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Cover sheet

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Running head: ONE-DIMENSIONAL CONTINUUM

Dysthymia and major depression: distinct conditions or different stages along a one-

dimensional continuum?

Abstract

Until recently researchers have discussed whether dysthymia and major depression represent distinct conditions or rather different stages along a one-dimensional continuum. This study addresses this question by examining the belief systems of normal, dysthymic, and depressed participants. We explored participants' beliefs and differentiated between positive and negative as well as between core and peripheral beliefs. Normal participants showed fewer negative beliefs and negative peripheral beliefs than the dysthymic group, whereas normal participants had more positive beliefs and positive core beliefs as well as fewer negative core beliefs than the depressed group. The hypothesized one-dimensional continuum could not be demonstrated for the belief systems. Instead, the data point to the conclusion that our idea of a one-dimensional continuum reaching from normal to dysthymic to depressed was too simple. Apparently, the differences in the belief systems reported here are related to the chronic character and severity of the mood disorder.

Key words: Major depression versus dysthymia; core and peripheral beliefs, cognitive factors.

Until recently it has been debated whether dysthymia and major depression represent distinct conditions or whether both disorders form different stages along a one-dimensional, clinically relevant continuum of unipolar depression. Both positions have experienced empirical support.

The view that dysthymia and major depression are distinct conditions is supported by differences between the groups with regard to evoked potentials (EPs; Howland & Thase, 1991) and Axis I and II comorbidity (Markowitz, Moran, Kocsis, & Frances, 1992; Pepper, Klein, Anderson, Riso, Ouimette, & Lizardi, 1995), family history of mood and personality disorders (Klein, Riso, Donaldson, Schwartz, Anderson, Ouimette, Lizardi, & Aronson, 1995), and different outcomes in naturalistic follow-up studies (e. g. Klein, Schwartz, Rose, & Leader, 2000).

However, there is also evidence for the hypothesis that dysthymia and major depression are different stages along a one-dimensional, clinically relevant continuum: dysthymic patients and patients with major depression are indistinguishable in the neurophysiological abnormalities in sleep patterns (Akiskal, Judd, Gillin, & Lemmi, 1997); epidemiological studies (Despland, Monod, & Ferrero, 1995; Judd, Akiskal, & Paulus, 1997) and prospective clinical follow-up studies (Judd, et al., 1998) also support this view.

Schwartz and Garamoni (1986), in their <u>structural model of positive and negative states of mind</u>, also postulate a continuum reaching from normal to dysthymic to depressive. Schwartz and Garamoni's (1986) model proposes that normal functioning is characterized by an optimal balance between positive and negative beliefs, thoughts, and emotions and that psychopathology is marked by deviation from this balance. Dysthymia and major depression are distinguished by the direction, magnitude, duration, and frequency of deviation from the optimal balance (Garamoni, Reynolds, Thase, Frank, & Fasiczka, 1992). Whereas normal subjects show a predominance of positive elements, the balance in dysthymia patients seems

to be distorted in favor of the negative elements, resulting, eventually, in the predominance of negative elements in depressed patients. This model has been supported by a variety of studies (Burgess & Haaga, 1994; Garamoni, Reynolds, Thase, Frank, & Fasiczka, 1991; Garamoni, et al., 1992; Kendall, 1992).

A. T. Beck's cognitive model of depression (1976, 1987, 1997) states that the beliefs of depressed patients play a central role in the development and maintenance of depressive symptoms. Beliefs are stable, general basic assumptions about the nature of the world and its relationship to the elements mentioned above (Beck, A. T., 1976, 1987, 1997). When activated, beliefs guide the perception and interpretation of situations, leading to better perception, memory, and recall of information that is congruent to the beliefs, as opposed to incongruent information. Therefore, negative beliefs influence or mediate thoughts and emotions (Beck, A. T., 1991). Stiles, Schröder, and Johansen (1993) tested this hypothesis by inducing sad vs. neutral mood in student subjects. According to A. T. Beck's (1967) model, the strength of the respective sad mood should depend on the nature of the beliefs. It has been shown that the beliefs indeed influenced the thoughts, which in turn influenced the emotions (Stiles et al., 1993).

With regard to these findings about the importance of beliefs, it seems worthwhile to investigate the beliefs of normal, dysthymic, and depressed subjects and the similarities and differences between the groups. We decided to subdivide them into positive vs. negative beliefs according to Schwartz and Garamoni (1986) and into core beliefs vs. peripheral beliefs according to Safran, Vallis, Segal, and Shaw (1986). According to Safran et al. (1986), central cognitive processes, so-called core beliefs, can be differentiated from peripheral beliefs using the following criteria:

1) Core beliefs are those related to the individual's basic identity in the world or to the fundamental sense of the self.

2) Core beliefs can be distinguished by their ability to predict an individual's emotional and behavioral responses to a wide range of situations.

3) Any attempt to modify core beliefs is likely to evoke strong anxiety.

4) Peripheral beliefs are subsumed under, or derived from, core cognitive processes.

Thus, according to the authors, core beliefs can be recognized by:

1) Self-referent cognitions

Self-referent cognitions are more central than other cognitions because they are closely related to the patient. For a patient with heterosocial anxiety, for example, who has the beliefs "I am unlovable" and "Women are all cold and rejecting", the first belief is considered more central because it is directly related to the patient.

2) Common themes

Core beliefs have similar themes. Ellis, for example, classifies lovability and competence as the main cause for psychological problems. According to A. T. Beck, Rush, and Shaw (1979), depressed people foster self-worth on the love and respect demonstrated by others as the most relevant themes. Safran et al. (1986) assume that these are the themes of core beliefs.

3) Cross-situational consistency

A main characteristic of core beliefs, according to Safran et al. (1986), is their consistent influence on different kinds of situations.

4) Process markers vs. content markers

Core beliefs are associated with strong emotions, and accordingly the discovery of core beliefs will trigger strong emotional reactions.

5) Learning from ineffective strategies

Peripheral beliefs may be resistant to change because they are derived from a core belief about the self.

6) In accordance with Kelly (1955), Safran et al. (1986) state that a change of core beliefs

is associated with great anxiety; thus, anxiety can help identify core beliefs.

J. Beck (1995) enlarged this list of characteristics with which to identify core beliefs by recommending the examination of the power of convictions, in addition to the previous suggestion to explore three typical situations and to be aware of strong, negative emotions. According to J. Beck (1995), strong confidence identifies the respective belief as a core belief.

Based on these characteristics and with special attention to core beliefs, we examined beliefs of normal, dysthymic, and depressed subjects. As depressed patients mainly recall negative self-relevant situations, we used personal strain situations, thus creating a base line in the sense of negative life events (Teasdale & Dent, 1987). Thus, we are able to examine whether dysthymia and major depression can be considered distinct conditions or whether they are different stages of the same clinically relevant continuum of unipolar depression. In accordance with Akiskal et al. (Akiskal et al., 1997; Judd et al., 1997; 1998) and Schwartz and Garamoni (1986), we expected the dysthymic subjects to take a position between the normal and depressed poles, as a continuum ranging from normal to dysthymic to depressed would suggest (Schwartz & Garamoni, 1986). We also expected to find this continuum in the core belief system of the respective group, i.e., the normal subjects should express more positive core beliefs than depressed subjects, whereas the value of the dysthymic subjects should lie between those of the other groups. For peripheral beliefs, similar results were expected because core beliefs affect them via their influence on information processing, thus creating a homogeneous belief system (Beck, A. T., & Rush, 1985). This has also been suggested by other authors (e. g., Young, 1994). It has to be considered, however, that, according to J. Beck (1995), there are also "compensatory" beliefs which, in contrast to peripheral beliefs which are congruent to core beliefs, are expected to circumscribe negative core beliefs' influence. Therefore, different patterns might be found for peripheral and core beliefs. For example, an

increase in negative core beliefs might go along with an increase in compensatory (positive) peripheral beliefs, thus preventing significant differences in positive peripheral beliefs between the three groups.

Following A. T. Beck and Rush (1985), as well as Young (1994), however, we expected consistent belief systems with peripheral beliefs to also follow the continuum from normal to dysthymic to depressed subjects: normal subjects should express more positive peripheral beliefs than dysthymic and depressed subjects, whereas the value of the dysthymic subjects should lie in between those of the other groups.

Method

Participants

The participants for this study were recruited by articles in the local press and by posted announcements. 202 women volunteered to complete the Beck Depression Inventory (BDI, Beck, A. T., & Steer, 1987). The age of the normal participants (n = 20) varied from 20 to 49 years, with a mean of 25.5 and a standard deviation of 8.24 years. The dysthymic participants (n = 20) ranged in age from 21 to 43 with a mean of 30.5 and a standard deviation of 9.1 years. The participants in the depressed group (n = 20) varied within the range of 20 and 57 years, with a mean of 30.58 and a standard deviation of 12.52 years. There was no significant age-related difference between the groups (Chi(2) = .91, p = .414).

The BDI (Beck, A. T., & Steer, 1987) and the SCID-I (First, Gibbon, Spitzer, Williams, 1996) were used as selection instruments. Participants with a BDI value of at least 16 points and a diagnosis of major depression on the SCID-I were categorized as the depressed group, whereas participants with a minimum of 16 points on the BDI and a diagnosis of dysthymia on the SCID-I without any lifetime major depression episode comprised the dysthymic group. Participants were categorized within the normal/control group if their BDI value did not

exceed ten points and if they were not classified to a certain diagnosis on the SCID-I. The

SCID-interview was conducted by doctoral students with two and three years of therapeutical

experience, who had passed a SCID-training program. The final psychiatric diagnoses are

provided by consensus of two SCID interviewers according to Spitzer's procedure (Spitzer,

1983). The interrater reliability concerning affective disorders was 0.95 (kappa). The BDI for

the normal participants had a range of zero to nine with a mean of 4.92 and a standard

deviation of 3.37, and the dysthymic participants had a range of 17 to 42 with a mean of 25.88

and a standard deviation of 8.84. The depressed participants had a range of 17 to 38 with a

mean of 28.50 and a standard deviation of 7.10. These values of dysthymic and depressed

participants are within the range found for depressed patients in several German psychiatric

populations (Hautzinger, Bailer, Worall, & Keller, 1994).

The participants were not allowed to take any medication two weeks before the experiment

since this could have had an effect on the symptoms (Becker-Carus, Heyden, & Ziegler,

1979).

Measures

The exploration of individual beliefs, thoughts, and emotions was carried out in accordance

with A. T. Beck's (1967) approach. The participants were asked to recall a situation in which

they had felt depressed and rejected. To explore thoughts and emotions, A. T. Beck's (1976)

three-column technique was used. With this technique, interviewer and participant work

together in dividing the imaginary situation into external events (description of surroundings

and people involved, the behavior of the participant and others involved), emotions, and

thoughts. For each emotion, the interviewer asked the participant whether there was any

thought associated with this particular emotion. The same procedure was applied to every

thought named by the participant. Thus, we were able to classify thoughts as positive or

negative afterwards. In order to explore the beliefs, the downward arrow technique by Burns

(1999) was utilized. Using this procedure, we asked participants, based on the thoughts explored in the three-column technique: "What would it mean to you if [thought of the subject] matched reality?" The first answer was recorded and the question was repeated. It is assumed that an important belief is discovered when the subject repeatedly describes the same statement with similar words. This procedure was repeated for each thought named by the participants. Finally, the participants estimated the intensity for each emotion, the degree of engagement for each thought, and the strength of conviction for each belief. The questions read as follows:

"On a scale from 0 to 100%, how strong is this emotion compared to the maximum strength imaginable for this emotion?"

"On a scale from 0 to 100%, how strongly have you been preoccupied with this thought compared to the maximum strength imaginable?"

"On a scale from 0 to 100%, how strong is your conviction about this belief?"

These interviews were conducted by clinical psychologists with two and three years of therapeutic experience, who had passed a qualifying training.

Subsequently, the beliefs, thoughts, and emotions were subdivided into positive and negative elements. For this, we used the same procedure as in preceding research (Derry & Kuiper, 1981; Missel & Sommer, 1983; Schwartz & Garamoni, 1986), following the Affects Balance Scale (Derogatis, 1975) and the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). Based on their association as given by the participant, both thought and affiliated emotion were assigned to the same category. Thereby, emotions were assigned to the categories "positive" or "negative" according to their affective valence. Categorization of beliefs into positive and negative beliefs was done differently; beliefs were classified as being negative (dysfunctional or irrational) if they expressed or implied dogmatic, rigid, illogical, global ideas about oneself, other persons, and/or the world (e. g. "Nobody likes me";

Beck, A. T., 1976; Beck, J., 1995; Ellis, 1991, 1997). All other beliefs were classified as being positive (functional or rational).

Afterwards, the beliefs were classified as core vs. peripheral beliefs, following J. Beck (1995) according to the following three criteria:

1)   Did the participants experience strong emotions during the exploration of the belief?

2)   If asked, were the participants able to describe additional situations in which the respective belief is important?

3)   Is there a strong conviction about the respective belief?

These three criteria for differentiating between core and peripheral beliefs were chosen because they could be examined while applying the downward arrow procedure. In constrast, the criteria concerning changes of beliefs within the setting of psychotherapy could not be tested within our design. Only those beliefs that fulfilled all of the criteria were classified as core beliefs.

Finally, beliefs were categorized as positive or negative core or peripheral beliefs by consensus of three raters (who were blind to the hypotheses of the study). The interrater reliability was 0.96 (kappa). The raters were doctoral students with two and three years of therapeutical experience.

For each category (positive and negative beliefs, positive and negative peripheral beliefs, positive and negative core beliefs) the value for "power" was calculated by summing the conviction values explored by the question "On a scale from 0 to 100%, how strong is your conviction about this belief?". Due to this procedure, the number of beliefs as well as the strength of conviction about a belief are reflected in the value of "power." Due to the very definition of core and peripheral beliefs which implies that the strength of conviction is higher for core than for peripheral beliefs, power cannot be independent from the dimension of core

vs. peripheral beliefs. However, as no comparison between core and peripheral beliefs has been provided, this detail is negligible in this study.

The reported significance levels were corrected by degrees of freedom according to Greenhouse and Geisser (1959). In order to check whether the strain situations in terms of <u>negative life events</u> differ between both groups, the reported situations were assessed by three raters (who were blind to the hypotheses of the study) on a scale from 0 to 100. The interrater reliability was 0.85 (kappa). The reported situations showed a mean of 26.67 and a standard deviation of 20.71 for the normal/control group, a mean of 36.25 and a standard deviation of 26.69 for the dysthymic groups, and a mean of 31.67 and a standard deviation of 25.08 for the depressed group. No significant group differences were found for severity of the reported situations (Chi(2) = 0.91, p = .678).

<div align="center">Results</div>

The data analysis (Kruskal-Wallis test) showed significant differences between the groups for both the positive beliefs (Chi(2) = 8.015, p < .05) and the negative beliefs (Chi(2) = 7.263, p < .05). The same significant differences were found for the positive (Chi(2) = 9.524, p < .01) as well as the negative (Chi(2) = 7.429, p < .05) core beliefs. Significant differences between the groups could only be found for the negative peripheral beliefs (Chi(2) = 8.537, p < .05), but not for the positive peripheral beliefs. The descriptive data with regard to the participants are shown in Table 1.

Wilcoxon rank sum tests were calculated for paired testing of possible differences between the groups. As we applied three pair comparisons to each Kruskal-Wallis test, we used a corrected p-value of .033 as indicating significance for there multiple comparisons.

For positive beliefs, a significant difference between the normal and the depressed participants was found (p < .033), with a higher mean rank for power of positive beliefs

(summed conviction values) in normal participants than in depressed participants. No significant differences were found for dysthymic participants.

For negative beliefs, a significant difference between normal and dysthymic participants was found ($p < .033$), with a higher mean rank for power of negative beliefs in dysthymic participants. No significant differences were found for depressed participants. For positive core beliefs, a significant difference between normal and depressed participants was found ($p < .033$), but the group of dysthymics did not differ from either of the other groups. This result is due to the significantly higher mean rank for power of the positive core beliefs in normal participants.

For negative core beliefs, a significant difference between normal and depressed participants was found due to the higher mean rank for power in the depressed group. The dysthymic group did not differ from any of the other groups.

For negative peripheral beliefs, a significant difference between normal and dysthymic participants could be found due to the higher mean rank for power of beliefs in the dysthymic participants($p < .033$), whereas no differences could be found for the depressed participants. The results are summarized in Table 2.

Discussion

Based on the cognitive theory of depression (Beck, A. T., 1976, 1987, 1991, 1997), the model by Schwartz and Garamoni (1986), and empirical findings (Akisksal et al., 1997; Judd et al., 1997; Judd et al., 1998), we postulated a one-dimensional continuum of the core and peripheral beliefs, ranging from normal to dysthymic to depressed. We expected to find a one-dimensional continuum in that the normal participants show the greatest power (summed conviction values) in positive core and peripheral beliefs and the least power in negative core and peripheral beliefs. The dysthymic participants were expected to show less power in positive core and peripheral beliefs and greater power in negative core and peripheral beliefs

than the normal participants.The dysthymic participants should show the least power in positive core and peripheral beliefs and the greatest power in negative core and peripheral beliefs. Our results were expected to thus support an underlying, clinically relevant continuum of unipolar depression.

Our analyses show that the power (summed conviction values) of normal participants in negative beliefs and negative peripheral beliefs is significantly smaller than that of the dysthymic group. Compared with the depressed group the normal participants had a significantly higher value for power in positive beliefs in general as well as in positive core beliefs. Furthermore, the normal participants show significantly lower values for power in negative core beliefs. No differences were found between dysthymic and depressed participants in any comparison. No further differences were found between the groups concerning positive peripheral beliefs.

These results are not in accordance with the expectations derived from the structural model of positive and negative states of mind by Schwartz and Garamoni (1986) and point to the conclusion that we should not simply assume a one-dimensional continuum ranging from normal to dysthymic to depressed. Strikingly, normal and dysthymic participants differ only at the category of negative peripheral beliefs, whereas the belief systems of normal and depressive participants differ with respect to the positive and negative core beliefs. Apparently, the severity of affective symptoms is related to the strength of the deviating beliefs. Thus it can be concluded that negative core beliefs are more related to pathological symptoms of an affective disorder than are the respective peripheral beliefs. Furthermore a main characteristic of core beliefs is their influence on different kinds of situations (Beck, J., 1995; Safran et al., 1986). Thus, fostering negative core beliefs activates negative emotions in a variety of situations, as manifested in major depression. Negative peripheral beliefs, on the

other hand, are more specific with regard to situations and associated with less intense emotions, leading to dysthymic mood instead.

The chronic character of dysthymia seems to contradict this explanation. However, the significant deviation in negative peripheral beliefs between normal and dysthymic participants is actually due to the long duration of dysthymia. In the course of major depression, there are phases in which positive beliefs can become dominant; dysthymia, on the other hand, can take a more constant course over several years, thus leading to the development of a long-term dominance of negative beliefs. According to Ingram (1984), negative information is only processed when negative beliefs are activated, thus leading to a strengthened system of peripheral beliefs. A. T. Beck (1987, 1997) acknowledges the possibility that a long-term dominance of beliefs may lead to the development of additional congruent beliefs. If so, the activated beliefs control information processing, making it difficult to process dissonant information (Fiske & Taylor, 1984), while at the same time enhancing the perception and processing of consonant information. In sum, it could be hypothesized that the number of beliefs added to an activated belief might therefore be directly related to the frequency and duration of activation of the respective belief. However, according to this explanation we would expect fewer positive peripheral beliefs in dysthymic than normal subjects; this is not the case. This might be due to the small sample size in the current study. On the other hand, higher frequency and longer duration of activation of negative beliefs might lead to increased formation of additional negative beliefs. However, this should not have an influence on the development of positive peripheral beliefs.

Based on our findings, we conclude that although dysthymic people do not have more negative core beliefs than normal people, their core beliefs are activated over longer periods of time, leading to more powerful peripheral beliefs. On the contrary, depressed and non-depressed people do differ with regard to core beliefs. The fact that depressed participants in

our sample did not develop more powerful negative peripheral beliefs can be explained by the
episodic character of major depression.

In sum, our exploration of belief systems of non-depressed, dysthymic and depressive
participants supports distinct conditions rather than a one-dimensional continuum of unipolar
depression. Non-depressed participants differ from dysthymic participants primarily in the
category of negative peripheral beliefs, whereas non-depressed participants differ from
depressive participants mainly in the category of core beliefs. Apparently, severity and the
chronic character of the mood disorder are related to these differences.

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Author Note

Table 1: Descriptive data of the normal, dysthymic, and depressive participants.

	Normal		Dysthymia		Depression	
	median/ range power	mean rank	median/ range power	mean rank	median/ range power	mean rank
Pos. B	125.00/ 0-260	22.29	35.00/ 0-150	14.31	0.0/ 0-190	12.17
Neg. B	98.50/ 0-175	11.08	260.0/ 110-555	22.13	200.0/ 60-385	18.17
Pos. C	0.00/ 0-100	20.67	0.0/ 0-0	14.00	0.0/ 0-0	14.00
Neg. C	70.00/ 0-165	11.96	90.0/ 0-100	14.94	100.0/ 60-190	22.08
Pos. P	87.50/ 0-360	20.04	60.0/ 0-150	16.38	0.0/ 0-190	13.04
Neg. P	65.00/ 0-340	11.29	170.0/ 50-465	23.75	100.0/ 0-285	16.88

power = summed conviction of beliefs; pos. B = all positive beliefs; neg. B = all negative beliefs; pos. C = positive core beliefs; neg. C = negative core beliefs; pos. P = positive peripheral beliefs; neg. P = negative peripheral beliefs; * = .05; ** = .01

Table 2: Wilcoxon rank sum tests of the significant Kruskal-Wallis tests between normal, dysthymic, and depressive participants.

	Normal vs. Dysthymia		Normal vs. Depression		Dysthymia vs. Depression	
	w-value	p-value	w-value	p-value	w-value	p-value
pos. B	59.5	.056	105.0	.008**	119.0	.554
neg. B	93.0	.011*	118.0	.064	114.0	.354
pos. C	64.0	.041	120.0	.014*	126.0	1.00
neg. C	114.5	.369	107.0	.012*	60.0	.059
neg. P	91.0	.007**	122.5	.110	103.0	.076

one-tailed; pos. B = all positive beliefs; neg. B = all negative beliefs; pos. C = positive core beliefs; neg. C = negative core beliefs; neg. P = negative peripheral beliefs; * = .033; ** = .01