. Also, some authors argue that the analyses of variance techniques inherent in experimental designs are not sufficient to examine mediational hypotheses because they do not provide a simultaneous test of error effects (see Baron & Kenny, 1986). As elaborated by Hoyle and Smith (1994), in the absence of random assignment to levels of a reputed cause, isolation of effect can be achieved through statistical means by including additional variables in the design that may produce the effect or jointly influence the putative cause and effect. Further, although it may be argued that structural equation modeling does not guarantee isolation of effects, it is an improvement over statistical techniques such as multiple regression and analysis of covariance (ANCOVA) because it engages maximum flexibility in modeling the effects of extraneous variables. Structural equation modeling does not result in one model being superior over all other alternative models. As discussed by Hull and Mendolia (1991), even small sets of variables can translate into a large set of alternate models.
Compartmentalization of positive and negative self-knowledge: Keeping bad apples out of the bunch. Journal of
Predicting successful completion of aftercare program following treatment for alcoholism: The role of dispositional
Tucker, L.R., & Lewis, C. (1973). The reliability coefficient for maximum likelihood factor analysis. Psychometrika, 38,
Unpublished manuscript. Appendix Correlation matrix, means, and standard deviations used for LISREL input (N =
195). Legend for Chart: A - Measure B - LOT C - RSE D - BDI E - PGLO F - PSTA G - PINT H - NGLO I - NSTA J -
NINT A B C D E F G H I J LOT -- -- -- -- -- -- -- -- -- -- -- -- RSE .61 -- -- -- -- -- -- -- -- -- -- -- -- BDI .53 .70 --
-- -- -- -- -- -- PGLO H .13 .14 .05 -- -- -- -- -- -- PSTA .27 .26 .09 .54 -- -- -- -- -- -- PINT .22 .25 .16 .43 .57 -- -- -- --
-- -- NGLO .19 .26 .28 .21 .01 .08 -- -- -- -- NINT .19 .20 .24 .06 -.06 .09 .41 -- -- NINT .18 .22 .26 .04 .01 .05 .32 .10
-- Mean 19.05 30.43 9.07 30.44 31.03 31.88 23.18 24.65 24.73 SD 5.85 5.28 7.28 4.83 4.83 4.64 5.76 4.05 5.23 Note.
LOT = Life Orientation Test; RSE = Rosenberg Self-Esteem Scale; BDI = Beck Depression Inventory; PGLO = positive
globality; PSTA = positive stability; PINT = positive internality; NGLO = negative globality; NSTA = negative stability; NINT =
negative internality (N = 195).