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Review

Towards understanding interindividual differences in stressor appraisals: A systematic review

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ABSTRACT

Objective: This paper aims to systematically review and synthesize existing empirical evidence examining the factors related to interindividual differences in stressor appraisals (i.e., perceived challenge and threat).
Method: Studies were identified in PsycINFO, Scopus, Psychological and Behavioral Sciences Collection, and Medline databases (1980-March 2017). Only empirical studies assessing constructs theorized to influence stressor appraisals were included.
Results: Of the 1956 identified articles, 11 studies reported in 12 articles assessing six constructs met inclusion criteria: Emotional intelligence, Big Five personality traits, anxiety, stress mindset, just world beliefs, and perfectionism. Stronger challenge appraisals were associated with higher emotional intelligence, lower neuroticism, higher extraversion, and more positive beliefs about the consequences of feeling stressed. Weaker threat appraisals were associated with lower neuroticism, and higher emotional intelligence, agreeableness, extraversion, and openness, stronger beliefs that the world is a just and fair place, and lower perfectionistic concerns and greater perfectionistic striving. Anxiety was unrelated to appraisals.
Conclusion: This review identified factors associated with interindividual differences in stressor appraisals, with some factors related to challenge appraisal but not threat appraisal, and vice versa. This suggests a potentially complex interplay between personality and appraisals.

1. Introduction

When an individual is presented with any single stressful event they engage in a stress response, which according to the Transactional Model of Stress (for a detailed explanation of the model, see: Lazarus & Folkman, 1984), involves them subjectively evaluating that single stressful event for its potential gains (challenge) and losses (threat) in a process known as primary appraisal. The individual will also evaluate their perceived available resources to cope with the stressful event in a process known as secondary appraisals (Folkman, Lazarus, Gruen, & DeLongis, 1986; Hanton, Wagstaff, & Fletcher, 2012; Lazarus & Folkman, 1984). In some cases, researchers refer to the appraisal of the stressful event as 'stressor appraisals', a collective term referring to any measurement of the extent to which the stressful situation is perceived to be challenging and/or threatening. This includes direct measurements of primary appraisals (e.g., Skinner & Brewer, 2002), as well as combined measurements of primary and secondary appraisals that are still interpreted as the extent to which the stressful event is being appraised as challenging and/or threatening (e.g., Tomaka, Blascovich, Kibler, & Ernst, 1997).

Interindividual differences in the appraisals made of any particular stressful event will lead to the adoption of different coping strategies informed by the individual's appraisals (Searle & Auton, 2015). This means that two individuals experiencing the same stressful event may appraise, and thus cope with, the stressful event differently (Conner & Barrett, 2005). It is thought that these interindividual differences in the stress response lead to different consequences for general health and functioning, for example, some individuals will report improvements and others will report declines in domains such as attention (Moore, Vine, Wilson, & Freeman, 2015; Vine et al., 2015), memory (Pedraza et al., 2016), and physiological wellbeing (Jamieson, Mendes, & Nock, 2013). With evidence that the application of different coping strategies by different people can impact on general health and functioning (Folkman et al., 1986; Gloria & Steinhardt, 2016; Jamieson et al., 2013; Moore et al., 2015; Pedraza et al., 2016), there is a need to understand how these interindividual differences in stressor appraisals emerge.

Despite research on the Transactional Model of Stress dating back to 1980 (Folkman & Lazarus, 1980), there is yet to be a systematic review

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of the range of factors that may predict stressor appraisals. Prior systematic reviews (e.g., Andersson & Willebrand, 2003; Bradley, Sparks, & Weber, 2016; Dewe, Cox, & Ferguson, 1993; Gooding et al., 2006) have focused on the way that stressor appraisals influence interindividual differences in coping processes in health decision making (Gooding et al., 2006), coping at work (Bradley et al., 2016; Dewe et al., 1993), and disability (Andersson & Willebrand, 2003). Yet, none of these reviews have focused on factors that influence interindividual differences in stressor appraisals of a single stressful event per se. Such an evaluation will allow for the proposal of a predispositional stressor appraisal mechanism that may help researchers to further explore interindividual differences in the stress response, and aid clinicians in identifying and targeting interindividual differences that predispose problematic stressor appraisals, and in turn, ineffective coping.

The primary aim of this systematic review is to synthesize the empirical literature that investigates factors related to interindividual differences in stressor appraisal. This review considers only the stressor appraisals made of a stressful event prior to an individual engaging with that event. Consequently, predictors of only secondary appraisals and predictors of appraisals made after the coping process with the stressful event is initiated are beyond the scope of this review. Examining only stressor appraisals made in anticipation of a stressful event will help to partial out any effects due to the interaction of coping and later appraisals. Furthermore, it is important to note that stressor appraisals have been measured in two key ways in current research. One view describes challenge and threat appraisals as bipolar opposites of a single continuum (referred to as the 'single continuum' approach to appraisals throughout this review), whereby a stressful event is deemed to be either challenging or threatening, but never simultaneously both (e.g., Jones, Meijen, McCarthy, & Sheffield, 2009). A common way of measuring appraisals via this single continuum approach is as a function of both primary and secondary appraisals. Such a ratio is thought to capture the dynamic relationship between primary and secondary appraisals in which higher ratio values are indicative of threat appraisals and lower ratio values are indicative of challenge appraisals (Tomaka et al., 1997). Another competing view portrays challenge and threat appraisals each having their own continuum which are related to each other (referred to as the 'dual continua' approach to appraisals throughout this review; e.g., Meijen, Jones, Sheffield, & McCarthy, 2014; Skinner & Brewer, 2002). Given that there is no evidence for the superiority of one definition over the other, this review will consider research from both single and dual continua research and will compare the findings between them where possible.

2. Methodology

2.1. Literature search strategy

Online literature searches were conducted on the PsycINFO, Scopus, Psychology and Behavioral Sciences Collection, and Medline databases (1980 to March 2017). This review searched for empirical articles published from 1980 onwards as articles prior to 1980 would predate the first Transactional Model of Stress paper (Folkman & Lazarus, 1980). Search terms comprised of commonly used keywords and terminologies in related papers, specifically: Transactional Model of Stress, Cognitive-Phenomenological Model of Stress, stress appraisal, primary appraisal, challenge appraisal, threat appraisal, and cognitive appraisal. To arrive at the final database, duplicates were first removed (n = 414). The remaining studies were then examined against inclusion and exclusion criteria (see Table 1). Articles were rejected if, based on their abstract and title, they were not deemed to meet the inclusion criteria, or they met the exclusion criteria. Full papers were scrutinized where a decision could not be determined from the abstract or title alone. The reference lists of included articles were hand searched to identify further articles that may be included in the review (n = 16). A flow diagram is presented in Fig. 1.

2.2. Quality ratings

Studies were evaluated for their quality after they were deemed to have met the inclusion criteria. Given that included literature were exclusively empirical in nature, the quality of studies was evaluated against STROBE (von Elm et al., 2008) and CASP (Singh, 2013) checklist criteria relevant for experimental research, these factors included: Adequate statistical power, randomized groups, stressor appraisals clearly defined, participant inclusion/exclusion criteria specified, use of a validated appraisal measure, multiple time points, and the use of a methodology guided by previous research (e.g., the use of an established stress induction and the use of validated scales). The number of criteria that were met were summed such that higher scores represented higher quality papers. The number of articles not meeting each criterion was tallied to highlight study quality areas most in need of improvement.

3. Results

3.1. Literature search results

The titles and abstracts of the 1956 unique articles obtained from the literature search were compared against the inclusion and exclusion criteria. This resulted in the exclusion of 1899 articles. The remaining 57 articles were retrieved, and the full paper was scrutinized against both inclusion and exclusion criteria. This resulted in the removal of a further 45 papers (see Fig. 1). In particular, 11 articles addressed an appraisal of a construct other than a stressful event (e.g., subjective perceptions of pain levels); 10 articles addressed the influence of appraisal on another construct (e.g., the influence of appraisal on coping); one article focused only on coping (i.e., did not use stressor appraisal as an outcome); 12 articles focused on appraisals made after the participant had initiated coping with a stressful event; seven papers did not assess stressor appraisal; one paper was a review of the Transactional Model of Stress; one paper was unobtainable; one paper was a book chapter; and one paper was not written in English. Twelve papers evaluating the influence of six different constructs on stressor appraisal met inclusion criteria. Two papers (Lyons & Schneider, 2005; Schneider, Lyons, & Khazon, 2013) report on different outcomes of the same dataset, and will therefore both be treated as one study reported across two papers hereafter. As such, these two papers will be counted as one study in all following statistics.

3.2. Characteristics of the selected studies

Specific study characteristics can be found in Table 2. Sample sizes ranged from 24 to 371 participants (total sample size = 1454; mean sample size = 132). All studies sampled from an undergraduate university sample. One study supplemented their undergraduate sample with a small (n = 25) community sample (Kilby & Sherman, 2016). All studies, except two, reported mean participant age from 19.6 to 23 years (mean = 21). The majority of studies were conducted in the United States (n = 7, 64%), with The Netherlands (n = 1, 9%), Belgium (n = 1, 9%), Germany (n = 1, 9%), and Australia (n = 1, 9%) each having conducted only one study. All studies, except one, reported the gender distributions of their sample (Males: M = 35, SD = 15.5, range = 8–54; Females: M = 73.3, SD = 39.5, range = 14–115). The majority (90%) of these studies had more female than male participants. Eight studies (73%) adopted a single continuum approach to stressor appraisals, six of which measured this as a ratio of primary to secondary appraisals (Lyons & Schneider, 2005; Mikolajczak & Luminet, 2008; Penley & Tomaka, 2002; Schneider, 2004; Schneider et al., 2012; Schneider et al., 2013; Tomaka & Blascovich, 1994), the other two measured only threat appraisals (Shewchuk et al., 1999; Zureck et al., 2015). Three studies (27%) adopted a dual continua approach to stressor appraisals (Gallagher, 1990; Kilby & Sherman, 2016;