Perceived Vulnerability
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General Description & Theoretical Background

Perceived vulnerability, also called perceived susceptibility, perceived likelihood, and perceived probability, **reflects an individual's belief about the likelihood of a health threat's occurrence or the likelihood of developing a health problem**. Perceptions of event likelihood are central to both expectancy-value theory in social psychology and to subjective-expected utility theory in economics. The earliest work using the construct of perceived susceptibility in the health domain sought to determine why people use health services and included research by Hochbaum (1958), Kegeles (1963), Bice & White (1969), Haefner & Kirscht (1970), and Rosenstock (1966, 1974) that led to the development of the Health Belief Model (Rosenstock, 1966; Becker 1974).

Definitions of Perceived Vulnerability in Health Behavior Theories

Perceived susceptibility is a major component of threat perception in the **Health Belief Model** (Rosenstock, 1966; Becker, 1974; Maiman & Becker, 1974). Specifically, this model suggests that the greater the perceived susceptibility, the greater the perceived threat, and the more likely a person will perform precautionary behaviors such as immunization. In **Protection Motivation Theory** (Rogers, 1983) perceived vulnerability is an important component of a process of threat appraisal, suggesting that people actively engage in a process of determining their risk. The **Precaution Adoption Process** (Weinstein, 1988) significantly expanded the construct by suggesting that people go through distinctly different stages of acknowledging their vulnerability, ranging from not being aware that there is a danger, to aware of the danger, to finally acknowledging that there are personally at risk.

Perceived vulnerability is also and important component of the **Prototype/Willingness Model** (Gibbons & Gerrard, 1995; Gibbons, Gerrard, & Lane, 2003). In this model, perceptions of vulnerability are part of a "reasoned" path to risk behavior reflecting the fact that some people who engage in risk behaviors acknowledge their vulnerability to the negative consequences of these behaviors (Gerrard, Gibbons, Benthin, & Hessling 1996). In contrast, it is not part of the "social reaction" path to risk behavior (Gerrard, Gibbons, Reis-Bergan, Trudeau, Vande Lune, & Buunk, 2002).

Constructs and Measurement

Measurement Issues

A wide array of operationalizations of perceived vulnerability (possibility, probability, likelihood, etc.) exists, and no one definitive measurement scale or strategy has emerged. However, a number of methods of assessment, and distinctions between these methods have emerged.

Absolute Perceived Vulnerability: Many measures of perceived vulnerability focus on absolute measures of risk (van der Pligt, 1998). Absolute measures **refer to the perceived likelihood a negative event will occur, e.g., “How likely is it that you will get lung cancer?”, “What do you think is the risk that you will get AIDS?”** (Gerrard, Gibbons, & Bushman, 1986; Weinstein & Nicolich, 1993). **Likert-type response scales** are usually utilized for these questions, e.g., 1= “almost certainly will not” to 5 = “almost certainly will” (Joseph,

Montgomery, Emmons, Kirscht et al., 1987). Many studies, however, employ scales that call for a **numerical probability estimate** such as percent likelihood estimates, e.g., "What is the likelihood that you will have an unplanned pregnancy in the next year?"; response scale = 0 to 100%).

A serious **weakness of simple absolute vulnerability questions** such as these is that they confound expectation, intentions, and current risk behavior, creating two related problems. First, **interpretation of estimates made in response to simple absolute assessment of vulnerability requires that knowledge of the respondents' current behavior.** For example, a low risk estimate can be interpreted as optimistic from a heavy smoker and accurate from a respondent who has never smoked (Gibbons, Lane, Gerrard, Pomery & Lautrup, 2002). Second, **respondents who are anticipating quitting a risk behavior or increasing a precautionary behavior frequently report less risk than their current behavior would suggest**. For example, the question "How likely is it that you will get lung cancer?" will elicit a different response from smokers who expect to quit smoking soon than from those who do not anticipate that they will have the motivation or ability to quit in the foreseeable future. Recognition of these problems has lead most researchers to abandon simple absolute measures of personal vulnerability and adopt conditional measures.

Conditional Perceived Vulnerability: Conditional vulnerability measures are **designed to elicit consideration of expected or intended future behavior**, thus avoiding the confounding of expectations, intentions, and current risk behaviors with perceptions of susceptibility (Ronis, 1992). **These measures are often phrased in the subjunctive** (e.g., "Imagine that you had six bottles of beer at a party. What is the chance that you will get sick from the beer and throw up?"; Halpern-Felsher, Millstein, Ellen, Adles, Tschann, & Beihll, 2001), and can include consideration of frequency of the risk behaviors, preventive behaviors, etc. (e.g., "What would be the likelihood of pregnancy if you had intercourse more than 3 times per week and used no birth control method?"; Gerrard & Luus, 1995). Thus, conditional measures also allow researchers to assess risk perceptions among people who are not currently engaging in the behavior but may do so in the future. They **can also be employed to distinguish between perceived vulnerability when preventive action is taken and when it is not taken** (e.g., "If you brush your teeth daily, how likely do you think it is that you will develop gum disease?" followed by "If you do not brush your teeth daily, how likely do you think it is that you will develop gum disease?").

Comparative Perceived Vulnerability: (see Klein, 1996; Klein & Weinstein, 1997). A number of studies have indicated that when asked about their vulnerability, respondents often make automatic comparisons of their own health behavior and characteristics with those of others (Klein, 1996; Klein & Weinstein, 1997). Thus, **some recent work has included both absolute perceived vulnerability measures as well as measures of comparative (or "relative") risk** (e.g., "Compared to others your age, how likely is it that you will have a smoking-related illness [e.g., lung cancer) at some time in the future?"; Gerrard, Gibbons, Benthin & Hessling, 1996).

Affective Heuristic: Loewenstein and colleagues proposed the **risk-as-feelings hypothesis**, which suggests emotional reactions often drive risk and precautionary behavior, and that these reactions are the result of a variety of factors that are not necessarily associated with cognitive evaluations of risks, e.g., the vividness of imagined negative consequences, personal experience with outcomes (Loewenstein, Weber, Hsee, & Welch, 2001). Similarly, **Slovic and his colleagues suggest that risk decisions stem more from how people feel about the behavior than what they think about the behavior** (Slovic, Finucane, Peters, & McGregor, 2003). They argue that people often refer to this "affective pool" when making a decision

because it is easier and quicker than weighing the costs and benefits, or recalling specific objective information.

Weinstein and colleagues have developed a **2-item scale designed to assess this feeling component of risk perceptions ("With no flu shot, I would feel that I'm going to get the flu this year," and "With no flu shot, I would feel very vulnerable to the flu");** Weinstein, Kwitel, McCaul, Magnan, Gerrard, & Gibbons, 2005).

Windschitl (2003) makes the same distinction, but suggests a somewhat different procedure that **assesses both the cognitive evaluation and the feeling component of risk with two separate questions:**

"What is the objective likelihood that you will get skin cancer?" [with detailed instructions on how to use the numeric scale]

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0% 100%

followed by:

"You just indicated your beliefs about how objectively likely it is that you will get skin cancer. However, at a gut-level, you might feel somewhat more or less vulnerable than your response above suggests. Place a mark on the scale below to indicate how you *feel* about your chances of getting skin cancer."

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0 100

Similar Constructs

Fatalism: Fatalism is **a general belief that one's life is under the control of fate or other external forces.** People high in fatalism tend to think that their actions have little impact on their lives, so they may be less likely to take health precautions. Fatalism measures include items such as, "I feel that nothing I can do will make any difference" and "I have left it all to my doctors" (Osborne, Elsworth, Kissane, Burke, & Hopper, 1999, p. 1340).

Unrealistic Optimism: Unrealistic optimism (Weinstein, 1982) is **the belief that one is less vulnerable to health problems in general, or to a specific health problem, than peers**. People consistently show this tendency, especially when they perceive that the problem is controllable or rare and when they lack experience with the problem. Covey & Davies (2004) distinguish between two types of unrealistic optimism measures. The first, the **direct measure, asks respondents to provide a single comparative risk judgment in which they indicate if the chances that a negative event will happen to them are below or above the average for people the same age and gender** (e.g., "Compared to other women your age, what are the chances of you getting skin cancer?"). The second measure, the **indirect measure, asks respondents to make two absolute judgments: one for themselves and one for a comparison target** (e.g., "How likely is it that you will get skin cancer?" and "How likely is it that the average person your age and gender will get skin cancer?"; cf. Perloff & Fetzer, 1986).