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The Measurement of Expectancies and Other Cognitions in Depressed Individuals[1]

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The aim of the study was to clarify the dimensionality and the degree of interrelatedness of measures of cognitions hypothesized by Beck (expectancies), Ellis (irrational beliefs), and Rehm (self-reinforcement) to be important for depression. Depressives were found (a) to have higher expectancies for negative and lower expectancies for positive events pertaining to the self but not for "world" events, (b) to report experiencing a greater number of negative and a fewer number of positive thoughts pertaining to the self but not the "world," and (c) to subscribe to specific irrational beliefs but not to others. In addition, relatively specific expectancies, thoughts, and irrational beliefs which appear to be uniquely related to depression were identified.

There is general consensus that the phenomena of depression include overt *behavioral* (e.g., a reduction in behavior rate) and *cognitive* (e.g., a high rate of self-depreciatory and self-critical thoughts), as well as *emotional* manifestations (e.g., feelings of sadness). However, there are important differences between "cognitive" and "behavioral" theories of depression regarding whether or not a *causal* role is assigned to cognitions in the etiology of depression. Cognitive theorists such as Beck (1967; Beck, Rush, Shaw, & Emery, 1979), Ellis and Harper (1961), and Rehm (1977) have each

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advanced hypotheses that attribute a causal role to cognitions, but they in turn differ among themselves in regard to the *specific* nature of the cognitions that are assumed to lead to depression. Beck (1967; Beck et al., 1979) postulates the existence of a cognitive "triad" consisting of a negative view of the self, the world, and the future. Within Beck's framework this triad is seen as leading to misinterpretations (distortions) of experience, and thus to the behavioral and emotional manifestations of depression. Ellis (e.g., Ellis & Harper, 1961) attached primary importance to irrational beliefs for the development of depression. Depression, in this view, occurs when a particular situation triggers an irrational belief. It is the belief that is hypothesized to cause the person to overreact emotionally to the situation. For example, a person may become depressed after being rejected because he believes that "if one is not loved by everyone one is unlovable." Finally, Rehm (1977) has developed a self-control model of depression in which negative self-evaluations, and low rates of self-reinforcement and high rates of self-punishment, are seen as leading to the low rate of behavior that characterizes depressed individuals.

In view of this variation of cognitive hypotheses, there is a need for psychometric instruments to assess the kinds of cognitions hypothesized to be important for the occurrence of depression. At the level of theory it is important to determine whether the cognitions uniquely associated with depression are best described as reflecting general expectancies (Beck), irrational beliefs about specific situations (Ellis), or by the frequency of positive and negative thoughts (Rehm). At the level of treatment research it is important to be able to measure change in the specific cognitive phenomena presumed to be related to depression.

As part of a treatment outcome study (Zeiss, Lewinsohn, & Muñoz, 1979), three cognitive instruments had been developed: the Subjective Probability Questionnaire (SPQ) (Muñoz & Lewinsohn, Note 1), the Personal Beliefs Inventory, Form M-1 (PBI) Muñoz & Lewinsohn, Note 2), and the Cognitive Events Schedule (CES) (Muñoz & Lewinsohn, Note 3). These instruments were designed to incorporate hypotheses about the nature of the critical cognitions for depression as advanced by Beck, Ellis, and Rehm. The construct validity of the instruments was evaluated by comparing depressed and nondepressed control groups. The results (Muñoz, 1977) can be summarized as follows: (1) Depressives (compared to nondepressives) had higher expectancies for negative and lower expectancies for positive events; (2) depressives ascribed more to irrational beliefs; (3) depressives reported experiencing fewer positive and many more negative thoughts.

The aims of the *present* investigation were as follows: (1) For each of the three cognitive instruments some items had been found to be highly

discriminating between depressed and nondepressed groups, while other items did not so differentiate. By contrasting "most discriminating" (MD) items it was hoped that the specific nature of the cognitive phenomena most critically related to depression could be further clarified. (2) The degree of interrelationship among the cognitive processes being measured by the three cognitive tests was to be explored. For example, do persons whose expectancies for negative events are high subscribe *also* to irrational beliefs, or are expectancies and degree of agreement with irrational beliefs independent cognitive processes?

METHOD

Subjects

As part of a treatment outcome study of depression (Zeiss et al., 1979), a two-stage screening process, involving cutoff scores on selected MMPI scales and interviewer's ratings on the depression factors identified by Grinker, Miller, Sabshin, Nunn, and Nunally (1961), was used in selecting three subject groups: depressed (N = 64), High-MMPI control (N = 61), and normal control (N = 74). Previous experience has indicated that the two-stage depression criteria identify persons in whom depression is present to a clinically significant degree and for whom being depressed constitutes the major presenting psychopathology (Lewinsohn, Biglan, & Zeiss, 1976). The mean age for participants was 30.2, and 40% of them were male. Each participant signed a statement of informed consent.

Cognitive Instruments

Three psychometric instruments were constructed and administered to all participants and have been described in greater detail elsewhere (Muñoz, 1977).

Subjective Probability Questionnaire. The Subjective Probability Questionnaire[3] (SPQ) consists of 80 statements orthogonally classified into eight scales of 10 statements each, using three dichotomies: (1) self-world, (2) present-future, and (3) positive-negative (for example, "I will have periods of great happiness" is a self-future-positive event). The SPQ was designed to operationalize Beck's (1967) "cognitive triad,"

[3]These and other materials may be obtained from Peter M. Lewinsohn.

defined as pervasive negative attitudes toward the self, the world, and the future, to which Beck assigns a central role in depression, by measuring the person's subjective probability that a negative event or a positive event is or will become true.

Cognitive Events Schedule (CES). The Cognitive Events Schedule was intended to probe for the content of thoughts, in particular for their frequency and affective impact, with the expectation that depressed individuals would report experiencing fewer positive and a greater number of negative thoughts (Muñoz, 1977). The CES was modeled after the Pleasant Events Schedule (MacPhillamy & Lewinsohn, Note 4), in which the respondents report the frequency and pleasantness of generally pleasurable activities. The CES focuses entirely on cognitive activities. Paralleling the SPQ, 160 items were generated representing the same eight content areas. Participants completed two ratings on each item, one for frequency of thoughts and one for pleasantness of thoughts. Only the frequency ratings were used in the present study. For the purpose of the present investigation, the CES is assumed to be a measure of self-reinforcement and self-punishment.

Personal Beliefs Inventory, Form M-1 (PBI). The Personal Beliefs Inventory, Form M-1, is a modification of the Personal Beliefs Inventory developed by Hartman (1968) and consists of 30 statements selected from the writings of Albert Ellis and others in the Rational Emotive Therapy tradition. Using a 5-point scale, participants rated their agreement or disagreement with statements reflecting beliefs (e.g., "The main goal and purpose of life is achievement and success") hypothesized to represent irrational beliefs important for the occurrence of depression.

Most Discriminating (MD) and Nondiscriminating (ND) Items. On the basis of analyses of covariance (using age as a covariate) for each of the items from the three cognitive instruments, sets of "MD" and "ND" items were identified. An item was defined as being MD if (a) the main effect due to diagnostic groups was significant at the .05 level for the PBI and at the .001 level for the other two instruments, and (b) visual inspection of the means showed the depressed group to be either above or below *both* nondepressed control groups. In this way 29, 53, and 13 MD items were selected for the SPQ, CES, and PBI, respectively. ND items were chosen from among those items for which there was no significant main effect due to diagnostic groups ($p > .10$ for the SPQ and CES and $p > .05$ for the PBI); 32, 54, and 17 nondiscriminating items for the SPQ, CES, and PBI, respectively, were selected. The means of the two sets of items for each instrument were roughly equivalent.

Factor Analyses. In order to clarify the dimensional structure of the depression related cognitions, the data, separately for the MD and for the

ND items, were submitted to principal-factors factor analysis. The first five factors were retained and rotated to the varimax criterion of simple structure.

RESULTS

Dimensionality of Depression Related Cognitions

Expectancies. The five factors extracted from the SPQ MD items accounted for 43% of the total variance; they were labeled Self-depreciation (e.g., "My family and friends would be better off without me," $r = .66$), Personal Happiness (e.g., "I will have periods of great happiness," $r = .60$), Personal Social Support (e.g., "My friends and family sincerely care for me," $r = .71$), Ability (e.g., "I am more intelligent than the average person," $r = .67$), and Likability (e.g., "I am more likable than the average person," $r = .66$). In contrast, the five factors extracted from the SPQ ND items accounted for 39% of the total variance; the labels for these factors were Government (e.g., "The government will become less corrupt and more responsive to the people," $r = .58$), Danger (e.g., "More countries will be governed by cruel rulers," $r = .54$), Trust Among People (e.g., "Most teachers sincerely care about their students' progress," $r = .52$), Disaster (e.g., "There will be a depression as bad as the 1930s within 25 years," $r = .53$), and Political Decline (e.g., "Taxes will get worse," $r = .55$). In sum, the MD factors are defined by items relating to the self, while the ND factors are defined by "world" and "other" related items.

Thoughts. The five factors extracted from the CES MD items accounted for 43% of the total variance; the factors were labeled Self-blame (e.g., "That was a dumb thing for me to do," $r = .69$), Dysphoria (e.g., "I'll never get over this depression," $r = .58$), Happiness (e.g., "I like people," $r = .67$), Loneliness (e.g., "Nobody loves me," $r = .55$), and Adversity (e.g., "Life is unfair," $r = .46$). By comparison, the five factors extracted from the CES ND items accounted for 29% of the total variance; these factors were labeled Corruption (e.g., "The wrong kind of people are getting more and more power," $r = .61$), Personal Uprightness (e.g., "I'm responsible," $r = .64$), Progress (e.g., "The president is trying hard to make a good decision," $r = .60$), Attractiveness: Non-self (e.g., "He's handsome (or, she's beautiful)," $r = .54$), and Trivia (e.g., "Wonder what there is to do this weekend," $r = .50$). Similiar to the expectancies results, all of the MD factors pertain to the self, while all but one of the ND factors pertain to the "world" and to "others."

Irrational Beliefs. The five factors that were extracted for each of the two sets of items, MD and ND, accounted for 32% and 29% of the total

variance, respectively. Initial inspection of the content of the items loading on the PBI factors did not suggest simple interpretations for these factors. Our efforts to develop hypotheses about the specific belief structures of importance in depression were greatly aided by supplemental data graciously made available to us by Dr. Eric Nelson (see Nelson, 1977). Briefly, we constructed post hoc hypotheses using PBI MD factors, and then checked the PBI ND factors and Nelson's data for confirmation or disconfirmation of these hypotheses. The labels finally selected for the PBI MD factors were Predetermined to be Unhappy (e.g., "Given the kind of home life some people have had, it is almost impossible for them ever to be happy," $r = .61$), Self-blame for Failures (e.g., "One should blame oneself severely for all mistakes and wrongdoings," $r = .62$), Being Judged Successful by Others (e.g., "The main goal and purpose of life is achievement and success," $r = .68$), Miscreant (e.g., "There are some people in this world who truly can be described as rotten," $r = .57$), and Emotional Reaction to Frustrations (e.g., "If things are not the way one wants them to be, then it is a catastrophe," $r = .47$). PBI ND Factors 1, 4, and 5 were labeled Approval (e.g., "An adult must be approved of or loved by almost everyone for almost everything he or she does," $r = .57$), Bad World (e.g., "The political situation in our country is awful; our leaders should lead more honest lives than they do," $r = .65$), and *The* Explanation (e.g., "There is invariably a right, precise, and perfect solution to human problems, and it is a catastrophe when this perfect solution isn't found," $r = .60$); Factors 2 and 3 were left unlabeled.

Relationships Among All of the Depression-Related Cognitions

In order to clarify the overall dimensionality of depression-related cognitions, we computed the intercorrelations among the combined pool ($N = 95$) of MD, SPQ, CES, and PBI items and submitted the resulting matrix to a factor analysis. The resulting factors were heavily "instrument-dominated," there being very few factors with high loadings on more than one of the tests. The factors that did emerge were very similar to the ones that had been identified in the separate factor analyses of the MD items from each of the instruments and that were listed previously. This analysis thus did not serve to clarify the dimensional structure of depressive cognitions. Next, intercorrelations among five scales (SPQ+, SPQ−, CES+, CES−, PBID) based on the MD items were computed separately for the depressed and nondepressed groups.[4] The correlations matrices were then submitted to

[4]Since the scales had been developed specifically to distinguish depressed and nondepressed groups, any correlations between scales based on all subjects would have been artificially

principal-factors analysis and rotated to the varimax criterion of simple structure. Five factors were retained.

Two interesting findings emerged: (a) The intercorrelations among the scales were mostly positive but relatively low in magnitude, resulting in first-principal unrotated factors that accounted for 40% and 26% of the total variance for the depressed and nondepressed samples, respectively. The results thus suggest the presence of weak, single underlying dimension. (b) The highest interscale correlations were obtained between measures of negative cognitions (CES− and SPQ−), and between measures of positive cognitions (CES+ and SPQ+), while the correlations of the PBI-D scale with the other scales were low and in some instances not statistically significant. Consistent with this clustering, the first rotated factor in matrices for both depressed and nondepressed groups had its highest loadings on CES+ (.72 and .68) and SPQ+ (.73 and .69), respectively, and the second rotated factor had its highest loadings on CES− (.55 and .72) and SPQ− (.54 and .51), respectively, for both depressed and nondepressed groups, while the PBID scale obtained its highest loadings on the third rotated factors for both depressed (.50) and nondepressed (.53) groups. The findings thus also suggest some clustering of depressive cognitions into (a) positive thoughts and expectancies, (b) negative thoughts and expectancies, and (c) irrational beliefs.

DISCUSSION

The results of our study have implications for the cognitive theories that formed the basis for the construction of the instruments, and for the nature and the dimensionality of the cognitions found to be uniquely associated with depression.

The findings provide only partial confirmation of Beck's "cognitive triad" and suggest that this construct be limited to negative expectancies for present and for future events pertaining to the self. Depressives apparently do not have more negative expectancies for "world" events, i.e., those that affect everyone and over which most people feel they have little control. The suggested restriction of Beck's construct is analogous to Seligman's (Note 5) recent distinction between "personal" and "universal" helplessness; the latter is not seen as critical for the occurrence of clinical depression.

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inflated because any two variables that strongly distinguish group X from group Y will tend to be highly correlated in a mixed X/Y design no matter how totally unrelated the variables otherwise are. As expected, the intercorrelations among scales in this matrix are very high and the first principal component factor accounted for 55% of the total variance.

A recent article by Bandura (1977) is also relevant to our findings. In trying to clarify the mediational role of expectancies in person-environment interactions, Bandura has suggested that a distinction be made between efficacy and outcome expectations. The term *efficacy expectations* is used to refer to what one expects to be able to do, while *outcome expectancies* is used to refer to what one thinks one will receive. Many of the MD SPQ items indicate that depressives have low self-efficacy expectancies about their ability to perform in situations requiring general competency skills (e.g., intelligence, social skills, and common sense). Only a small number of the items suggest that the depressed also have more negative outcome expectancies (e.g., "My friends and family sincerely care for me"; "People would help me if I were in trouble"). It may tentatively be suggested that low self-efficacy expectancies are more problematic for depressed individuals than are low outcome expectancies, but further research is needed to address this issue.

The relevance of our results with the CES to Rehm's (1977) self-control theory of depression and to the theoretical ideas advanced by Muñoz (1977) is based on the assumption that the hedonic content of thoughts (positive vs. negative) constitutes a measure of covert reinforcement. To the extent that this assumption is valid, the results strongly support Rehm's hypothesis that the depressed self-punish more and self-reinforce less. Our results also suggest that the depressive's excess of self-punishment is greater than his deficit in self-reward. This hypothesis may be suggested because 41 out of 53 MD CES items refer to negative thoughts, whereas the original item pool for the CES had an equal number of positive and negative thoughts.

The PBI results are perhaps the most interesting and challenging. While an elevated overall tendency to subscribe to irrational beliefs has been reported by Muñoz (1977) and by Nelson (1977), the present results suggest that depressives subscribe to certain irrational beliefs that make them especially sensitive to experiences of failure and frustrations, and to beliefs that imply that it is impossible for them to ever achieve happiness or to have their needs met.

The concept of "irrational beliefs" was introduced in a much broader context by Ellis (1962) as being responsible for *all* unpleasant emotions. Within this framework, the PBI results may be used to hypothesize that situations that trigger the depression-related belief structures identified in the present study lead to the emotion of dysphoria, while other, yet to be pinpointed, specific irrational belief structures may lead to other emotional reactions (e.g., anxiety, hostility). The fact that a belief structure (attaching

overriding importance to love and approval from others) that is suggested by Goldfried and Sobocinski's (1975) findings as being especially relevant to social anxiety was *not* found to be uniquely related to depression is consistent with a more general formulation within which specific irrational belief structures are hypothesized to be linked to specific unpleasant emotions. The present results suggest that future research within this framework may be fruitful.

One of the major goals of the present investigation was to clarify the *dimensionality* of the cognitions uniquely associated with depression. Specifically, we were interested in the degree of interrelationship among measures assumed to assess the different cognitive constructs (expectancies, self-reinforcement, irrational beliefs) that have been postulated by cognitive theorists as being important for the occurrence of depression. A high degree of intercorrelation among measures, all of which had previously been shown to be related to depression (Muñoz, 1977), would cast doubt on the independence of the constructs; i.e., it would suggest that the measures are not measuring separate traits. The fact that scales derived from three different theoretically derived measures were found to be intercorrelated to some extent for both depressed and nondepressed persons suggests the presence of a general underlying dimension. To the extent justified by the magnitude of the correlation coefficients, an individual who subscribes to irrational beliefs may also be predicted to have more negative expectancies (and thoughts) and fewer positive expectancies (and thoughts). In this regard, our findings parallel results obtained by Lobitz and Post (1979), who also reported positive correlations among three conceptually different cognitions (self-expectation, self-evaluation, and self-reward). Lobitz and Post (1979) suggest that a more global factor, such as low self-esteem, would be underlying all variables. *Nevertheless*, the relative weakness of this general factor, and the fact that psychologically meaningful cognitive clusters emerged from the factor analyses of the MD items of the individual scales, suggests that there is also considerable specificity in the nature of the cognitions associated with depression. The present findings certainly do not justify the rejection of positive and negative expectancies and thoughts and of irrational beliefs as independent constructs of cognition relevant to depression.

Finally, at the level of clinical assessment and treatment, the instruments developed for the present investigation may be useful for pinpointing specific cognitive problems shown by patients and to evaluate the specific impact of cognitive and other interventions on the cognitions that were found to be related to depression.

REFERENCE NOTES

1. Muñoz R. F., & Lewinsohn, P. M. *The Subjective Probability Questionnaire.* Technical memorandum, University of Oregon, 1975.
2. Muñoz, R. F., & Lewinsohn, P. M. *The Personal Beliefs Inventory, Form M-1.* Technical memorandum, University of Oregon, 1975.
3. Muñoz, R. F., & Lewinsohn, P. M. *The Cognitive Events Schedule.* Technical memorandum, University of Oregon, 1975.
4. MacPhillamy, D. J., & Lewinsohn, P. M. *The Pleasant Events Schedule.* Technical memorandum, University of Oregon, 1971.
5. Seligman, M. E. P. *Behavioral and cognitive therapy for depression from a learned helplessness point of view.* Presented at the NIMH Conference on Research Recommendations for the Behavioral Treatment of Depression, Pittsburgh, April 1979.

REFERENCES

Bandura, A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review,* 1977, *84*, 191-215.

Beck, A. T. *Depression: clinical, experimental, and theoretical aspects.* Philadelphia: University of Pennsylvania Press, 1967.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. *Cognitive therapy of depression.* New York: Guilford Press, 1979.

Ellis, A. *Reason and emotion in psychotherapy.* New York: Stuart, 1962.

Ellis, A., & Harper, R. A. *A guide to rational living.* Hollywood: Wilshire Books, 1961.

Goldfried, M. R., & Sobocinski, D. Effect of irrational beliefs on emotional arousal. *Journal of Consulting and Clinical Psychology,* 1975, *43*, 504-510.

Grinker, R. R., Miller, J., Sabshin, M., Nunn, J., & Nunnally, J. D. *The phenomena of depression.* New York: Harper & Row, 1961.

Hartman, B. J. Sixty revealing questions for 20 minutes. *Rational Living,* 1968, *3*, 7-8.

Lewinsohn, P. M., Biglan, A., & Zeiss, A. M. Behavioral treatment of depression. In P. O. Davidson (Ed.), *The behavioral management of anxiety, depression, and pain.* New York: Brunner/Mazel, 1976. Pp. 91-146.

Lobitz, W. C., & Post, R. D. Parameters of self-reinforcement and depression. *Journal of Abnormal Psychology,* 1979, *88*, 33-41.

Muñoz, R. F. A cognitive approach to the assessment and treatment of depression (Doctoral dissertation, University of Oregon, 1977). *Dissertation Abstracts International,* 1977, *38*, 2873B. (University Microfilms, No. 77-26, 505, 154)

Nelson, R. E. Irrational beliefs in depression. *Journal of Consulting and Clinical Psychology,* 1977, *45*, 1190-1191.

Rehm, L. P. A self-control model of depression. *Behavior Therapy,* 1977, *8*, 787-804.

Zeiss, A. M., Lewinsohn, P. M., & Muñoz, R. F. Nonspecific improvement effects in depression using interpersonal skills training, pleasant activities schedules, or cognitive training. *Journal of Consulting and Clinical Psychology,* 1979, *74*, 427-439.