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IMPLICATIONS OF THE DIMENSIONALITY OF UNREALISTIC OPTIMISM FOR THE STUDY OF PERCEIVED HEALTH RISKS

JOHN B. NEZLEK AND BETH D. ZEBROWSKI
The College of William & Mary, Williamsburg, VA

To examine the dimensions of unrealistic optimism, 635 college students indicated their relative likelihood of experiencing 25 health problems commonly used in studies of unrealistic optimism. Factor analyses of these estimates yielded five correlated, but distinct factors, suggesting that unrealistic optimism is not a unidimensional construct. Two factors, Common and Mixed, were comprised of heterogeneous problems. The Common factor was comprised of problems similar to those frequently used in other studies, and these problems were also perceived as more likely to occur than problems comprising other factors. Three factors were comprised of problems in specific domains, (1) substance abuse, (2) sexuality, and (3) mental health. Participants' psychological well-being and dispositional optimism were negatively correlated with perceived risk of experiencing mental health problems, whereas these measures were unrelated to perceived risks for other types of problems. The present results suggest that results of studies on unrealistic optimism may vary considerably as a function of the specific health risks being examined.

Contemporary research on well-being is informed by the realization that wellness is influenced by the decisions and choices people make regarding health-relevant behaviors. Although some individuals behave in ways that promote well-being, others behave in ways that put them at risk for negative health outcomes. A variety of researchers have suggested that individuals engage in risky behaviors in part because they underestimate the likelihood that they will experience health problems, and such underestimates have been referred to as unrealistic optimism (Weinstein, 1980).

In studies of unrealistic optimism, people are typically asked to estimate the likelihood they will experience a certain negative event relative

Address correspondence to John B. Nezlek, College of William & Mary, Department of Psychology, PO Box 8795, Williamsburg, VA 23817-8795. E-mail: jbnezl@wm.edu

to the likelihood that other, similar people will experience the same event; typically, people provide such estimates for numerous events. Various sets of possible negative events have been used to study unrealistic optimism in a variety of samples; however, no study has explicitly considered the possibility that unrealistic optimism is a multidimensional construct. To the contrary, most researchers seem to assume that underestimates of risk for a wide variety of problems covary. For example, in many studies, the prime measure of unrealistic optimism has been a mean risk score collapsed across all the negative events presented in the study (Weinstein, 1982; Cohn, Macfarlane, Yanez, & Imai, 1995).

In many other studies, risks for different negative outcomes are analyzed separately, but risks for different outcomes are not directly compared and whatever differences are found are not discussed in detail, (Dewberry, Ing, James, Nixon, & Richardson, 1990; Peterson & DeAvila, 1995). For example, Weinstein (1987, p. 494) stated that "unrealistic optimism is prevalent in the population as a whole" Kulik and Mahler (1987, p. 24) suggested that "participants overall demonstrated a pervasive tendency to view their own risk for a variety of negative life events as significantly below average." Finally, O'Brien, Van Egeren, & Mumby (1995, p. 27) concluded that "there appears to be a generalized tendency for increased levels of optimism to be associated with a diminished sense of susceptibility to harm."

The present study was designed to examine the dimensionality of unrealistic optimism. Given the number and variety of health problems people can and do experience, it seems unlikely that the variability in perceptions of risk for all these problems can be explained by a single factor, unrealistic optimism. Studies have included up to 52 different health problems (O'Brien et al., 1995), ranging from car accidents to cancer to drug addiction. These different problems have fundamentally different causes and consequences, and it would require an unusually strong bias to cut across such differences to produce the single factor that has seemingly been assumed by many researchers.

The assumption underlying the present study was that perceived risk for health problems is more accurately characterized as a set of specific risk factors (*s* factors) rather than as a generalized perception of risk (*g* factor). This assumption allowed for two possible types of models: one in which *s* factors represented totally independent constructs, and another in which *s* factors represented constructs that were meaningfully distinct but had common variance in the form of a second-order general factor. Determining the dimensionality of the unrealistic optimism construct could have important implications for research and theory about perceived risk. If perceived risk is multidimensional, it may not be appropriate to use total risk scores aggregated across all health problems (a *g* score)

because the variance of such a total score combines the variance of distinct factors (*s* scores). If some underlying risk *s* scores were related to other constructs and some were not, or if some *s* scores had positive relationships and others had negative relationships, relationships between these other constructs and a *g* risk score would necessarily be different than relationships between these constructs and *s* risk scores.

If perceived risk is multidimensional, researchers who measure perceptions of risk across different sets of health problems may be measuring qualitatively different psychological constructs, making it difficult to compare results across studies. This possibility is quite real; a review of the existing literature suggests that studies of perceived risk have not used the same sets of health problems. A summary of the health problems used in different studies of perceived risk is presented in Table 1.

Little attention has been paid to the psychometric properties of the specific sets of health problems used in different studies, and the rationales for using different sets vary considerably across these studies. In one of the first studies on the topic, Weinstein (1982) used the following criteria when compiling a list of 45. In order to be included a problem had to apply to all segments of the population and be familiar to all participants. Also, a problem could not typically occur in childhood and reappear rarely or be a chronic problem by college age. The rationales used in many other studies have not been so detailed. In some studies, problems were chosen because they had evoked an optimistic bias in past research (Kulik & Mahler, 1987; Perloff & Fetzer, 1986; Weinstein, 1983); whereas in others no specific rationale was provided (Cohn et al., 1995; Dewberry et al., 1990; Hoorens & Buunk, 1993; Peterson & De Avila, 1995; Weinstein, 1984, 1987).

Regardless of the specific set of health problems used in a study, unrealistic optimism is defined as the belief that one is less likely than others to experience negative health outcomes, a construct similar to Scheier and Carver's (1985) construct of dispositional optimism. Scheier and Carver conceptualized dispositional optimism as a stable belief that one will experience good instead of bad outcomes, and they developed the Life Orientations Test (LOT; Scheier & Carver, 1985) to measure this trait.

As suggested by the similarity of the two constructs, some research has found positive relationships between measures of unrealistic and dispositional optimism. Hamid (1990) found that, compared to students with low LOT scores, students with high LOT scores felt that they were less likely to contract the flu in the next six months. Similarly, O'Brien et al. (1995) found that compared to participants with lower LOT scores, participants with higher LOT scores felt that they were less likely to experience hypertension. O'Brien et al. (1995) also reported a series of post-hoc analyses performed on perceptions of risk for 52 other health

Table 1. Negative Outcomes Used in Studies of Unrealistic Optimism

	A	B	C	D	E	F	G	H	I	J	K	L	M
Cancer	*	*	*	*	*	*	*	*	*	*	*	*	*
Heart attack	*	*	*	*	*		*	*	*	*	*	*	*
Car accident	*	*	*	*	*	*	*	*	*		*	*	*
Alcoholism	*	*	*	*	*			*	*	*	*		*
Suicide	*	*	*	*	*	*		*		*		*	
Mugging		*	*	*	*	*		*			*	*	*
Tooth decay	*	*	*	*	*	*		*				*	
Diabetes	*	*	*	*	*	*		*					*
Drug addiction	*		*	*	*	*		*					
Hypertension	*	*	*	*	*	*		*					*
Gum disease	*		*		*	*		*					
Lung cancer	*	*			*			*				*	
Venereal disease	*		*			*		*			*	*	*
Pneumonia		*		*		*			*	*			
Ulcers	*	*	*					*				*	
Asthma	*			*				*	*				
Deafness	*			*				*	*				
Influenza	*			*	*			*					
Skin cancer	*				*			*	*				
Arthritis	*				*			*	*				
Obesity	*				*	*		*					
Common cold	*		*			*		*					
Hepatitis	*		*					*					
Tuberculosis	*		*					*					
Strep throat	*		*					*					
Epilepsy	*		*					*					
Fever blisters	*			*				*					
Sunstroke	*			*				*					
Bronchitis	*			*				*					
Homicide victim	*			*				*					
Gallstones	*			*				*					
Kidney infection	*					*		*					
Laryngitis	*				*			*					
Nervous breakdown					*			*					*
AIDS						*				*	*		
Stroke					*		*		*				
Divorce											*	*	*
Multiple sclerosis	*							*					
Warts	*							*					
Glaucoma	*							*					
Tetanus	*							*					
Migraines	*							*					
Slipped disk	*							*					
Arteriosclerosis	*							*					

	A	B	C	D	E	F	G	H	I	J	K	L	M
Hemorrhoids	*							*					
Vitamin deficiency		*							*				
Conjunctivitis	*							*					
Varicose veins	*							*					
Hypoglycemia	*							*					
Colitis	*							*					
Food poisoning					*				*				
Poison ivy					*								
Senility					*				*				
Broken bone					*			*					
Unwanted sex						*					*		
Mononucleosis		*											
Emphysema			*										
Insomnia					*								
Cigarette addict						*							
Peer pressure						*							
Ride w/drunk driver						*							
Unprotected sex						*							
Cardiovascular disease								*					
Household accident								*					
Accidental death								*					
Heart attack <40								*					
Sterility											*		
Depression												*	
Car stolen											*		
Fired from job											*		
Unemployed											*		
College dropout											*		

Note. Problems used in each study are noted with *. Column headers represent different studies. A = Weinstein (1982); B = Weinstein (1983); C, D = Weinstein (1984); E = Weinstein (1987); F = Cohn, Macfarlane, Yanez, and Imai (1995); G = Kreuter and Strecher (1995); H = O'Brien, VanEgeren, and Mumby (1995); I = Peterson and De Avila (1995); J = Hoorens and Bunk (1993); K = Dewberry, Ing, James, Nixon, and Richardson (1990); L = Kulik and Mahler (1987); M = Perloff and Fetzer (1986).

problems. They found 24 significant correlations between perceived risk and the LOT, including negative correlations between the LOT and susceptibility judgments for flu and sexual transmitted diseases.

Research on depression suggests that psychological adjustment is another construct that should be related to unrealistic optimism. In his cognitive theory of depression Beck (1972) posits that depressed people are less optimistic about their futures than the nondepressed. Consistent with this supposition, Scheier and Carver (1985) reported a negative relationship between dispositional optimism and scores on the Beck Depression Inventory (BDI). Depressed people may also be less prone to

unrealistic optimism than the nondepressed because they may make realistic evaluations of contingencies, a tendency that has been labeled depressive realism (Alloy & Abramson, 1988).

Research and theory have tended to focus on the specific relationship between optimism and depression. Nonetheless, the same processes that are responsible for the depression-optimism relationship may also manifest themselves in relationships between unrealistic optimism and other aspects of well-being. Accordingly, the present study included a measure of people's satisfaction with themselves (trait self-esteem; Rosenberg, 1965) and a measure of their satisfaction with their lives (Diener, Emmons, Larsen, & Griffin, 1985). We expected that in the present study perceived risk for health problems would be negatively related to dispositional optimism and negatively related to measures of psychological well-being. No prediction was possible concerning how these relationships might vary across different *s* factors of perceived risk if perceived risk was found to be multidimensional.

METHOD

PARTICIPANTS AND PROCEDURE

Participants were 635 introductory psychology students (420 women and 215 men, mean 18.8 years of age) at the College of William & Mary. They participated in partial fulfillment of course requirements, and they provided all the data described in this article during a single session.

Using a 7-point scale ranging from (1), much below average to (7), much above average (with (4) as average), participants rated their risk of experiencing 25 health problems in the future compared to the risk for the average William & Mary student of the same sex. In research on unrealistic optimism, such ratings are usually referred to as direct comparisons because people directly compare their risk to others'. The problems were taken from Weinstein (1982, 1987), with the addition of two problems used in some subsequent studies, AIDS and cirrhosis of the liver.

Participants also completed a measure of dispositional optimism, the LOT (Scheier & Carver, 1985),[1] and three measures of psychological ad-

1. Because of an oversight, the LOT was used instead of the more recent LOT-R (Scheier, Carver, & Bridges, 1994). Nevertheless, it is unlikely that using the LOT-R would have produced results that were meaningfully different from those reported here. Scheier and colleagues (1994) reported a .95 correlation between the LOT and the LOT-R, suggesting that the two versions measure very similar constructs. Moreover, five of the six items compris-

justment and well-being, the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965), the Satisfaction With Life Scale (SWLS; Diener et al., 1985), and the BDI (Beck, 1972). For the LOT and the SWLS, 7-point response scales (strongly disagree to strongly agree) were used; for the RSE a 1 (strongly disagree) to 5 (strongly agree) scale was used, and for the BDI, the standard 0 to 3 scale was used. As suggested by previous research, the LOT, RSE, SWLS, and BDI were reliable; Cronbach's αs were .88, .90, .86, and .86 respectively. Scores on these measures were distributed as follows: LOT ($M = 38.7$, $SD = 8.4$), RSE ($M = 40.3$, $SD = 6.5$), SWLS ($M = 24.1$, $SD = 6.1$), BDI ($M = 6.0$, $SD = 6.1$).

RESULTS

Similar to the results of other studies, participants believed that they were less likely to experience health problems than their peers were. The mean perceived risk across all problems (2.9) was significantly less than 4.0, the midpoint of the response scale labeled "average," $F(1,634) = 1022.6$, $p < .001$. Moreover, the average perceived risk was significantly less than 4.0 for each individual problem (all ps $< .001$) except strep throat ($M = 4.1$; $p = .11$) and the common cold, for which the risk was significantly greater ($M = 4.5$; $p < .001$).[2] A summary of participants' perceptions of risk is presented in Table 2.

To determine if perceived risk was a unidimensional construct, ratings of perceived risk for all 25 health problems were analyzed with a confirmatory factor analysis using EQS (Bentler, 1989). The results of this analysis suggested that perceived risk for health problems was not a unidimensional construct. There was a poor fit between the data and a one-factor model using both a χ^2-based criterion ($p < .0001$) and Bentler's (1988) comparative fit index (.64).

ing the LOT-R are part of the LOT, allowing the calculation of an optimism score uncontaminated by two items, "I always look on the bright side of things," and "I'm a believer in the idea that 'every cloud has a silver lining.'" Scheier and colleagues asserted that these two items did not directly measure dispositional optimism. Analyses using a LOT comprised of the five items common to the two versions produced results that were functionally equivalent to those presented in this article. Moreover, analyses of positive and negative subscales of the original LOT (Scheier & Carver, 1985) also produced results that were functionally equivalent to the present results. These analyses suggest that the results of the present study and the conclusions based on these results do not hinge on the specific way Scheier and colleagues' construct of dispositional optimism is measured.

2. To determine if perceptions of risk were above or below "average," single sample ANOVAs (with 1,634 degrees of freedom) were performed in which mean perceived risk was compared to 4, the midpoint of the scale. In the interests of brevity, the details of these analyses are not reported.

Table 2. Ratings of Perceived Risk

Risk Factor	*M*	*SD*
Heart attack	3.3	1.6
High blood pressure	3.4	1.7
Strep throat	4.1	1.4
Arthritis	3.7	1.6
Cancer (non-lung)	3.5	1.6
Common cold	4.5	1.3
Mononucleosis	3.3	1.6
Ulcers	3.3	1.6
Pneumonia	3.3	1.4
Auto accident	3.6	1.3
Tooth decay	3.0	1.5
Gum disease	3.0	1.5
Diabetes	2.9	1.6
Lung cancer	2.6	1.7
Emphysema	2.4	1.5
Cirrhosis	2.3	1.5
Alcoholism	2.7	1.8
Drug addiction	1.8	1.3
Epilepsy	2.1	1.3
Tuberculosis	2.4	1.4
Hepatitis	2.3	1.3
AIDS	1.9	1.3
Venereal disease	1.9	1.3
Suicide	2.1	1.5
Nervous breakdown	2.7	1.7

To examine the dimensions underlying perceived risk, an exploratory factor analysis was conducted. The initial solution of a maximum likelihood factor analysis of participants' ratings produced five factors with eigenvalues greater than 1.0. To allow for the possibility that these factors were correlated, this initial solution was subjected to an oblique rotation, direct quartimin (Jennrich & Sampson, 1966). The five rotated factors were positively correlated with each other, and the correlations between the factors are presented in Table 3.[3]

The five factors found in this analysis had a reasonably clear pattern of coefficients. (When interpreting these factors, variables that had a coeffi-

3. A five factor solution was chosen because chi-squared goodness-of-fit tests indicated that a five-factor solution fit the data better than a four-factor solution, which fit the data better than a three factor solution, and so on, all *ps* < .0001. An oblique rotation was chosen as the final rotation because given the correlations between the factors, an oblique rotation seemed to represent the structure of the data more accurately.

Table 3. Factor Correlations

Factor	Common	Substance	Mixed	Sexual
Substance	.38			
Mixed	.37	.40		
Sexual	.29	.56	.29	
Mental	.36	.38	.31	.35

cient of less than .25 on a factor were not considered, although it should be noted that there were very few coefficients between .15 and .25.) The first factor, labeled Common, was made up of cardiovascular problems, various infections, cancer, and auto accidents. The second factor, labeled Substance, was made up of health problems primarily associated with substance use or abuse. Perceived risk for lung cancer, emphysema, cirrhosis of the liver, alcoholism, and drug addiction had high coefficients on this factor. The third factor, labeled Mixed, included perceived risk for epilepsy and tuberculosis; hepatitis, tooth decay, and gum disease also loaded on this factor. The fourth factor, labeled Sexual, was made up of health problems primarily associated with sexual activity. Perceived risk for AIDS and venereal disease had high coefficients on this factor. The last factor, labeled Mental, was a psychological well-being factor, characterized by perceived risk for "nervous breakdowns", suicide, and ulcers. The factor coefficients are presented in Table 4.[4] These factors can also be understood in terms of the relative perceived risk of experiencing the problems constituting each factor. Weighted averages for each factor were computed by multiplying raw scores for each variable by the factor coefficients shown in Table 4. To maintain the correspondence between the basis for these averages and the basis for the interpretation of the factors, only variables whose coefficients were presented in Table 4 were used in these calculations.[5]

The problems constituting the first factor, Common, had the greatest perceived risk, a weighted average of 3.6. The second factor, Substance, had problems that were perceived as less risky (2.4) than the problems constituting the first factor, $F(1,634) = 735.7$, $p < .01$, and the fourth factor, Sexual, had problems that were perceived as less risky (2.0) than the second, $F(1,634) = 107.2$, $p < .01$. The average perceived risk of the problems

4. There was only one sex difference in these factors. Men had higher scores on the substance factor than women, $F(1,633) = 4.5$, $p < .05$. The means were .11 and -.06 respectively. There were no sex differences in any of the other analyses presented in this paper.

5. Calculations based on weighted scores that included all variables and calculations based on unweighted scores (composite scores) produced results that were very similar to those presented in this article.

Table 4. Factor Loadings for Different Problems

Risk Factor	Common	Substance	Mixed	Sexual	Mental
Heart Attack	.62				
High blood pressure	.62				
Strep throat	.57				
Arthritis	.52				
Cancer (non-lung)	.50				
Common cold	.46				
Mononucleosis	.42				
Ulcers	.41				.30
Pneumonia	.39				
Auto accident	.37				
Tooth decay	.27		.47		
Gum disease	.43		.40		
Diabetes	.32		.30		
Lung cancer		.85			
Emphysema		.80			
Cirrhosis		.73			
Alcoholism		.53			
Drug addiction		.45		.32	
Epilepsy			.75		
Tuberculosis			.73		
Hepatitis			.36	.31	
Venereal disease					
AIDS				.84	
Suicide					.85
Nervous breakdown					.79

Note. Coefficients less than .25 have been deleted.

constituting the third and fifth factors, Mixed and Mental, was 2.5, and this was significantly different from the risk for the first and fourth factors (all *p*s < .01), but not the second factor. The means used to calculate these scores were presented in Table 2.

Interpreting these factors requires consideration of the following: the nature of the items, the perceived risk for the problems loading on each factor, the variance accounted for by each factor, and the relationships between the factors. The first factor accounted for the most variance; it also had the greatest number of problems with high coefficients and the greatest perceived risk for the problems that loaded on it. This factor (Common) appears to be the closest to the construct that most previous research was intended to examine. The third factor (Mixed) was another general factor made up of problems that were perceived as less likely to occur than the problems constituting the first factor.

Table 5. Correlations of Risk Factors and Psychological Adjustment

	LOT		BDI		RSE		SWLS	
Factor	Zero	Part	Zero	Part	Zero	Part	Zero	Part
Common	-.20	-.04	.26	-.05	-.26	-.05	-.20	-.01
Substance	-.16	.01	.21	-.02	-.17	.07	-.17	.04
Mixed	-.10	.07	.10	-.13	-.15	.06	-.12	.07
Sexual	-.13	.04	.18	-.05	-.13	.10	-.15	.04
Mental	-.41		.52		-.51		-.45	
Total score	-.25	.02	.33	-.03	-.31	.05	-.27	.04

Note. LOT — Life Orientation Test; BDI — Beck Depression Inventory; RSE — Rosenberg Self-Esteem Scale; SWLS — Satisfaction with Life Scale; Zero-order correlation; Part-correlation with Mental Factor partialled out.

The three other factors each concerned more specific problems. The second and fourth factors (Substance and Sexual) appear to be problems associated with specific and well-known domains of behaviors. These two factors were positively correlated (.56), and what distinguished them was their relative perceived risk. The risk for Substance was moderate, whereas for Sexual it was the lowest of all five factors. The fifth factor, Mental, referred quite specifically to emotional problems, which in this sample were perceived as moderately likely relative to other types of problems.

In addition to examining the psychometric structure of perceived risk, the present study was also designed to examine some of the correlates of perceived risk. Correlations between the total risk score and each of the factors and the LOT, BDI, RSE, and SWLS are presented in Table 5.

Due to the large sample size, any correlation greater than .08 was significant at the .05 level, and any correlation greater than .11 was significant at the .01 level. Correlations of .10 explain very little variability (1%) however, and so statistical significance was not used as a simple proxy for importance. The pattern of relationships was clear. The Mental factor and measures of adjustment shared 16 to 25% of their variability, relationships described by Cohen (1988) as large-sized effects. Individual differences in adjustment were significantly related to the other factors, but these relationships were small-sized effects, accounting for only 1 to 6% of the variability in the other factors.

Moreover, a partial correlation analysis indicated that the correlations between the individual difference measures and the Common, Substance, Mixed, and Sexual, factors were due primarily to the relationships between these factors and the Mental factor. When the correlations between these four factors and the Mental factor were partialled out of the correlations between the four factors and the individual difference

measures, the correlations between the four factors and the individual difference measures virtually disappeared. These partial correlations are also presented in Table 5.

Finally, the correlations among the five factors suggested the existence of a second order factor, and the existence of such a factor was confirmed by a confirmatory factor analysis using EQS (Bentler, 1989). All five factors had positive coefficients on this factor, .59, .82, .60, .71, and .58, respectively, but this second order factor did not possess much explanatory power. Similar to the results of the analyses of the first order factors, the second order factor was not related to measures of dispositional optimism or the three measures of well-being after the mental health factor was partialled out, all *r*s < 10.

DISCUSSION

The present results strongly suggest that unrealistic optimism as it has been operationalized in many studies is not a unidimensional construct. A confirmatory factor analysis found that a one factor model did not adequately explain participants' ratings of the perceived risk of experiencing 25 different health problems commonly used in studies of unrealistic optimism. Furthermore, exploratory factor analyses of these ratings produced five distinct factors. Although these factors were correlated, the strength of these correlations and relationships between these five factors and other measures suggested that it is useful to consider the underlying factors they reflect to be distinct constructs.

The pattern of coefficients for the five factors produced by the exploratory factor analysis was clear. Two factors (Common and Mixed) were comprised of mixes of different types of problems, with the problems comprising one factor (Common) being perceived as more likely to occur than those comprising the other. The other three factors were comprised of specific types of problems. One of these specific factors was comprised primarily of problems associated with substance abuse, another was comprised of problems associated with sexual activity, and a third was a mental health factor.

The present results suggest that although there may be a general tendency to underestimate the likelihood of negative outcomes, perceptions of risk for sets of certain outcomes vary independently of one another. The first factor that emerged from the factor analysis seemed to be closest to the general tendency that has been the focus of most research. It contained many of the problems that have been used frequently in previous research, including common infectious diseases, cancer, common cardiovascular problems, and auto accidents. Moreover, this group of problems was perceived as the most likely to occur. To the extent that re-

searchers use problems out of this group, they are studying the same (generalized) tendency to underestimate risk.

Another factor, (Mixed), consisted of problems that were not thematically related; however, these problems were perceived as much less likely to occur than the first group. Although this factor and the first factor were correlated, the correlation between them was weak enough (.37) to suggest that the two factors should be considered as measures of separate constructs. To the extent that researchers use problems out of this group, they are probably studying a tendency to underestimate risk for problems that are perceived to be unusual or unlikely.

The other three factors each consisted of groups of related problems, substance abuse, sexually related problems, and mental health problems. Although these factors and the first factor were correlated, the correlations were weak enough (.38, .29, .36) to suggest that these factors should be considered as measures of separate constructs. To the extent that researchers use problems out of these groups, they are probably studying more specific tendencies to underestimate risk for specific types of problems.

The importance of conceptualizing perceived risk as a multidimensional construct was illustrated by the correlations between perceived risk, measures of psychological well-being, and dispositional optimism. Although some correlations between the first four factors and these measures were statistically significant, only the mental health factor was meaningfully related (rs > .30) to measures of psychological adjustment and dispositional optimism. Furthermore, relationships between the other factors and these measures were due primarily to the variance these factors shared with the mental health factor.

The lack of meaningful relationships (rs < .20) between the LOT and perceived risk for four of the five groups of problems was not expected. The LOT has been offered as a measure of general, dispositional optimism. Previous research (O'Brien et al., 1995) has found negative correlations between LOT scores and perceived risk for various problems. It should be noted, however, that the mean correlation between LOT scores and perceived risk reported by O'Brien and colleagues was not large (only -.23); two of the strongest of these correlations were between LOT scores and perceived risk for suicide (-.36) and nervous breakdown (-.32), the two problems comprising the Mental factor in the present study.

The lack of relationships between LOT scores and perceived risk may have been due to various factors. Despite evidence and research to the contrary (and the face validity of the items comprising the measure), the LOT may not measure dispositional optimism. Another possibility is that dispositional, general optimism is not related to perceptions of

health risk. The general, dispositional optimism measured by the LOT may consist of optimism about other types of outcomes such as how existing problems will be resolved. Much of the research on the construct has concerned existing problems such as health complaints (Smith, Pope, Rhodewalt, & Poulton, 1989) and coping with an existing medical condition such as breast cancer (Carver and colleagues 1993). As Scheier et al. (1994, p. 1064) note: ". . . optimism may be a stronger independent predictor of some outcomes than of others." Given the possible complex, multidimensional nature of perceived risks for health problems, perceptions of risk for specific types of problems may reflect processes specific to each type of problem more than they reflect some general optimistic bias. Moreover, an individual's optimism about how a negative condition will be resolved may reflect a different process than his or her optimism about whether or not a negative condition will occur.

Although LOT scores were related to perceived risk for mental health problems, the relationship between the LOT and the Mental factor dropped from -.41 to -.22 when BDI scores were partialled out. Assuming that the LOT measures some aspect of dispositional optimism, this shared variability suggests that some portion of the optimism measured by the LOT overlaps with aspects of depression. Such overlap is also consistent with Beck's theory, which posits that a lack of optimism is a characteristic of depression. (The BDI contains items about the future.) It would appear that beliefs about future mental distress are related to optimism as measured by both the BDI and the LOT.

The most important implications of the present results concern how unrealistic optimism is studied and how results across studies of unrealistic optimism can be compared. Researchers need to be more mindful of how they operationalize unrealistic optimism regarding negative health outcomes. The present multidimensional model suggests that optimism about different health outcomes may be related to different psychological constructs and may reflect different psychological processes. Researchers cannot simply select a group of health outcomes, measure perceptions of risk regarding these outcomes, and then aggregate these perceptions across all outcomes to produce a single score because such aggregate scores assume an underlying unitary construct.

If researchers use problems that measure different underlying constructs, aggregate scores calculated across measures of multiple, distinct underlying constructs may mask or distort relationships between these underlying constructs and other variables of interest. Such a situation occurred in the present study. The relationships between dispositional optimism and total risk score was meaningfully weaker (-.25) than the relationships between the LOT and scores on a specific factor (-.41, the Mental factor). This occurred because the variance of the total score com-

bined the variance of the Mental factor with the variance of other factors that were not related to the LOT.

Moreover, if perceptions of risk for different health problems reflect qualitatively different psychological constructs or phenomena, the results of studies that use different health problems to measure unrealistic optimism may not be directly comparable. For example, Hoorens and Buunk (1993) measured perceptions of risk for cancer, heart attack, alcohol problems, suicide, and AIDS. Within the present framework, the first two problems represent the first factor, and each of the other problems represent a specific factor—substance abuse, mental health, and sexuality, respectively. In contrast, Kreuter and Strecher (1995) measured perceptions of risk for cancer, heart attack, car accident, and stroke. Within the present framework, all of these problems represent the first factor. The present results suggest that these two studies operationalized perceived risk with different combinations of constructs, and this needs to be considered when the results of the two studies are compared.

There are two important caveats regarding the present results. First, the present study examined the perceptions of risk of students, young adults in their late teens and early twenties. Understanding the unrealistic optimism of such a population may be particularly important because health-impairing habits may be developing at this time in people's lives; however, the perceptions of risk of other age (and socioeconomic) groups also require study. First, it can not be assumed that the factorial structure and the relationships found in this study between risk and other constructs will generalize to other populations. Second, the factorial structure found in this study necessarily reflects the covariances among the specific risks measured in this study. A different combination of risks may have produced a somewhat different structure.

The present results, in combination with the results of previous studies, leave little doubt that people tend to underestimate the likelihood that they will experience negative health outcomes. Moreover, the present results strongly suggest that there are meaningful differences in such underestimates as a function of the specific problem being rated. Researchers need to be aware of this possibility both in selecting problems for study and in interpreting their results. There are numerous advantages to using multiple measures of an underlying construct, and researchers should continue to measure perceived risk across a variety of problems. Nonetheless, a group of potential problems cannot automatically be considered as multiple measures of the same construct. To the extent possible, estimates of the risk for a set of problems should be analyzed to determine how many underlying constructs are being measured. Not all studies will have the sample sizes needed to conduct the multivariate analyses used in the present study; however, less re-

source-consuming options are available, for example, computation of item to total correlations. Regardless, when studying perceptions of risk across multiple negative outcomes, researchers should either demonstrate that they are studying a unidimensional construct (rather than assume they are) or conduct analyses that are sensitive to possible differences among sets of problems.

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