Explanatory Style and Immunoglobulin A (IgA)

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Abstract—The construct of explanatory style has been related to numerous aspects of human psychology, including health. Our research has focused on the effects of various psychological variables on the immune system, in particular Immunoglobulin A (IgA). We had participants fill out the Attributional Style Questionnaire (ASQ), the predominant measure of explanatory style, and assayed saliva samples for secretory IgA. No relationship was observed between overall ASQ score and IgA, or composite optimism score and IgA. However, we observed significant negative correlations between both the composite pessimism score and IgA, as well as the hopelessness score and IgA. Pessimistic explanatory style may therefore be related to immune system deficits and poor health.

LEARNED HELPLESSNESS theory was originally proposed after experiments in dogs demonstrated dramatic failures in a shuttlebox avoidance task (Overmier & Seligman, 1967). These avoidance failures were evident after pre-exposure to inescapable shocks, but not escapable shocks (Seligman & Maier, 1967). The central assertion of the theory was that the “helpless” subjects learned that their actions were independent of shock termination in a task prior to the avoidance procedure, and that translated into poor performance in the subsequent avoidance task (Maier & Seligman, 1976). It was argued further that exposure to inescapable shock produces a constellation of symptoms that resembles depression in humans (Maier & Seligman, 1976). A large animal literature has examined almost every aspect of the effects of inescapable stress (reviewed in Peterson et al., 1993), ranging from the training parameters necessary to produce the behavioral deficit (e.g., Rossellini & Seligman, 1978) to the numerous physiological ramifications of inescapable stress (e.g., Brennan et al., 1992).

The concept of Explanatory or Attributional Style was proposed in 1978 by Abramson, Seligman, and Teasdale as an extension of “classic” learned helplessness theory to humans (Abramson et al., 1978). This “Attributional Reformulation” was developed for humans to handle several interpretive problems that emerged. First and foremost was, if exposure to uncontrollable stress causes depression, then why aren’t the vast majority of humans depressed? We are all exposed to uncontrollable stressors. This is where the notion of Attributional style was introduced, more recently referred to as explanatory style. The original conceptualization of Attributional Style was that humans, when confronted with a situation perceived as uncontrollable, attempt to determine the cause of the situation (Abramson et al., 1978). According to the theory, the cause of the event can be perceived along three bipolar scales: internal vs. external, stable vs. unstable, and global vs. specific (Peterson et al., 1982). Research has shown that individuals have consistent explanatory

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styles relating to these perceptions (Burns & Seligman, 1989), these styles are measurable, and they have ramifications in a tremendously diverse number of areas (see Buchanan & Seligman, 1995).

Seligman and colleagues have generated a large amount of data looking at the two extremes of explanatory style. Individuals that consistently make internal, stable, global attributions about negative events (i.e., “it’s my fault, it won’t go away soon, and it affects a large part of my life”) have been labeled pessimists (Seligman, 1990). Individuals that consistently make external, unstable, specific attributions about negative events (i.e., “it’s not my fault, it will go away soon, and it affects a small part of my life”) have been labeled optimists (Seligman, 1990). A large body of data has been generated showing that pessimists and optimists differ greatly in a number of different variables. Most germane to the present discussion is the fact that pessimism appears to be a reliable predictor of poor health (Peterson et al., 1988). One study demonstrated that a pessimistic explanatory style predicted both number of days of illness and number of doctor visits during the following year (Peterson, 1988).

We have been examining the effect of various psychological variables on the immune system, specifically Immunoglobulin A (IgA) (e.g., Charnetski et al., 1998). IgA is the most plentiful of the five major antibodies in the body. Secretory IgA exists in all mucosal membranes of the body, and provides a literal first line of defense against invading pathogens (Kuby, 1992). IgA levels negatively correlate with number of colds (Cohen, 1996; McClelland et al., 1980), and IgA increases parallel recovery from mucosal infection (Ogra, 1985). Previous research has shown that various psychological variables can increase IgA levels. Subjects exposed to relaxing music and using mental imagery showed increases in IgA (Rider et al., 1990). Subjects viewing humorous materials also show increases in IgA (Dillon et al., 1985) as do subjects performing daily relaxation techniques (Green et al., 1988). We have found that both music (Charnetski et al., 1998) and moderate sexual activity (Charnetski & Brennan, 1999) are positively related to IgA production.

Previous research has shown that cellular immunity, measured by T-cell ratios and the T-cell response to mitogenic challenge, is compromised in pessimists (Kamen-Siegel et al., 1991). We therefore wished to assess whether explanatory style was related to IgA, a measure of humoral immunity. We hypothesized that IgA levels would be related to explanatory style, especially in light of the prior finding that optimists become ill less frequently than pessimists do.

Methods

Subjects

Participants were 112 undergraduate volunteers from Introductory Psychology classes at Wilkes University. Forty-two were male, and 70 were female. The average age was 18.8 years (range: 16–23 years). The participants received extra credit for their participation.

Instrument

Participants completed the Attributional Style Questionnaire (ASQ; Peterson et al., 1982). The ASQ consists of 12 scenarios, six “good” and six “bad.” The participant is instructed to describe the primary cause of each event listed, although these causes are not involved in the scoring. The cause is then rated for internal vs. external, stable vs. unstable,