

Stöber, J., Tepperwien, S., & Staak, M. (2000). Worrying leads to reduced concreteness of problem elaborations: Evidence for the avoidance theory of worry. *Anxiety, Stress, & Coping, 13*, 217-227.

Worrying Leads to Reduced Concreteness of Problem Elaborations:
Evidence for the Avoidance Theory of Worry

Joachim Stöber,* Sven Tepperwien, and Mirjam Staak

Free University of Berlin

*Author for correspondence

Dr. Joachim Stöber
Martin Luther University of Halle-Wittenberg
Department of Educational Psychology
Franckesche Stiftungen, Haus 5
D-06099 Halle (Saale)
Germany
Phone : +49 345 55-23789
Fax : +49 345 55-27244
E-mail : stoeber@paedagogik.uni-halle.de

Abstract

Both lay concept and scientific theory have embraced the view that nonpathological worry may be helpful for defining and analyzing problems. To evaluate the quality of problem elaborations, concreteness is a key variable. Two studies with nonclinical student samples are presented in which participants elaborated topics associated with different degrees of worry. In Study 1, participants' elaborations were assessed using problem elaboration charts; in Study 2, they were assessed using catastrophizing interviews. When participants' problem elaborations were rated for concreteness, both studies showed an inverse relationship between degree of worry and concreteness: The more participants worried about a given topic the less concrete was the content of their elaboration. The results challenge the view that worry may promote better problem analyses. Instead they conform to the view that worry is a cognitive avoidance response.

Keywords: Anxiety, Problem Solving, Avoidance, Imagery

Introduction

Many people hold the belief that worrying may be helpful in analyzing everyday problems. This goes both for normal individuals (Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994; Tallis, Davey, & Capuzzo, 1994) and for pathological worriers (Borkovec & Roemer, 1995). Yet, this assumption is not just held by people. Many researchers have also embraced the view that worry may be associated with better analysis and definition of problems (e.g., Breznitz, 1971; Davey, 1994a; MacGregor, 1991; Schönplflug, 1989). In particular, nonpathological worry, that is worry as observed in nonclinical individuals, is hypothesized to assist in "motivating the individual and helping him or her to define and think through any potential problem in good time" (Davey, 1994a, p. 38).

Empirical research on worry and problem solving, however, has produced mixed results. Some studies found worry to be positively correlated with problem-focused coping (Davey, 1993; Davey, Hampton, Farrell, & Davidson, 1992). Other studies found worry to be unrelated to problem-solving ability and negatively correlated with problem-solving confidence (Davey, 1994b; Ladouceur, Blais, Freeston, & Dugas, 1998). Yet, because all of these studies did not directly address the quality of problem analysis, their implications for the present question are unclear.

To our knowledge, there is so far only one series of studies directly addressing worry and the quality of problem analysis, namely the one by Stöber (1996, Studies 2-4). In these studies, participants were presented with topics associated with different degrees of worry. Each topic was presented as a focal problem in a problem elaboration chart, and participants were asked to elaborate the given problem by writing down (a) as many potential antecedents for this problem and (b) as many negative consequences of this problem as they could think of. When these problem elaborations were rated for concreteness, it was found that worrisome topics were associated with problem elaborations of reduced concreteness compared to problem elaboration of non-worry topics. According to Schönplflug (1989), concreteness is a key variable with respect to the quality of problem analysis and definition. Only "through concreteness, anticipations of future events and actions gain some of the probative force and self-explanatory power of perceptions. They can serve as internal task models ... for which action plans can be developed" (p. 248). Consequently, the results of Stöber's (1996) studies were interpreted as evidence that,

contrary to common belief and some scientific theory, worry was associated with *poorer* problem analysis.

However, Stöber's (1996) findings had two major limitations. First, strong evidence for an inverse relationship between worry and concreteness was found only after post-hoc aggregation of findings across studies, rendering the validity and replicability of the results questionable. Second, all studies used the same method to assess worrisome problem elaborations, namely problem elaboration charts. Consequently, the results may be method-specific and thus of limited generality. Therefore, the aim of the following two studies was to overcome the limitations of the previous findings. For this, two changes were introduced. First, the degree of worry was systematically varied within studies. Second, the two studies used different methods to assess problem elaboration. Whereas Study 1 used again problem elaboration charts (Stöber, 1996), Study 2 used catastrophizing interviews (Vasey & Borkovec, 1992). In line with Stöber's (1996) findings, we expected for both studies an inverse relationship between worry and concreteness of problem elaboration.

Study 1

Method

Participants

A sample of 60 students (36 women) was recruited at the Free University of Berlin, the majority of whom (49) were majoring in psychology. Average age was 26.2 years ($SD = 4.3$). All participants volunteered in exchange for two hours of extra course credit.

Procedure

Worry-topic selection. Following previous studies (East & Watts, 1994; Stöber, 1996), we chose the Worry Domains Questionnaire (WDQ) (Tallis, Eysenck, & Mathews, 1992; German version by Stöber, 1995) as a list of potential worry topics. The WDQ is a questionnaire on nonpathological worry, with the 25 items covering a broad range of everyday worries from different domains such as relationships, finances, or work (cf. Joormann & Stöber, 1997). For each item (e.g., "that I run out of money", "that I may lose close friends"), respondents indicate their degree of worry on a five-point scale with the answer categories *Not at all* (0), *A little* (1), *Moderately* (2), *Quite a bit* (3), and *Extremely* (4). Thus, the WDQ items allow for the selection of worry topics associated with different degrees of worry.

All experiments were conducted in individual sessions. First, participants filled out the WDQ. Then, the experimenter asked them to look at their WDQ answers and select two WDQ items about which they had indicated not to worry at all (i.e., two items for which they had checked the answer category *Not at all*); two items about which they had indicated a low amount of worry (i.e., two items for which they had checked the answer category *A little*); and two items about which they had indicated the greatest amount of worry (i.e., two items for which they had given the highest ratings). The latter items showed a mean endorsement of $M = 2.6$ ($SD = 0.7$). Translated back to the WDQ answer scale, this indicated that participants worried about these items between *Moderately* and *Quite a bit*.

These six items were used as topics for the consecutive problem elaboration procedure. The two topics of each worry level (i.e., the two no-worry topics, the two low-worry topics, and the two high-worry topics) were blocked, forming three blocks. The sequence in which these blocks were presented was randomly assigned and counterbalanced across participants.

Problem elaboration charts. Each topic was written into a box labeled "problem" located in the middle of a problem elaboration chart with three empty boxes on the left side

and three empty boxes on the right side (cf. Stöber, 1998, Fig. 1). Participants were asked to write down (a) three potential antecedents for the problem into the three boxes of the left side and (b) three potential negative consequences of the problem in the three boxes on the right side of the chart. There were no time limits. After finishing with all six problem elaborations, participants were fully debriefed. This included the information that their problem elaborations would be rated for concreteness. Participants were informed that they could withdraw from the study without consequences. However, no one did.

Concreteness ratings. To assess the concreteness of participants' problem elaborations, the three authors rated each antecedent and each consequence that participants had written down on five-point scale from *Abstract* (1) to *Concrete* (5).¹ This was done independently and blind to the experimental condition. To enhance reliability, ratings were aggregated across antecedents and consequences, raters, and topics at each worry level. With an intraclass correlation (Shrout & Fleiss, 1979, Case 3) of $ICC = .97$, the reliability of these aggregates was highly satisfactory.

Results and Discussion

Concreteness ratings were subjected to a one-way ANOVA with worry level as a three-level repeated-measurement factor. As expected, there was a significant effect of worry level (cf. Table 1, Study 1). In line with previous findings (Stöber, 1996), the concreteness of problem elaborations differed significantly across worry levels. These differences followed a linear trend: The greater the degree of worry, the less concrete the problem elaborations. Post-hoc comparisons indicated that all three means differed significantly. To control if these differences were due to differences in the topics selected for problem elaboration, we calculated an ANOVA on the concreteness of the selected topics.² Results showed that the selected topics did not differ with respect to concreteness: Overall ANOVA effect and linear trend were both nonsignificant with $F_s < 1$ (Table 1). Thus, the lower concreteness of worrisome problem elaborations was not due to lower concreteness of the selected topics.

Whereas the present results corroborated the previous findings (Stöber, 1996), it is possible to raise a potential problem with the problem elaboration method employed in all preceding studies. Generating antecedents and consequences for a problem topic may be a rather artificial construction task compared to the automatic questioning style that is typical of worrisome self-talk (Borkovec, 1994). Therefore, in a second study, we employed an alternative method for assessing worrisome elaborations, namely the catastrophizing interview (Vasey & Borkovec, 1992). Specifically relating to the chain-like structure of worry, this method represents a good way of capturing the worrier's catastrophizing in its "natural" flow. With this, the primary aim of Study 2 was to demonstrate generalizability of the previous findings by replicating them once more, but with a different method.

Study 2

Method

Participants

A second sample of 60 students (45 women) was recruited at the Free University of Berlin, most of whom (55) were majoring in psychology. Average age was 26.5 years ($SD = 6.0$). Again, all participants volunteered in exchange for two hours of extra course credit.

Procedure

Worry-topic selection. The procedure for selecting six worry topics was exactly the same as in Study 1. Participants worried about no-worry topics *Not at all* and about low-

worry topics *A little*. The high-worry topics had a mean endorsement of $M = 2.9$ ($SD = 0.7$). Translated back to the WDQ answer scale, this indicated that participants worried about the high-worry topics on average *Quite a bit*.

Catastrophizing interviews. To simplify procedure and data analysis, the original procedure of the catastrophizing interview (Vasey & Borkovec, 1992) was modified. First, we replaced the two-step questioning procedure with the one-step questioning procedure introduced by Davey, Jubb, and Cameron (1996). In this, the only question was "What is it that worries you most about X?". At the first step, X was substituted with the selected topic. At the second step, X was substituted with the answer that the participant gave in the first step. This procedure was repeated until the participant could not think of any further answers, repeated answers, or refused to continue (for details, see Davey et al., 1996). Second, we asked participants to write down their answers instead of tape-recording them (as was the case in previous studies). Apart from using the catastrophizing procedure instead of the problem elaboration charts, all other procedures (i.e., topic blocking, random allocation, counterbalancing, and debriefing) were exactly the same as in Study 1.

Concreteness ratings. For each topic, participants wrote down on average 7.3 catastrophizing steps ($SD = 2.5$). The number of steps did not differ significantly between worry levels, $F(2, 118) = 1.47, p > .23$. As in Study 1, we rated all steps for concreteness independently and blind to experimental condition. When these ratings were aggregated across catastrophizing steps, raters, and topics at each worry level, reliability was again highly satisfactory, $ICC = .93$.

Results

As in the first study, the one-way ANOVA on concreteness showed a significant effect of worry level (cf. Table 1, Study 2). Also the linear trend was again significant: The more worrisome the topic, the less the concreteness of the catastrophizing steps. This time, however, only two of the three post-hoc comparisons were significant. Whereas elaborations of low-worry topics and elaborations of high-worry topics both differed significantly from elaborations of no-worry topics, elaborations of low-worry topics and elaborations of high-worry topics did not differ. As in Study 1, we controlled for differences in the concreteness of the selected topics. Results showed that the selected topics did not differ. Again, ANOVA effect and linear trend were both nonsignificant with $F_s < 1$ (Table 1).

General Discussion

In sum, the findings of the two present studies replicated and extended the findings of Stöber (1996). In both studies, worry was associated with problem elaborations of reduced concreteness when compared to worry-free elaborations. Moreover, we found that this association followed a linear trend. The more worrisome the topic was, the less concrete were the participants' problem elaborations. Even when participants worried only a little bit about a selected topic, their problem elaborations were less concrete compared those for topics of no concern. Moreover, the fact that these results were obtained with two different procedures, namely problem elaboration charts (Stöber, 1996) in Study 1 and catastrophizing interviews (Vasey & Borkovec, 1992) in Study 2, indicates that the findings are generalizable across different procedures for assessing problem elaborations.

The limitations of the present studies pertain mainly to three points. First, the data are only correlational. This leaves the causal direction in the inverse relationship between worry and concreteness an open question. Even though we would favor the interpretation that worry leads to more abstract problem elaborations, the present findings are also consistent with the interpretation that (past) failure to achieve a concrete analysis of a given problem may have resulted in worry. Therefore, future studies should employ also experi-

mental designs with a manipulation of amount of worry. Second, both studies used non-clinical student samples. Consequently, it remains unclear if the present findings may generalize to pathological worriers such as clients diagnosed with generalized anxiety disorder (cf. American Psychiatric Association, 1994). Future research should therefore investigate problem elaboration associated with clinical states of worry. Third, concreteness ratings by external raters may not reflect the subjective concreteness for the participants. For example, it may hold that repeatedly worrying about a certain topic may have lead to a "compilation" of the associated mental representations (cf. Anderson, 1987). To an external rater, the compilation (e.g., trouble at work) would be less concrete compared to some uncompiled representations (e.g., I won't be able to finish the assigned work and my boss will be angry again). For the person worrying, however, it may be just as concrete. Therefore, future studies should obtain concreteness ratings also from the participants themselves.

Still, by demonstrating that even low levels of nonpathological worry were associated with less concrete problem elaborations, the present findings challenge views that worry may be helpful for defining and analyzing problems. Appropriate definition and analysis of problems have been identified as important steps on the way to problem solution (D'Zurilla & Goldfried, 1971). In this, concreteness may be a key variable. Concrete problem elaborations may not only motivate the individual to counteract the perceived risks (prevention) or to prepare for the expected negative consequences (anticipatory coping), but may also show concrete ways of doing so (Schönpflug, 1989; Stöber, 1998). Consequently, if worry is associated with problem elaborations of reduced concreteness, worry may rather impede detection and implementation of appropriate problem solutions.

Whereas the present findings challenge views that worry helps problem solving, they support views that worry is associated with avoidance of aversive imagery (Borkovec, 1994; Borkovec, Ray, & Stöber, 1998). Research in the framework of dual-coding theory (Paivio, 1986) has long demonstrated that there is an intimate link between the concreteness of words and sentences and the speed, ease, and vividness of associated imagery. In comparison to more concrete words and sentences, less concrete words and sentences elicit elaborate mental images much slower and with less ease. Moreover, the associated imagery is less vivid, compared to imagery associated with more concrete verbal material (Marschark & Cornoldi, 1991; Paivio, 1991). Consequently, if worry is associated with reduced concreteness, this may explain how worry helps to escape aversive imagery (cf. Stöber, 1998, in press). With this, the present findings on worry, problem elaboration, and concreteness may not only question some long-held views on worry and problem analysis, but also may open up new perspectives on the relationship between worry, thoughts, and imagery.

References

- American Psychiatric Association (Ed.). (1994). *Diagnostic and statistical manual of mental disorders: Fourth edition (DSM-IV)*. Washington, DC: Author.
- Anderson, J. R. (1987). Skill acquisition: Compilation of weak-method problem solutions. *Psychological Review*, *94*, 192-210.
- Borkovec, T. D. (1994). The nature, functions, and origins of worry. In G. C. L. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment, and treatment* (pp. 5-33). New York: Wiley.
- Borkovec, T. D., Ray, W. J., & Stöber, J. (1998). Worry: A cognitive phenomenon intimately linked to affective, physiological, and interpersonal behavioral processes. *Cognitive Therapy and Research*, *22*, 561-576.
- Borkovec, T. D., & Roemer, L. (1995). Perceived functions of worry among generalized anxiety disorder subjects: Distraction from more emotionally distressing topics? *Journal of Behavior Therapy and Experimental Psychiatry*, *26*, 25-30.
- Breznitz, S. (1971). A study of worrying. *British Journal of Social and Clinical Psychology*, *10*, 271-279.
- Davey, G. C. L. (1993). A comparison of three worry questionnaires. *Behaviour Research and Therapy*, *31*, 51-56.
- Davey, G. C. L. (1994a). Pathological worrying as exacerbated problem-solving. In: C. G. L. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment, and treatment* (pp. 35-59). New York: Wiley.
- Davey, G. C. L. (1994b). Worrying, social problem-solving abilities, and problem-solving confidence. *Behaviour Research and Therapy*, *32*, 327-330.
- Davey, G. C. L., Hampton, J., Farrell, J., & Davidson, S. (1992). Some characteristics of worrying: Evidence for worrying and anxiety as separate constructs. *Personality and Individual Differences*, *13*, 133-147.
- Davey, G. C. L., Jubb, M., & Cameron, C. (1996). Catastrophic worrying as a function of changes in problem-solving confidence. *Cognitive Therapy and Research*, *20*, 333-344.
- D'Zurilla, T. J., & Goldfried, M. R. (1971). Problem solving and behavior modification. *Journal of Abnormal Psychology*, *78*, 107-126.
- East, M. P., & Watts, F. N. (1994). Worry and the suppression of imagery. *Behaviour Research and Therapy*, *32*, 851-855.
- Freeston, M. H., Rhéaume, J., Letarte, H., Dugas, M., & Ladouceur, R. (1994). Why do people worry? *Personality and Individual Differences*, *17*, 791-802.
- Holland, B. S., & Copenhaver, M. D. (1988). Improved Bonferroni-type multiple testing procedures. *Psychological Bulletin*, *104*, 145-149.
- Joormann, J., & Stöber, J. (1997). Measuring facets of worry: A LISREL analysis of the Worry Domains Questionnaire. *Personality and Individual Differences*, *23*, 827-837.
- Ladouceur, R., Blais, F., Freeston, M. H., & Dugas, M. J. (1998). Problem solving and problem orientation in generalized anxiety disorder. *Journal of Anxiety Disorders*, *12*, 139-152.
- MacGregor, D. (1991). Worry over technological activities and life concerns. *Risk Analysis*, *11*, 315-324.
- Marschark, M., & Cornoldi, C. (1991). Imagery and verbal memory. In C. Cornoldi & M. A. McDaniel (Eds.), *Imagery and cognition* (pp. 133-182). New York: Springer.
- Paivio, A. (1986). *Mental representations: A dual coding approach*. New York: Oxford University Press.

- Paivio, A., with Marschark, M. (1991). Integrative processing of concrete and abstract sentences. In A. Paivio (Ed.), *Images in the mind: The evolution of a theory* (pp. 134-154). New York: Harvester Wheatsheaf.
- Schönplflug, W. (1989). Anxiety, worry, prospective orientation, and prevention. In C. D. Spielberger & I. G. Sarason (Eds.), *Stress and anxiety* (Vol. 12, pp. 245-258). Washington, DC: Hemisphere.
- Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, *86*, 420-428.
- Stöber, J. (1995). Besorgnis: Vergleich dreier Inventare zur Erfassung allgemeiner Sorgen [Worry: A comparison of three questionnaires measuring everyday worries]. *Zeitschrift für Differentielle und Diagnostische Psychologie*, *16*, 50-63.
- Stöber, J. (1996). *Besorgnis und Besorgtheit: Untersuchungen über Problemräume, deren Strukturierung und Elaboration* [Worry and worrying: Investigations of problem spaces, their structuring and elaboration]. Frankfurt/M., Germany: Lang.
- Stöber, J. (1998). Worry, problem solving, and suppression of imagery: The role of concreteness. *Behaviour Research and Therapy*, *36*, 751-756.
- Stöber, J. (in press). Worry, thoughts, and images: A new conceptualization. In U. von Hecker, S. Dutke, & G. Sedek (Eds.), *Generative mental processes and cognitive resources: Integrative research on adaptation and control*. Dordrecht, the Netherlands: Kluwer.
- Tallis, F., Davey, G. C. L., & Capuzzo, N. (1994). The phenomenology of non-pathological worry: A preliminary investigation. In G. C. L. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment, and treatment* (pp. 61-89). New York: Wiley.
- Tallis, F., Eysenck, M. W., & Mathews, A. (1992). A questionnaire for the measurement of nonpathological worry. *Personality and Individual Differences*, *13*, 161-168.
- Vasey, M. W., & Borkovec, T. D. (1992). A catastrophizing assessment of worrisome thoughts. *Cognitive Therapy and Research*, *16*, 505-520.

Author Note

Preparation of this article was supported in part by German Research Foundation (DFG) grant STO 350/1-1 to the first author. We want to thank Thomas Borkovec, Alexandra Freund, Bärbel Knäuper, Andrew Mathews, and Monisha Pasupathi for helpful comments and suggestions on earlier versions of this article.

Address correspondence to Joachim Stöber who is now at the Martin Luther University of Halle-Wittenberg, Department of Educational Psychology, Franckesche Stiftungen, Haus 5, D-06099 Halle (Saale), Germany. E-mail: stoeber@paedagogik.uni-halle.de.

Footnotes

¹To enhance applicability, the scale's endpoints were anchored. *Abstract* (1) was anchored with the labels "indistinct, cross-situational, equivocal, unclear, aggregated", *Concrete* (5) was anchored with the labels "distinct, situationally specific, unequivocal, clear, singular".

²As the concreteness value of the selected topics, we took the mean concreteness of the respective WDQ items from a previous study in which a sample of 16 students had rated all WDQ items for concreteness (see Stöber, 1996, p. 243).

Table 1

Worry, Concreteness, and Problem Elaboration in Study 1 (Problem Elaboration Charts) and Study 2 (Catastrophizing Interviews)

Study	Concreteness of ...	Worry						Test	
		None		Low		High		ANOVA	Linear trend
		<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>F</i> (2, 118)	<i>F</i> (1, 59)
Study 1	Problem elaboration	3.53 _a	(0.57)	3.29 _b	(0.58)	3.08 _c	(0.48)	15.91***	31.78***
	Selected topic	3.31	(0.75)	3.37	(0.62)	3.42	(0.55)	0.35	0.61
Study 2	Problem elaboration	2.99 _a	(0.46)	2.77 _b	(0.41)	2.74 _b	(0.43)	7.39***	12.25***
	Selected topic	3.33	(0.75)	3.32	(0.64)	3.43	(0.60)	0.52	0.56

Note. Each study with $N = 60$. Concreteness was rated on a five-point scale from *Abstract* (1) to *Concrete* (5). Within rows, means with different subscripts are significantly different with $p < .05$ (pair-wise t tests, alpha level adjusted according to Holm's weighted Bonferroni procedure; cf. Holland & Copenhaver, 1988).

*** $p < .001$