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Original article

Coping as a mediator of stress and psychotic-like experiences

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ABSTRACT

Background: There is evidence that individuals along the whole psychosis continuum have increased responsiveness to stress; however, coping responses to stressors have not been extensively explored in subthreshold psychotic symptoms.
Methods: In 454 undergraduates, psychotic-like experiences (PLEs) were evaluated using the positive items of the Prodromal Questionnaire. Perceived stress and traumatic life events were assessed using the Life Events Checklist and Perceived Stress Scale, and coping was measured using the Brief COPE. We also examined whether different coping styles mediated the relationship between perceived stress and PLEs, as well as whether different coping styles mediated the relationship between traumatic life events and PLEs.
Results: Both number of traumatic life events and current level of perceived stress were significantly associated with PLEs. These relationships were both mediated by higher levels of maladaptive coping.
Conclusions: Results have the potential to inform treatment strategies, as well as inform targets for exploration in longitudinal studies of those at risk for psychosis.

1. Introduction

Psychosocial stress has been found to be a risk factor for various mental disorders, including psychotic disorders [1]. There is evidence that individuals at greater risk for developing psychosis are more likely to have experienced traumatic life events in childhood [2], as well as to perceive events to be more stressful [3]. Indeed, both cross-sectional studies and prospective studies suggest that childhood traumatic life events have a dose-dependent link to psychotic symptoms [4,5]. There also is some evidence that increased perceived stress may contribute to this relationship in those at risk for psychosis [6] and those exhibiting subthreshold psychotic symptoms [3,7]. Though perceived stress and traumatic life events have long been studied in relation to psychosis risk [4,8,9], few studies have explored the potential contributions of coping to this association.

Coping is an action-oriented or intrapsychic effort to manage, master, tolerate, reduce, or minimize stressful events or a stressful environment [10]. Categorizing coping responses is complex and varies with the measure used. Folkman and Lazarus [11] described coping strategies as either problem-focused (also called task-focused): attempting to change the individual's circumstances, or emotion-focused: attempting to change the individual's response to the circumstances. Many questionnaire-based assessments of coping rely on the distinction between approach and avoidance coping [12]; however, categorizing avoidance as a coping style is problematic, as it can also be viewed in certain instances as a failure to cope but still indicates an acknowledgment and a type of response to a stressor [13]. A more common approach in psychosis studies utilizes a distinction between adaptive and maladaptive coping styles, which incorporates many of the previous definitions of coping [15–17]. Drug and alcohol use, self-blame, and denial fall into the maladaptive category, which are also captured by avoidance coping, while the adaptive category includes approach coping styles such as active coping, planning, and the use of emotional and instrumental support [12,15]. Studies have found that schizophrenia outpatients employ maladaptive coping styles significantly more often than non-psychiatric counterparts [16]. Specifically, individuals with schizophrenia have been found to employ more emotion-focused coping and less task-focused coping [18,19], significantly more distraction-based coping and worrying, as well as significantly less emotional expression and comforting cognition (e.g., self-encouragement and soothing thoughts) than non-psychiatric controls [20]. Cumulatively, these findings suggest that schizophrenia patients rely on coping strategies that are either maladaptive and/or have the potential of exacerbating distress.

Few studies have been conducted on coping among individuals at ultra-high-risk (UHR) for developing psychosis, but in these few

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studies, UHR subjects were found to cope in similar ways to patients diagnosed with schizophrenia. UHR subjects used significantly fewer task-oriented and social diversion (i.e., engaging with others) coping methods and engaged in far more emotion-oriented coping compared to a non-clinical comparison group [21]. Another study found that not only did UHR subjects use active coping styles less frequently than non-psychiatric controls, but also used active coping strategies significantly less than first episode schizophrenia patients [22]. Additionally, several studies found that UHR individuals tend to engage in less adaptive coping and more maladaptive coping than non-psychiatric controls [17,22,23].

While only the most frequent and distressing psychotic symptoms are considered diagnostically relevant [24], limiting inclusion to only those individuals with diagnosable symptoms may in fact underrepresent the contribution of subthreshold psychotic symptoms to the liability for psychotic disorders [25]. PLEs have been linked to risk for developing a psychotic disorder in the general population [24]. Additionally, the risk factors for subclinical and clinical psychosis overlap significantly [26]. Only one study has examined coping in the context of a continuum of psychosis, using subthreshold psychotic experiences as a spectrum of psychotic risk. Lin et al. [27] found that emotion-focused coping was bi-directionally related to increased experience of subthreshold psychotic symptoms in a longitudinal study of a non-clinical sample of adolescents, such that more emotion-focused coping predicted increased PLEs, and increased PLEs predicted higher levels of emotion-focused coping. However, this study did not take into account perceived stress or trauma as additional variables that may affect symptoms, TLEs and perceived stress may actually be driving these relationships, as we have previously found both factors to influence PLEs [7]. The aim of the present study was to determine the role of different coping strategies (adaptive/maladaptive) in mediating the relationship between TLEs and PLEs, and perceived stress and PLEs. We hypothesized that experiencing a greater number of TLEs and higher levels of perceived stress will be associated with significantly higher PLEs, as found in our previous studies [7]. Additionally, we hypothesized that these relationships will be mediated by the use of maladaptive coping styles, but not adaptive coping styles. While our primary hypotheses focus on mediation, moderation will also be tested.

2. Methods

2.1. Participants and procedures

Four hundred and fifty four undergraduate students at Temple University participated and were recruited from an online subject pool as a requirement from various interdisciplinary courses. Questionnaires were completed online in the laboratory, with lab staff available to provide instructions and answer questions. The study was approved by the university's Institutional Review Board and all participants provided informed consent.

2.2. Instruments

2.2.1. The Prodromal Questionnaire

PLEs were evaluated using the positive scale (45 items) of the full length, 92-item Prodromal Questionnaire [28]. Focusing on the last month, individuals are asked whether they have experienced symptoms while not under the influence of drugs, alcohol, or medications. The variable of interest was the total number of PLEs endorsed. Endorsing 8 or more PLEs has been validated against the Structured Interview for Prodromal Syndromes (SIPS) in predicting psychosis risk syndromes with 90% sensitivity and 49% specificity [28,29].

2.2.2. The Perceived Stress Scale

The Perceived Stress Scale [30] was used to evaluate perceived stress among participants. The scale measures perceived global stress, with a focus on the predictability and controllability of events in the past month [30]. This scale has high concurrent and predictive validity with physical and psychiatric outcomes, moderate internal and test-retest reliability, and significant correlations with physiological measurements of stress [31–33]. Significant differences in PSS scores have been found in ultra-high risk for psychosis groups vs. non-psychiatric controls, and has been correlated with additional perceived stress measurements, such as experience sampling methods [34,35]. The PSS sum score was used.

2.2.3. The Life Events Checklist

The Life Events Checklist (LEC) assessed traumatic life event (TLE) exposure [36]. For each life event listed, subjects respond if the TLE:

- 1 (happened to me);
- 2 (witnessed it);
- 3 (learned about it);
- 4 (not sure);
- 5 (does not apply).

Responses of 3, 4 and 5 were excluded, consistent with previous studies and better test–retest reliability, as more proximal events are more closely associated with PTSD risk [36,37]. Responses of "1" for the first 16 TLEs were included as well as responses of "2" for scenarios where "1" was not a viable option or less likely to be related to PTSD outcome, e.g., sudden, violent death; sudden, unexpected death of someone close to you; and serious injury, harm, or death you caused to someone else ([38], see Table 1). The "other" TLEs item was excluded from analyses, as additional information about the TLEs was not available, and thus has not been validated. The LEC has been shown to be adequate when evaluating consistency with the actual occurrence of events, has demonstrated good convergent validity, and has moderate temporal stability [36]. The total number of TLEs was examined.

2.2.4. The Brief COPE

Coping was assessed using the Brief COPE, a shortened version of the COPE questionnaire, which has been validated previously in non-psychiatric samples [39]. Items were separated into seven types of coping comprised of two items each, each representing different ways of coping with stressful experiences utilized overall

Table 1
Life Events Checklist items.

Life Events Checklist
1. Natural disaster
2. Fire or explosion
3. Transportation accident
4. Serious accident at work, home, or during recreational activity
5. Exposure to toxic substance
6. Physical assault
7. Assault with a weapon
8. Sexual assault
9. Other unwanted or uncomfortable sexual experience
10. Combat or exposure to a war-zone (in the military or as a civilian)
11. Captivity
12. Life-threatening illness or injury
13. Severe human suffering
14. Sudden violent death
15. Sudden accidental death
16. Serious injury, harm, or death you caused to someone else
17. Other very stressful event or experience