

# Examining associations between personal growth initiative and subjective trajectories of life satisfaction among survivors of ethnopolitical violence in Rwanda and Sri Lanka

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## Abstract

Does personal growth initiative (PGI)—the tendency to be proactive about one's personal development—impact adaptive beliefs about life quality among survivors of mass violence, such as ethnopolitical warfare or genocidal violence? One-hundred-and-twenty-three survivors of the 1994 genocide against the Tutsi in Rwanda and 179 Tamil individuals affected by the civil war in Sri Lanka completed assessments of PGI, satisfaction with one's past life, current life satisfaction, and anticipated future life satisfaction. High levels of PGI were associated with an adaptive inclining trajectory of life satisfaction (Past < Present < Future) in both samples. These results indicate that PGI is associated with adaptive beliefs about one's identity and well-being among war-affected populations, and supports future interventions targeting PGI among those communities.

## KEYWORDS

genocide, life satisfaction, personal growth initiative, temporal life satisfaction, trauma, war, war-affected populations

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## INTRODUCTION

The number of civil wars has tripled in the past decade (Von Einsiedel et al., 2017), which has unsurprisingly led to an increase in civilian displacement both within and outside their countries. Consequently, the number of displaced individuals globally has reached 26.4 million in the last decade (United Nations High Commissioner for Refugees [UNHCR], 2021). These individuals are typically exposed to multiple traumatic events, including killings and assassinations, acts of torture, bombing raids, home theft, home invasions, and forced separations of family members (Levy & Sidel, 2008; Wang et al., 2010).

In coping with the traumas and stressors of war, survivors of mass violence may be able to utilize skills associated with intentional self-development to facilitate coping with or decrease the distress caused by having experienced war-related adversities (Blackie et al., 2015). One key indicator of the individual's ability or capacity for growth and change is *personal growth initiative (PGI)*—the individual's intentional desire and active engagement in growth-enhancing behaviors, attitudes, and goals that allow for such development to occur in all life domains that are important for the individual (Robitschek, 1998). In the present study, we examined the relationship between PGI and adaptive beliefs about how one's life unfolds over time—specifically, the belief that one's *life satisfaction* or the global evaluation of one's quality of life (Diener et al., 1999; Pavot & Diener, 1993) is increasing over time—in two samples impacted by mass violence in Rwanda and Sri Lanka.

PGI is distinct from similar characteristics such as *purpose* or *meaning* in life. *Purpose* can be defined as “a central, self-organizing life aim which organizes and stimulates goals, manages behaviors, and provides a sense of meaning” (McKnight & Kashdan, 2009, p. 242) and while PGI can be considered at its core to be related to goal-setting behavior, PGI represents the individual's capacity for growth and change within specific life domains, which can possibly occur prior to or after having a developed *purpose* in life, which tends to be more related to the individual's life as a whole rather than within specific life areas. *Meaning*, on the other hand, can be defined as the *feeling* of belonging to and serving something considered larger than oneself (Seligman, 2011). It is different from PGI in the sense that meaning is centered around helping the individual understand their world and their place in it and gives them a sense that their life matters (Steger, 2009, 2012), whereas PGI is more goal-directed and about making plans of action to attain goals (Robitschek, 1998).

Prior research indicates that PGI is a strong predictor of positive psychological, social, and emotional well-being (Robitschek & Keyes, 2009; Weigold et al., 2013). Individuals with high levels of PGI display less psychological distress over time, fewer depressive symptoms, and higher well-being (Danitz et al., 2018; Weigold et al., 2018). High levels of PGI have been found to help individuals focus on the future, find meaning in adversity, and experience psychological growth (Shigemoto et al., 2017), which is associated with increased life satisfaction (Bauer & McAdams, 2004). Individuals with high levels of PGI may be more motivated to intentionally cope with an event both cognitively and behaviorally (Shigemoto et al., 2016), as they would be motivated to actively think about and engage with the process of growth and change (Robitschek et al., 2012). Individuals with high levels of PGI that seek counseling have been found to use these skills during the counseling process with positive results (Robitschek et al., 2012; Weigold et al., 2018). Their PGI levels also tend to increase over the course of counseling (Danitz et al., 2018; Robitschek et al., 2019; Weigold et al., 2018), highlighting the possible utility of interventions focused on PGI such as intentional growth training (Thoen & Robitschek, 2013), strengths-based interventions (Woerkom & Meyers, 2019), and traditional psychotherapy (Danitz et al., 2018).

PGI is proposed to be a determinant of well-being across cultures (Robitschek, 2003), and a number of studies have examined the utility of PGI in non-Western samples. These studies found that PGI is positively associated with greater life satisfaction (in a Chinese sample; Yang & Chang, 2014), predicted lower levels of functional impairment (in Rwandan genocide survivors; Blackie et al., 2015), and higher levels of well-being (among Sri Lankan war survivors; Demaske et al., 2021; and disadvantaged adolescents from Jammu, India; Sood & Gupta, 2014).

Levels and predictors of life satisfaction have been examined in different cultures, including in Sri Lanka (e.g. Chapman et al., 2019; Nonaka et al., 2012; O'Neill et al., 2021) and Rwanda (Abbott & Wallace, 2012; Ngamaba, 2016). It should be noted that the predictors of life satisfaction vary across cultures, which makes it important to consider how specific cultural values and other cultural factors influence the individual's perception of what makes one's life satisfying. To provide one example, Suh et al. (1998) found that norms or standards for life satisfaction (e.g. the ideal perception of life satisfaction the individual has) had a stronger association with life satisfaction in collectivistic countries than in individualistic countries.

Recent research in the well-being literature has further highlighted the importance of considering beliefs about individuals' recollected past and anticipated future lives, in addition to their current lives (Pavot et al., 1998; Ye, 2007). Specifically, individuals' perceptions concerning how their lives unfold over time have been found to be related to mental health and functioning (e.g. Busseri & Peck, 2015; Busseri et al., 2009). Typically, individuals tend to consider their current lives to be more satisfying than their past lives, and further that their future lives will be more satisfying (Busseri, 2013). Even individuals high in pessimism report an upward trajectory in their perceived life satisfaction over time, perceiving the future to be more positive (Busseri et al., 2009). PGI's cognitive components—i.e. an intentional and aware engagement in the process of growth—may have implications for cognitive components of subjective well-being such as life satisfaction. Examining the relationship between PGI and temporal life satisfaction in post-war populations could therefore indicate the degree to which PGI is associated with a well-adjusted self-concept and sense of identity.

## THE PRESENT STUDY

In the current investigation, we examine the relationship between PGI and subjective trajectories of life satisfaction in two post-war populations—post-genocide Rwanda and post-war Sri Lanka. The 1994 Rwandan genocide resulted in over 800,000 deaths ranging from young children to old and unable civilians, and 26.1% of the population were found to suffer from clinically diagnosed posttraumatic stress disorder 14 years after the genocide was over (Munyandamutsa et al., 2012). The Sri Lankan civil war between the Sri Lankan government forces and the Liberation Tigers of Tamil Eelam, a Tamil separatist group, lasted for almost 30 years and resulted in the death of 100,000 and in the displacement of 800,000 individuals by the war's conclusion in 2009 (Jayawickreme et al., 2010; Vhurumuku et al., 2012).

Given the relationship between PGI and facets of well-being, as well as PGI's adaptive value among survivors of ethnopolitical violence in Sri Lanka and Rwanda (Blackie et al., 2015; Demaske et al., 2021), we hypothesized that high levels of PGI would be associated with high life satisfaction and an upward trajectory of perceived life satisfaction in the past to the present, and from the present to the future, indicating that there is an association of high levels of PGI with high levels of life satisfaction across the three subjective time points. To examine how

different levels of PGI were associated with different levels of life satisfaction, a median tri-split was used to split PGI into equally sized groups representing the three different levels of PGI such as low, moderate, and high PGI. The rationale behind splitting the groups is to further examine the association of PGI with life satisfaction through examining how each level of the PGI groups associates or interacts with life satisfaction separately. This directly allows us look at how the trajectories of life satisfaction across the three temporal points are depending on the individual's PGI levels. Based on this split, we also hypothesized that low and moderate levels of PGI would not be associated with an upward trajectory from past to present to future and would not be associated with high life satisfaction across all three-time points.

## METHODS

### Participants

#### Rwanda sample

This sample consisted of 123 Rwandan genocide survivors (86 female) living in villages inhabited by genocide survivors in five districts in the vicinity of Rwanda's capital city, Kigali, who completed measures of life satisfaction and PGI. The age of the participants ranged from 26 to 77 years old ( $M = 45.13$ ,  $SD = 12.7$ ). Participants were recruited by visiting households and by approaching participants on the street to invite them to come and take part in the study in a local school in their village.

#### Sri Lanka sample

This sample consisted of 179 internally displaced, war-affected Tamil individuals living in north-eastern Sri Lanka (142 female) who completed measures of life satisfaction and personal growth initiative. The age of the participants ranged from 16 to 70 years old ( $M = 35.95$ ,  $SD = 12.54$ ). Participants were recruited from 10 Sri Lankan-based centers run by the Family Rehabilitation Centre (FRC), a not-for-profit nongovernmental organization that provides counseling and other services to individuals who were internally displaced populations in the northern and eastern provinces of Sri Lanka.

### Procedure

#### Rwanda

Rwandan participants were invited to take part in a study on well-being and mental health by 12 research assistants who were native Rwandans and had visited five districts of villages that were inhabited by genocide survivors. The districts were selected by a local project coordinator based on budget considerations and their closeness to the coordinator's headquarters in Kigali. Participation in the study was entirely voluntary, and written informed consent was acquired from each participant prior to completing the questionnaire. Special measures were taken to ensure that participants felt comfortable consenting of their own free will by having a research

assistant clarify all aspects of informed consent. These procedures were approved both by the Institutional Review Board (IRB) at Wake Forest University and the Rwandan Ethics Committee.

## Sri Lanka

The Sri Lankan participants were recruited after their regular meeting sessions at FRC to ensure they did not feel that they could only obtain services from the FRC until after their participation in the study. Prior to their participation, each of the participants was asked to complete and sign an informed consent form. The participants were compensated with 100 Sri Lankan rupees (approximately \$1 US) for their participation, which was enough to purchase lunch in the region at the time of data collection. The study procedure was approved by the IRB at Wake Forest University.

Trained health participants and FRC staff members were present to translate any questions or responses from the participants and the primary investigator. The measures were originally in English but were all presented in the native language of the participants, Tamil. The measures were initially translated by two native Tamil speakers, and a translated monitoring form (van Ommeren et al., 1999) was used to record the translation, lexical back-translation, and an evaluation of each measurement item. To ensure semantic equivalence, each of the measures' items was then back-translated into English by two bilingual physicians. The English back-translation was reviewed by the research team, and the final translation was translated back into Tamil by the third set of bilingual physicians.

## Measures

The participants completed a questionnaire packet that included the Temporal Satisfaction with Life Scale (TSLS) (Pavot et al., 1998), the Personal Growth Initiative Scale (PGIS) (Robitschek, 1998), and a demographic questionnaire including age and gender. The packets also included additional measures to which the participants responded that are not relevant to the current study.

### TSLS (Pavot et al., 1998)

The TSLS asks respondents to indicate the degree to which they agree or disagree with 15 statements regarding their perceived levels of satisfaction with life in the past, present, and future on a 7-point Likert-type scale, which ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale contains a three-factor structure that was validated in English, as well as Chinese, and German translations of the scale (McIntosh, 2001; Trautwein, 2004; Ye, 2007). The three factors included in this scale are past, present, and future life satisfaction, which are each measured by five items where the top five items of the scale measure the past such as "I am satisfied with my life in the past," and the middle five items that measure the present such as "The current conditions of my life are excellent," and the bottom five items that measure the future such as "The conditions of my future life will be excellent." The internal reliability for the scale has been high across different populations. In a Turkish sample of 236 respondents, the reliability

was very good ( $\alpha = .87$  overall,  $\alpha = .88$  present). In a Spanish sample of 737, the reliability was excellent ( $\alpha = .91$  overall,  $\alpha = .81$  present; Tomás et al., 2016), with a test reliability  $\alpha = .81$  (Akyurek et al., 2019). In the current study, reliability in both samples was good (Rwanda:  $\alpha = .77$ ; Sri Lanka:  $\alpha = .83$ ).

## PGIS (Robitschek, 1998)

This measure includes nine items, such as “I know how to change specific things that I want to change in my life” and “I take charge of my life,” which measures the degree to which the participants agree or disagree with statements that reflected their intentions towards personal growth using a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). A systematic review on personal growth initiative by Pinto Pizarro de Freitas et al. (2016) indicates that PGI has good construct validity, with internal reliability ranging from  $\alpha = .86$  to  $\alpha = .91$  (Robitschek, 1998, 2003). In the current study, the reliability of the scale in both samples was good (Rwanda:  $\alpha = .84$ ; Sri Lanka:  $\alpha = .80$ ).

## Data analytic plan

We tested our hypothesis in this study by utilizing two different types of analysis—null hypothesis significance testing (NHST) and Bayesian analysis. Our reasoning behind using two different analyses is to reinforce the accuracy of our results and to examine whether these different statistical approaches may produce similar results or shed light on discrepancies in our results and data. We utilized NHST analysis in order to provide significance levels.

In order to examine the association between PGI and the different temporal points of life satisfaction, we conducted a linear regression analysis with the temporal points of life satisfaction as the dependent variable and PGI as the independent variable. A priori power analysis was conducted using the statistical calculator G\*Power (Version 3.1.9.7) (Faul et al., 2007) in order to determine the minimum sample size for regression analyses using a medium effect size of 0.15, and given existing literature (Cohen, 1988), a power of 0.8, and a  $p = .05$  were used. Calculations suggested a minimum sample size of 55 would be sufficient in order to examine our hypothesis and the relationship between PGI and life satisfaction.

In addition to linear regression models, Bayesian models were used to reinforce the use of null hypothesis testing and  $p$ -values and to mitigate types  $S$  and  $M$  errors (Gelman & Carlin, 2014). Bayesian regressions were conducted to examine the associations between PGI and the different temporal points of life satisfaction and to reinforce the accuracy of our NHST regressions. To examine how gender interacts with PGI and influences its relationship with life satisfaction, we conducted Bayesian regressions with the slope being conditional on gender. We examined our gender associations through a Bayesian analysis, as it allowed us to examine the relationship between gender, PGI, and life satisfaction through a quadratic lens. RStudio (Version 4.1.1) was used to run *quap* functions (rethinking package, Version 2.13) to conduct Bayesian regressions and analyses of variance (ANOVAs). The Bayesian models were conducted using the *quap* (quadratic approximation posterior distribution) function to acquire the posterior distribution and mean estimates for the association between PGI and life satisfaction. Correlations were also conducted to examine the relationship between age, PGI, and the three temporal points of life satisfaction.



In order to examine the relationship between PGI and life satisfaction in terms of separate groups, a tri-split was used for both samples to split PGI into three levels (low, moderate, and high) using the 33% and 66% cutoff points, and a  $3 \times 3$  mixed repeated-measures ANOVA was conducted to examine the trajectory associations between different levels of PGI and the different levels of subjective life satisfaction in both samples. The three temporal points were used as the within-subjects factor (time1 = past, time2 = present, and time3 = future), and PGI was used as the between-subjects factor indicating all different levels of PGI (low, moderate, and high). A Bayesian ANOVA was also conducted where PGI was modeled as a linear function of the past, present, and future life satisfaction with randomly chosen slopes according to the PGI levels. The models did not include intercepts as the focus of our analyses was on the differential impact of each temporal point of life satisfaction on PGI. In our discussion, we focused on the NHST ANOVA as it provides us with significance levels that allow us to clarify the meaning of the interactions in the relationship between PGI and life satisfaction.

RESULTS

Rwanda

Positive and significant correlations were found between PGI and current life satisfaction ( $r = .23, p < .01$ ) and between PGI and future life satisfaction ( $r = .27, p < .01$ ). No significant relationships were found between PGI and past life satisfaction ( $r = -.12$ ). In our regressions, the predictive variable was PGI whereas our outcome variables were each of the life satisfaction temporal points. Linear regression analyses indicated that PGI significantly predicted current life satisfaction,  $R^2 = .05, F(1,121) = 7.10, p < .01$ . PGI was also found to predict future life satisfaction,  $R^2 = .07, F(1,121) = 9.67, p < .01$ . PGI was not found to be significantly associated with past life satisfaction,  $R^2 = .01, F(1,121) = 1.95, p > .05$ . Our collinearity diagnostics indicated a VIF (variance inflation factor) value between 1.0 and 1.41, which indicates a low to moderate correlation between our variables, clarifying that our variables are different from each other and that there are no issues of collinearity among the variables.

Age was significantly and negatively correlated with both future life satisfaction ( $r = -.292, p < .01$ ) and PGI ( $r = -.251, p < .01$ ) but was not correlated with any of the other variables. The descriptive statistics for the Rwandan sample are shown below in Table 1. We also tested

TABLE 1 Descriptive statistics for Rwandan sample

Variable	n	M	SD	Skewness		Kurtosis		Range	
				Statistic	SE	Statistic	SE	Min	Max
PGI	123	41.78	8.93	-1.302	.218	2.336	.433	9	54
TSWL Past	123	3.76	1.37	0.550	.218	-0.368	.433	1.0	7.0
TSWL Present	123	3.41	1.29	0.416	.218	-0.539	.433	1	7
TSWL Future	123	5.22	1.27	-1.643	.218	2.444	.433	1	7
Age	123	45.13	12.72	0.448	.218	-0.693	.433	26	77

Abbreviations: PGI, personal growth initiative; TSWL, temporal satisfaction with life.

for collinearity among the variables and found that there were no collinearity problems; to provide stronger evidence for the lack of collinearity problems, we ran correlations between the past, present, and future life satisfaction in which the correlations indicated very low to nonexistent collinearity between past and present life satisfaction ( $r = .189, p < .05$ ), between the past and future ( $r = .218, p < .05$ ), and between the present and the future life satisfaction ( $r = .528, p < .01$ ).

PGI was split into three approximately equal groups according to the degree of the construct: Low PGI ( $M = 32.10, n = 42$ ), Moderate PGI ( $M = 43.03, n = 35$ ), and High PGI ( $M = 49.67, n = 46$ ). Mixed ANOVA analyses indicated that there was a significant main effect for temporal life satisfaction,  $F(2,360) = 68.21, p < .001, \eta^2 = .26$ . The means for both past and present life satisfaction were lower than future life satisfaction, but both past and present life satisfaction were comparable in terms of means (Past  $M = 3.76$ , Present  $M = 3.41$ , Future  $M = 5.22$ ). There was no significant main effect for PGI groups,  $F(2,360) = 1.80, p > .16, \eta^2 = .006$ . This indicated that the different levels of PGI were not significantly different from each other. A significant interaction was found between PGI and Temporal Life Satisfaction,  $F(4,360) = 4.60, p < .01, \eta^2 = .035$ .

In terms of the PGI groups (i.e., Low, Moderate, and High) and their interaction with temporal life satisfaction, the means for past, present, and future life satisfaction among the low PGI group showed a slightly downward trajectory from past to present, and a slightly upward trajectory towards the future (Past  $M = 4.02$ , Present  $M = 3.15$ , Future  $M = 4.82$ ). Among the moderate PGI group, a slightly downward trajectory can be seen from past to present and then slightly upward from present to the future (Past  $M = 3.91$ , Present  $M = 3.25$ , Future  $M = 5.10$ ). Among the high PGI group, a clear upward trajectory was found from past to present to future with the means for the present and future life satisfaction being the highest among the PGI groups (Past  $M = 3.41$ , Present  $M = 3.78$ , Future  $M = 5.69$ ). For the trajectories plot, see Figure 1.

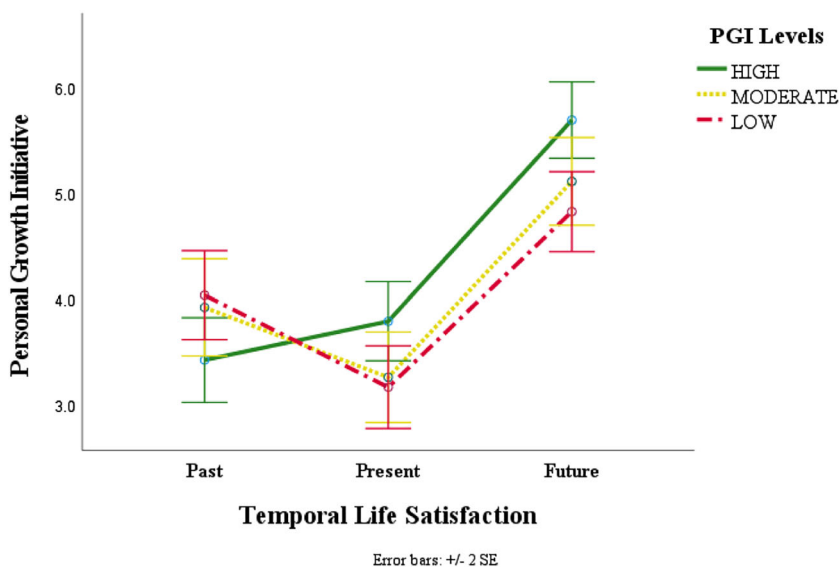


FIGURE 1 Personal growth initiative (PGI) and life satisfaction trajectories in the Rwandan sample



The Bayesian regressions indicated that the estimates for the association between PGI and life satisfaction were higher for future life satisfaction ( $M = 0.29$ ,  $SD = 0.09$ ) than they were for past ( $M = -0.09$ ,  $SD = 0.09$ ) and present life satisfaction ( $M = 0.26$ ,  $SD = 0.09$ ). The Bayesian model for the interaction of gender with both PGI and life satisfaction indicated that the association between PGI and future life satisfaction was stronger in males ( $M = 0.51$ ,  $SD = 0.15$ ) than in females ( $M = 0.22$ ,  $SD = 0.10$ ) and the association between PGI and present life satisfaction was also stronger in males ( $M = 0.33$ ,  $SD = 0.15$ ) than in females ( $M = 0.25$ ,  $SD = 0.10$ ). The interaction was not examined with past life satisfaction given that it was not significantly associated with PGI.

The Bayesian ANOVA analysis predicted different variations for the association between each temporal point of life satisfaction and each level of PGI. Moderate levels of PGI were more strongly associated with past life satisfaction ( $M = 0.09$ ,  $SD = 0.14$ ) compared with low ( $M = -0.12$ ,  $SD = 0.15$ ) and high PGI levels ( $M = -0.20$ ,  $SD = 0.13$ ). In terms of present life satisfaction, low ( $M = 0.11$ ,  $SD = 0.16$ ) and high levels of PGI ( $M = 0.22$ ,  $SD = 0.14$ ) were more strongly associated with present life satisfaction than moderate PGI ( $M = 0.09$ ,  $SD = 0.17$ ). In terms of future life satisfaction, low ( $M = 0.35$ ,  $SD = 0.14$ ) and high levels of PGI ( $M = 0.65$ ,  $SD = 0.19$ ) were also more strongly associated with future life satisfaction than moderate PGI ( $M = -0.05$ ,  $SD = 0.15$ ).

## Sri Lanka

Significant, positive relationships were found between PGI and current life satisfaction ( $r = .38$ ,  $p < .01$ ) and between PGI and future life satisfaction ( $r = .34$ ,  $p < .01$ ), but no significant relationship was found between PGI and past life satisfaction ( $r = .11$ ). Similar to our regressions in the Rwandan sample, in the Sri Lankan sample, the predictive variable was PGI whereas our outcome variables were each of the life satisfaction temporal points as well. Linear regression models indicated that PGI predicted higher present life satisfaction,  $R^2 = .14$ ,  $F(1,177) = 30.45$ ,  $p < .001$ . PGI was also found to predict increased future life satisfaction,  $R^2 = .11$ ,  $F(1,177) = 23.69$ ,  $p < .001$ . PGI was not significantly associated with past life satisfaction,  $R^2 = .01$ ,  $F(1,177) = 2.22$ ,  $p > .05$ . As with our Rwanda analysis, our collinearity diagnostics indicated a VIF value between 1.08 and 1.49, which indicates a low to moderate correlation between our variables, clarifying that our variables are different from each other and that there are no issues of collinearity among the variables.

Age was significantly and negatively correlated with present life satisfaction ( $r = -.213$ ,  $p < .01$ ) but was not significantly correlated with any of the other variables. The descriptive statistics for the Sri Lankan sample are shown below in Table 2. Similar to the analysis conducted with the Rwandan sample, we had also tested for collinearity, and found that there were no collinearity problems; we also conducted correlations to provide stronger evidence for the lack of collinearity problems, which indicated very low to nonexistent collinearity between past and present life satisfaction ( $r = .153$ ,  $p < .05$ ) and between the past and future ( $r = .275$ ,  $p < .01$ ), and between the present and the future life satisfaction ( $r = .540$ ,  $p < .01$ ).

As with the Rwandan sample, the PGI in the Sri Lanka sample was also split into three approximately equal groups: Low PGI ( $M = 32.13$ ,  $n = 61$ ), Moderate PGI ( $M = 41.55$ ,  $n = 56$ ), and High PGI ( $M = 47.73$ ,  $n = 62$ ). The mixed ANOVA model indicated that there was a significant main effect of temporal life satisfaction,  $F(2,528) = 11.92$ ,  $p < .001$ ,  $\eta^2 = .039$ . The mean for past life satisfaction was higher than present life satisfaction, and present life satisfaction

TABLE 2 Descriptive statistics for Sri Lankan sample

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Skewness		Kurtosis		Range	
				Statistic	SE	Statistic	SE	Min	Max
PGI	179	40.48	7.54	−1.032	.182	1.599	.361	9	53
TSWL Past	179	4.40	1.68	−0.334	.182	−1.071	.361	1.0	7.0
TSWL Present	179	3.90	1.55	−0.044	.182	−1.186	.361	1	7
TSWL Future	179	4.61	1.15	−0.376	.182	−0.398	.361	1.80	6.80
Age	179	35.95	12.54	0.552	.182	−0.330	.361	16	70

Abbreviations: PGI, personal growth initiative; TSWL, temporal satisfaction with life.

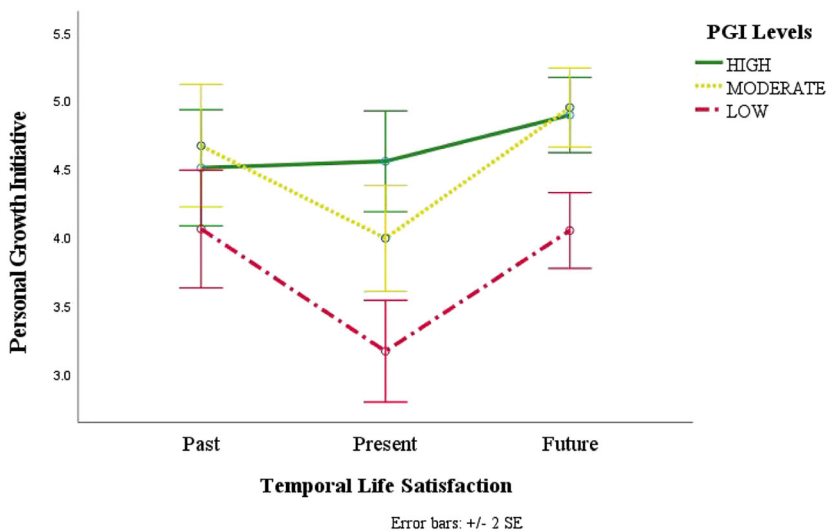


FIGURE 2 Personal growth initiative (PGI) and life satisfaction trajectories in the Sri Lankan sample

was lower than future life satisfaction; furthermore, past and future life satisfaction were comparable and not significantly different (Past  $M = 4.40$ , Present  $M = 3.90$ , Future  $M = 4.61$ ). There was a significant effect for PGI groups,  $F(2,528) = 21.19$ ,  $p < .001$ ,  $\eta^2 = .07$ , indicating that the PGI groups were significantly different from each other.

The model also indicated that there was no significant interaction between PGI and temporal life satisfaction,  $F(4,528) = 1.99$ ,  $p < .1$ ,  $\eta^2 = .01$ . Among the low PGI group, the means for past, present, and future life satisfaction showed a downward trajectory from past to present and an upward trajectory back up from present to future (Past  $M = 4.05$ , Present  $M = 3.16$ , Future  $M = 4.04$ ). With the moderate PGI group, a similar trajectory was also observed indicating a downward trend from past to present and an upward trend to the future (Past  $M = 4.66$ , Present  $M = 3.98$ , Future  $M = 4.94$ ). For the high PGI group, a clear upward trajectory was observed from past, to present, and future (Past  $M = 4.50$ , Present  $M = 4.55$ , Future  $M = 4.89$ ; Figure 2).

Bayesian regression models indicated that the estimate for the association between PGI and current life satisfaction was slightly higher ( $M = 0.39$ ,  $SD = 0.07$ ) than future life satisfaction ( $M = 0.36$ ,  $SD = 0.07$ ) and past life satisfaction ( $M = 0.13$ ,  $SD = 0.07$ ). The results from the Bayesian model for the interaction of gender with both PGI and life satisfaction indicated that the association between PGI and future life satisfaction was stronger in males ( $M = 0.48$ ,  $SD = 0.16$ ) than in females ( $M = 0.34$ ,  $SD = 0.08$ ), but the association between PGI and present life satisfaction was stronger in females ( $M = 0.41$ ,  $SD = 0.07$ ) than in males ( $M = 0.37$ ,  $SD = 0.16$ ). As with the Rwandan sample, the interaction was not examined with past life satisfaction given that it was not significantly associated with PGI.

Bayesian ANOVA analyses indicated that moderate levels of PGI were more strongly associated with past life satisfaction ( $M = 0.05$ ,  $SD = 0.11$ ) compared with low ( $M = 0.018$ ,  $SD = 0.11$ ) and high PGI levels ( $M = 0.031$ ,  $SD = 0.10$ ). In terms of present life satisfaction, low PGI levels ( $M = 0.47$ ,  $SD = 0.14$ ) were also more strongly associated with present life satisfaction than high levels of PGI ( $M = 0.09$ ,  $SD = 0.12$ ) and moderate PGI ( $M = 0.34$ ,  $SD = 0.12$ ). In terms of the future, low PGI levels ( $M = 0.43$ ,  $SD = 0.13$ ) more strongly predicted future life satisfaction compared with high PGI ( $M = 0.07$ ,  $SD = 0.12$ ) and moderate PGI ( $M = 0.04$ ,  $SD = 0.13$ ).

## Comparison of Rwandan and Sri Lankan samples

Rwandan participants had higher average PGI ( $M = 41.78$ ) and future life satisfaction ( $M = 5.22$ ) score compared with Sri Lankan participants (PGI = 40.48, Future Life Satisfaction = 4.61). In contrast, Sri Lankan participants had higher average past life satisfaction ( $M = 4.40$ ) and present life satisfaction ( $M = 3.90$ ) than the Rwandan sample (Past Life Satisfaction = 3.76; Present Life Satisfaction = 3.41). In terms of PGI groups (high, moderate, and low) and their interaction with life satisfaction, future life satisfaction was higher in all PGI groups in the Rwandan sample than in the Sri Lankan sample; however, past and present life satisfaction were higher in the PGI groups in the Sri Lankan sample than in the Rwandan sample. There was no association between past life satisfaction and PGI in both samples; however, there was a stronger association between PGI and present and future life satisfaction in the Sri Lankan sample than the Rwandan sample, suggesting that PGI predicts a larger change in life satisfaction in the Sri Lankan sample than in the Rwandan sample.

## DISCUSSION

The present study examined the relationship between PGI and subjective trajectories of temporal life satisfaction in two samples affected by genocide (Rwanda) and civil war (Sri Lanka). We hypothesized that high PGI will be associated with a perceived upward trajectory of life satisfaction from past to present and from present to the future. The results from the ANOVA analysis indicate that our hypothesis was confirmed in Rwandan genocide survivors. In Sri Lankan war survivors, the results from our ANOVA analysis indicated that PGI was not significantly associated with life satisfaction (i.e. PGI did not significantly interact with life satisfaction), but a clear upward trajectory of temporal life satisfaction was found among the high PGI group indicating an inclining trajectory from the past to the present and to the future. No gender differences were found.

Multivariate analyses indicated that PGI significantly predicted both present and future life satisfaction in both Rwanda and Sri Lanka, providing evidence that PGI predicts changes in life satisfaction, yet PGI was not significantly associated with past life satisfaction. We also conducted Bayesian analyses to acquire mean estimates for the association between PGI and each of the temporal life satisfaction points, which provided evidence for low estimates for the association between PGI and past life satisfaction. These results indicate that PGI predicted change in both present and future life satisfaction in both populations and suggest that individuals with high PGI can better cope with the demands of post-conflict life, facilitate more positive outcomes, and experience greater life satisfaction. These findings are consistent with previous studies that have linked PGI to higher life satisfaction in non-Western samples (e.g. Blackie et al., 2015; Chang et al., 2019; Demaske et al., 2021; Sood & Gupta, 2014) and add to the literature demonstrating PGI's cross-cultural validity as a psychological construct (e.g. Ayub & Iqbal, 2012; Joshanloo & Ghaedi, 2009).

The trajectories of life satisfaction across the three-time points were similar in both Rwanda and Sri Lanka, indicating a declining trajectory from past life satisfaction to present life satisfaction and an inclining trajectory from present life satisfaction to future life satisfaction (Past  $\searrow$  Present  $\nearrow$  Future). Similar trajectories were observed in both the low and moderate PGI groups based on the interaction of PGI with life satisfaction in both samples, yet individuals with high PGI reported an inclining trajectory from past life satisfaction to present life satisfaction and from present life satisfaction to future life satisfaction. It is likely that many respondents considered their current lives to be worse than their past lives due to the war adversities experienced and, therefore, consider their past lives before the war to be better. In contrast, in populations unaffected by war, individuals evaluate their current lives to be more satisfactory than their past lives and anticipate that their future will be better (Busseri, 2013; Busseri et al., 2009).

This downward trajectory from past life satisfaction to present life satisfaction and the upward positive trajectory from present life satisfaction to future life satisfaction seen in the current study is similar to the life satisfaction trajectories in depressed individuals, an unsurprising finding, given the high levels of depression and anxiety seen in post-conflict settings (Bogic et al., 2015). Busseri and Peck (2015) found nonlinear subjective trajectories among depressed individuals indicating low and stable trajectories from past to present life satisfaction with an anticipation of a more positive future, which also reflects previous findings from studies that show similar patterns of subjective trajectories among individuals with low well-functioning (e.g. low self-esteem and low dispositional optimism; Busseri, 2013; Busseri et al., 2009, 2013; Choma et al., 2014).

The differences in PGI's association with life satisfaction in both populations (i.e. PGI was more associated with present life satisfaction in the Sri Lankan sample but was more strongly associated with future life satisfaction in the Rwandan sample) are possibly explained by the differences in cultural and historical factors that exist in both countries, the length of the conflict, and the efforts of rebuilding after the conflict. For example, the Sri Lankan civil war lasted longer (1983 to 2009) than the Rwandan genocide (1994), which possibly impacted post-conflict personal growth differently in both countries.

Furthermore, there was no association between PGI and past life satisfaction in both samples. This lack of association between PGI and past life satisfaction is possibly due to PGI's nature as a future-oriented construct and how it encompasses future growth and change (Robitschek, 1998; Snyder et al., 1991); therefore, PGI does not associate with the individual's perceptions of how satisfied they were with their past life as it functions more as a force of continuous change and growth.

The present findings provide possible approaches to increasing the well-being of these survivors through intervention programs that aim at increasing the individual's personal strengths such as personal growth and capacity for change. Thoen and Robitschek (2013) designed growth-based interventions and intentional growth training (IGT) that aim at enhancing the individual's personal growth through educating them about PGI and how to utilize PGI skills in important aspects of their lives. There is evidence for the effectiveness of IGT in increasing PGI in Western samples (Thoen, 2013; Thoen & Robitschek, 2013), and it is possible, given the relationship between PGI and life satisfaction in non-Western samples, that IGT and personal growth-based interventions can increase PGI in these post-conflict samples. The individual's intentional engagement in personal growth efforts provides the individual with a sense of agency over their lives, and agency has been associated with improved mental health in Sri Lankan war survivors (Jayawickreme et al., 2019). Post-conflict and post-genocide survivors are likely not always provided with the opportunities that allow for personal growth during the rebuilding phase after the war; therefore, such programs could provide them with the personal strengths and resources that not only help them with personal growth but also ultimately enhance their well-being.

Further research on war-affected samples should investigate how PGI can be utilized during counseling to increase the individual's sense of control over their lives by giving the individual the tools and the skills needed to enact and facilitate the growth and change in the areas that are important for them in their lives. It is also important for future research to investigate possible cultural differences in the valuing of the skills associated with PGI and how they impact its utilization in therapy or in other counseling contexts. Finally, future research should examine the ways PGI could be useful in the treatment of war-affected populations through psychosocial support and counseling-based programs that promote positive change and growth in populations like refugees and internally displaced individuals in war-affected countries or with war-affected populations such as Syrian, Ukrainian, Yemeni, and other displaced individuals.

One limitation of the present study is that these data were collected at a specific post-conflict moment in Sri Lanka and Rwanda (2014). These results may therefore not generalize to individuals living in the current context, given the substantive changes that have occurred in both countries. In addition, the cross-sectional design means that we cannot establish a causal link between PGI and having adaptive beliefs about one's life—it is possible that believing that life gets better over time leads to possessing the beliefs characteristic of PGI. Also, future studies should replicate our findings using the revised version of the PGIS (Personal Growth Initiative Scale-II; Robitschek et al., 2012), which separates PGI into four distinct elements—readiness for change, planfulness, using resources, and intentional behavior. Such studies can identify if particular elements of PGI are associated with life satisfaction in post-conflict populations. Additionally, the Sri Lankan sample consisted of individuals who voluntarily attended clinics run by a local nongovernmental organization. This limits the generalizability of these results to the larger population in war-affected Northern and Eastern Sri Lanka, as these participants may have higher mean levels of PGI (motivating them to attend the clinics) and also have greater material and interpersonal resources that enabled them to attend. Finally, despite prior research highlighting the validity of PGI in the Sri Lankan (Blackie et al., 2015) and Rwandan (Demaske et al., 2021) contexts, we utilized measures that had not originally been developed for use in these specific cultural contexts. Future research may identify culture-specific idioms of PGI for use in local assessments of the construct.

In conclusion, this study examined PGI and its association with life satisfaction in two post-conflict samples—Rwanda and Sri Lanka—and found that high levels of PGI were associated

with an inclining trajectory of life satisfaction from the past to the present and from the present to the future. These results indicate that PGI has cross-cultural utility and could be possibly utilized in the therapeutic efforts of improving the lives of war-affected samples and populations such as refugees and displaced individuals.

## CONFLICT OF INTEREST

The authors have no conflicts of interest.

## ETHICS APPROVAL STATEMENT

These procedures were approved both by the IRB at Wake Forest University (IRB00021431 and IRB00021338) and the Rwandan Ethics Committee.

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## DATA AVAILABILITY STATEMENT

The data are available and will be provided upon reasonable request.

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