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# Post-traumatic growth as positive personality change: Developing a measure to assess within-person variability

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ABSTRACT

Earlier work has defined post-traumatic growth (PTG) as positive personality change, but measurement of this construct has relied almost exclusively on cross-sectional and retrospective assessments. The aim of this study was to use an experience-sampling procedure to measure the extent to which PTG manifested in individuals' everyday lives after a recent highly stressful or traumatic adverse event (compared to a control group). In doing so, we developed a state measure of PTG. The factor structure of state PTG was comparable to trait PTG, there was significant variability in individuals' PTG from moment-to-moment, but individuals' trait PTG was unrelated to their state PTG. Moreover, individuals who had experienced a recent adversity did not differ from control participants on state PTG.



## 1. Introduction

Post-traumatic growth (PTG; Tedeschi & Calhoun, 2004) refers to the potentially transformative and positive impact that significant adversity can have on an individual's personality (Jayawickreme & Blackie, 2014). Although controversy exists over the exact nature of the positive changes included in PTG (Blackie & Jayawickreme, 2014; Miller, 2014), it is most commonly assessed in the following five domains: improved relationships, increased personal strength, identification of new possibilities in life, spiritual growth, and greater appreciation of life (Tedeschi & Calhoun, 1996). PTG is frequently reported in survey studies, with as many as 83% of individuals who have survived life-threatening illnesses, natural disasters, and transportation accidents reporting at least one positive change (Affleck, Tennen, Croog, & Levine, 1987; Affleck, Tennen, & Rowe, 1991; McMillen, Smith, & Fisher, 1997; Sears, Stanton, & Danoff-Burg, 2003).

Although theories of PTG stipulate that people experience meaningful changes in their characteristic and enduring patterns of thoughts, feelings and behaviors (Tedeschi & Calhoun, 2004)—that is, changes in personality—much of the evidence on this topic has been based on cross-sectional studies utilizing retrospective measures of self-reported growth. These measures only allow for limited tests of meaningful hypotheses on the nature and predictors of growth, given that growth is only measured through subjective perceptions of past changes. Furthermore, these measures cannot rule out other plausible alternatives, such as self-enhancing positive illusions during post-trauma recovery or positive reappraisal as an active coping mechanism (Tennen & Affleck, 2009). In other words, *in terms of assessing quantifiable personality change*, current measurement strategies for assessing PTG suffer from significant limitations (see Blackie & Jayawickreme, 2014; Jayawickreme & Blackie, 2014). PTG has most frequently been assessed using measures such as the Post-Traumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), in which participants are asked to recall retrospectively how they were before they experienced the adverse event, to estimate how much they have changed since the event, and to assess the extent to which this change can be attributed solely to the adverse life event (Ford, Tennen, & Albert, 2008). Such a measurement strategy requires participants to undertake a mentally taxing procedure, as participants must attempt the following five steps for each item on the questionnaire: (1) deduce current standing on the dimension, (2) recall prior standing on the dimension before the event had

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occurred, (3) compare these standings, (4) calculate the degree of change, and finally, (5) evaluate how much of the change was due to the adverse event.

Use of the PTGI and similar scales therefore assumes that people are able to recall their prior trait levels accurately, but as personality psychologists have demonstrated, perceived change is usually only modestly associated with pre-post change (see Henry, Moffitt, Caspi, Langley, & Silva, 1994; Herbst, McCrae, Costa, Feaganes, & Siegler, 2000; Robins, Noftle, Trzesniewski, & Roberts, 2005). For example, Robins et al. (2005) assessed the personality of 290 college students 6 times over the course of 4 years, and at the end of the 4 years asked participants to rate how much they believed their personality had changed. The correlation between pre-post- personality change and participants' perceived change was around 0.2.

A similar finding has been reported by PTG researchers. Individuals' perceptions of how they had changed over the course of 8 weeks following a traumatic event were also correlated around 0.2 with how they had actually changed as assessed by comparing pre and post levels of PTG (Frazier et al., 2009). Furthermore, pre-to-post-change in PTG domains was associated with lower distress at time 2 (apart from change in the spiritual domain), whereas retrospective perceptions of PTG were related to greater distress and use of positive reappraisal coping at time 2. Yanez, Stanton, Hoyt, Tennen, and Lechner (2011) found no correlation between pre-post PTG and retrospective perceptions of PTG among an undergraduate sample across 6 weeks, and Joseph et al. (2012) found a moderate correlation (0.41) among a community sample across 6 months. Based on this growing evidence, some researchers have argued that the PTGI (and similar self-report measures) likely measure global self-perceptions of change rather than quantifiable "growth" (a term which implies measurable pre- to post- change; Frazier et al., 2009). As a result, some of these researchers have suggested that retrospective self-perceptions and pre- to post-change of PTG should be separate areas of investigation (Joseph, 2014). Other researchers have taken a stronger stance and called for less, but better quality research into PTG (Frazier, Coyne, & Tennen, 2014).

## 2. PTG as positive personality change: The importance of assessing within-person variability

One solution to some of the issues faced in PTG research is to conduct additional and longer-scale prospective longitudinal studies (Jayawickreme & Blackie, 2014). Another solution (the one investigated in the present study), is the development of multi-method approaches to study PTG (Frazier et al., 2014). We focus here on the use of time-sensitive assessments that capture daily manifestations of PTG. Specifically, daily process methods such as experience sampling methodology (ESM; Conner, Tennen, Fleeson, & Barrett, 2009; Fleeson, 2007) offer one promising avenue. In ESM, each participant carries a device (such as a smartphone) and when prompted describes his or her current behavior, thoughts and feelings several times per day for several days. ESM is broadly accepted as a valid self-report behavioral measurement tool, with a number of advantages over other measurement methods (see Furr, 2009; Scollon, Prieto, & Diener, 2009). Of particular importance, ESM has high ecological validity. Additionally, ESM reduces memory biases associated with retrospective methods of behavioral measurement (Shiffman, Stone, & Hufford, 2008). This advantage is particularly relevant to addressing concerns with the use of retrospective recall in scales such as the PTGI (Ford et al., 2008). Although both the PTGI and ESM are based on self-report, ESM does not require as many complex and bias-prone mental operations (i.e., recalling one's prior personality, assessing one's current personality, computing changes, and deciding how much change to attribute to the trauma). Thus, unlike the PTGI, ESM reports do not ask participants to report on the process of change. Instead participants only report their thoughts, feelings, and behavior in the moment, which should be easier to do.

Furthermore, ESM enables the study of interactionism (Fleeson, 2007). According to this approach, personality can vary from one occasion to another depending on the unique properties of a situation, how an individual interprets a situation, and the extent to which an individual flexibly adapts their behavior to meet their goals or the social expectations of the situation. The study of within-person variability in PTG is important, because it provides an understanding of how PTG manifests within an individual as he or she moves from one situation to another. For example, assume that experiencing PTG in the moment serves to lower an individual's state-level (or momentary-level) of distress; using ESM, researchers can compare the distress of one individual during times that she experiences PTG to the same individual's distress during times that she does not experience PTG (Fleeson, 2007). These within-person analyses complement traditional between-person comparisons, providing a dynamic description of how PTG manifests, and relates to other experiences, in daily life.

Additionally, utilizing methods such as ESM can establish the extent to which the broader beliefs and self-concepts characteristic of PTG translate into meaningful differences in daily life. Assessing an individual's everyday PTG-relevant behavior over time addresses basic questions about the nature of the construct – how does trait-relevant PTG manifest in everyday behavior, and are there individual-differences in this manifestation (Fleeson, 2001)? Is PTG just a reflection of a person's global attitudes about adversity ("what doesn't kill me makes me stronger") and narrative sense of self ("I'm a wise person because of what I went through")? Or do people high in PTG actually think, feel, and act differently in daily life? As pointed out by Fleeson (2014), if a person's broad, trait-level reports of PTG are not instantiated in daily behavior it suggests that PTG is an illusory belief, as individuals are not enacting the PTG they report (e.g., they describe a sense of changed priorities but do not act in line with these priorities). This would cast doubt on the adaptive significance of PTG and may influence the extent and ways in which PTG-focused interventions are developed. Examining the extent to which PTG manifests in daily life would thus deepen our understanding of how adversity impacts personality in the short- and long-term.

### 2.1. Developing a daily measure of PTG

The first step in developing a daily measure of PTG involves identifying suitable state analogues of PTG dimensions that capture the construct at a daily or hourly level. In keeping with the density distribution model (Fleeson, 2001, 2004) a state is defined as having the same content as a corresponding trait, but as applying for a shorter duration. For example, an extraverted state has the same content as trait extraversion (talkativeness, energy, boldness, assertiveness, etc.), but applies as an accurate description for only a few minutes to a few hours, whereas a trait applies for months or years. States are qualitatively similar to traits, and both are descriptive of a person's behavior, feelings and thoughts.

A state measure of PTG would assess what the individual is concretely doing, thinking or feeling, at the moment he or she is doing it, in real situations, using the same information and numeric rating scales used to assess the PTG constructs at the global "trait" level. Assessing state PTG involves examining the extent to which individuals who have experienced an adverse event may perceive greater appreciation of life, improved relationships, increased personal strength, identification of new possibilities, and spiritual change *in daily life, moment to moment* (Blackie & Jayawickreme,