



OPEN Hedonic and eudaimonic pathways of self-forgiveness and suicide-related cognitions in trinidad and tobago: a quantile regression approach

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Self-forgiveness is a multidimensional construct involving both hedonic processes, primarily related to fostering self-compassion and alleviating self-condemnation, and eudaimonic processes, focused on moral repair and value reorientation. While previous research has linked self-forgiveness to lower suicidality, little is known about whether these components operate similarly across different levels of suicide-related cognitions. This study examined the associations between the hedonic (esteem restoration; ERS) and eudaimonic (value reorientation; VRO) components of self-forgiveness and suicide-related cognitions in a general population sample from Trinidad and Tobago, using quantile regression. This cross-sectional study was conducted online via Qualtrics in 2023 with 869 English-speaking adults. Suicide-related cognitions were measured using the Brief Suicide Cognitions Scale, and self-forgiveness was assessed with the Self-Forgiveness Dual-Process Scale, comprising the VRO and ERS subscales. Quantile regression analyses were conducted at the 25th, 50th, and 75th percentiles of suicide-related cognition scores, controlling for demographic characteristics. Robust linear regression using Huber's M-estimator was also performed to assess model stability. Quantile regression indicated that ERS was linked to significantly lower suicide-related cognitions at all examined quantiles, with the strongest associations observed at the 50th and 75th percentiles ($\beta = -0.47$, $p < .001$ for both). VRO (eudaimonic component) showed a significant negative association only at the 75th percentile ($\beta = -0.13$, $p = .045$). For comparison, robust linear regression using Huber's M-estimator showed a significant negative association for ERS, whereas VRO was not statistically significant. This study underscores the importance of examining self-forgiveness beyond average effects, as its components may not operate uniformly across suicide-related-cognition levels. The use of quantile regression highlights these differences and points to the need for future longitudinal research to examine whether these associations reflect processes relevant to suicide prevention.

Keywords Self-forgiveness, Hedonic and eudaimonic processes, Suicide-related cognitions, Quantile regression, Trinidad and Tobago

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Abbreviations

B-SCS	Brief Suicide Cognitions Scale
SF-DPS	Self-Forgiveness Dual-Process Scale
VRO	Value Reorientation (eudaimonic component of self-forgiveness)
ERS	Personal Esteem Restoration (hedonic–personal component of self-forgiveness)
τ (tau, correlation)	Kendall's tau correlation coefficient
τ (tau, regression)	Quantile level in quantile regression
β (beta)	Standardized coefficient
B	Unstandardized coefficient
SE β	Standard error of standardized coefficient
CI	Confidence interval
VIF	Variance Inflation Factor
R ²	Coefficient of determination (pseudo R ² in robust/quantile regression)
M	Mean
SD	Standard deviation
Med	Median
Sk	Skewness
K	Kurtosis

Suicide is a major public health issue in Trinidad and Tobago, which is among the countries with the highest suicide mortality rates in the Caribbean^{1–3}. National estimates suggest approximately 8–9 suicide deaths per 100,000 population each year^{4,5}. The drivers of suicide-related cognitions are multifaceted, involving intertwined psychological, social, and economic determinants. Across the Caribbean, including Trinidad and Tobago, suicidal behavior has been consistently linked to a combination of emotional distress, such as depression and hopelessness, and the lingering impact of traumatic experiences^{3,6,7}. Substance misuse—particularly alcohol and cannabis—also plays a significant role, with acute intoxication often preceding suicide deaths and chronic use worsening underlying mental health conditions¹. These risks occur within a sociohistorical context shaped by colonization, slavery, and indentured servitude, which has contributed to the erosion of traditional practices and the development of varied coping strategies among Afro-Caribbean, Indo-Caribbean, mixed-heritage, and smaller surviving First Peoples communities⁸. While religious and community networks may offer some protection through social integration and moral guidance, their effect is often weakened by economic hardship, interpersonal violence, and barriers to mental health services^{6,9–12}.

The psychological care system in Trinidad and Tobago remains underdeveloped relative to the population's needs⁸. Although the country has made strides in mental health infrastructure and professional training, resources remain insufficient and unevenly distributed. Barriers include financial constraints, stigma, limited public awareness of mental health services, and a shortage of trained personnel^{7,13}. These constraints mean that many individuals at risk of suicide do not receive timely or adequate support.

Given the scarcity of mental health resources, identifying low-cost strategies to enhance resilience is essential, including non-religious approaches, which gain relevance in the context of the global secularization of societies¹⁴. A recent Trinidad and Tobago sample study¹⁵ showed that higher self-forgiveness reduced the impact of stress on substance use cravings, a finding relevant to suicide-related cognitions given the frequent and bidirectional comorbidity between addictive and suicidal behaviors^{16–19}, as well as the broader link between self-forgiveness, stress, and health^{20–22}. Self-forgiveness involves acknowledging one's mistakes, experiencing appropriate remorse, and releasing self-directed negative emotions without excusing harmful behavior²³. The *stress-and-coping model of self-forgiveness*²⁴, extending Lazarus and Folkman's²⁵ transactional theory, conceptualizes it as a coping strategy that alleviates the psychological strain of self-condemnation by integrating emotional, cognitive, and behavioral processes that foster adaptive functioning. Empirical studies have linked self-forgiveness with lower suicidal ideation and attempts, largely through its capacity to reduce shame, guilt, self-stigma, and perceived burdensomeness^{26–29}—key predictors in the interpersonal theory of suicide³⁰. These negative self-evaluative states often involve a struggle with self-condemnation and diminished self-worth, which can intensify psychological distress and hopelessness. According to Webb and Boye³¹, self-forgiveness addresses this burden by restoring self-worth and re-establishing a sense of esteem, underscoring its role as a protective factor in suicide prevention when forgiveness is relevant to recovery (cf³²).

Although overall self-forgiveness has been linked to reduced suicide-related cognitions^{26–29}, little is known about the relative contributions of its different dimensions. The *Dual-Process Model of Self-Forgiveness*^{33,34} extends Bandura's^{35,36} Social Cognitive Theory of Moral Behavior by conceptualizing self-forgiveness as a moral repair strategy addressing inevitable violations of sociomoral values. In this framework, genuine self-forgiveness involves two interrelated processes: *value reorientation* (VRO)—fully accepting responsibility for wrongdoing and committing to align future behavior with moral standards—and *esteem restoration* (ERS)—replacing self-condemnation with self-affirming emotions³⁴. This dual structure integrates decisional and emotional elements of forgiveness³⁷ and distinguishes it from maladaptive responses such as pseudo-self-forgiveness, where self-worth is preserved by denying or minimizing responsibility³⁸. Although not initially conceptualized in hedonic–eudaimonic terms, these components parallel the pathways described by Woodyatt et al.³⁹: a hedonic route (ERS) via self-compassion, which is thought to reduce self-criticism, shame, and avoidance while fostering positive affect by replacing harsh self-judgment with self-kindness and interrupting automatic evaluative processing through nonjudgmental, present-focused awareness^{40–46}, and a eudaimonic route (VRO) via reaffirmation of violated values, which is theorized to restore integrity and social–moral identity because wrongdoing threatens the shared value consensus underlying these identities, such that recommitting to violated values repairs this perceived breach and reaffirms the offender's standing as a moral agent through renewed moral engagement^{47–49}.

This differential pattern is further corroborated by recent evidence indicating that, when the two dimensions are modeled together, VRO is positively associated with guilt and shame, whereas ERS is inversely associated with shame, suggesting that the two dimensions relate to self-punitive emotions in opposite directions, though not unambiguously to adaptation's detriment⁵⁰. Furthermore, while both may lead to the end-state of self-forgiveness, they may not be equally effective in producing the deeper changes necessary for reconciliation and moral restoration following interpersonal harm. For instance, in their empirical work, Woodyatt et al.³⁹ found that the eudaimonic pathway was more strongly associated with genuine self-forgiveness and greater willingness to make amends, suggesting these dimensions may differentially shape outcomes relevant to psychological repair—a possibility that, to date, remains untested in relation to suicide-related cognitions.

Current study

Building on theoretical and empirical evidence for the protective role of self-forgiveness in mitigating suicide-related cognitions, the present study examined whether VRO (eudaimonic component) and ERS (hedonic component) are differentially associated with suicide-related cognitions in a general sample from Trinidad and Tobago. Rather than relying on traditional linear models, which estimate a single average effect and assume uniform associations across individuals, we adopted quantile regression to capture potential heterogeneity in these relationships. This method allows the estimation of predictor effects at different points in the conditional distribution of suicide-related cognition scores, thereby revealing patterns that may be obscured in mean-based analyses. This approach is particularly relevant given evidence that psychological resources often exert stronger protective effects under elevated adversity^{51–53}. Theoretical accounts likewise suggest that forgiveness is especially beneficial for individuals facing substantial emotional burdens, such as those with PTSD^{54,55}, and that self-regulatory capacities (e.g., mindfulness) and positive psychology interventions can yield disproportionately greater benefits for those in higher distress^{56–60}. While the Dual-Process Model³⁴ provides the primary conceptual framework for distinguishing VRO and ERS, the possibility that their associations may vary across levels of psychological burden is also consistent with Hobfoll's⁶¹ Conservation of Resources Theory, which posits that individuals strategically mobilize and invest psychological resources in response to the nature and severity of stressors, particularly when they perceive core resources to be at risk. Although constructs related to hedonic ERS, such as self-compassion, have been shown to moderately buffer against suicidal thoughts and behaviors in a meta-analysis by Suh and Jeong⁶², recent evidence highlights the particular value of eudaimonic well-being for predicting preventive attitudes toward suicide, even when controlling for religiousness and mental health problems⁶³. In addition, eudaimonic motives are more consistently linked to positive mental health than hedonic ones, partly via higher self-control and sustained well-being⁶⁴. PERMA-based research likewise shows a strong correlation between eudaimonic well-being and subjective happiness⁶⁵, underscoring its protective potential. Furthermore, Griffin et al.⁶⁶ introduced the social connection hypothesis, which suggests that reaffirming violated values—such as by acknowledging them and sharing experiences with supportive others—can strengthen interpersonal functioning and belonging, domains often undermined under conditions of suicidality³⁰. This reinforces the expectation that VRO, through its eudaimonic focus on value restoration, may be especially protective under heightened existential distress (cf. existangst³²). Based on these considerations, we hypothesized that VRO would show a stronger negative association with suicide-related cognitions at higher levels of distress, while allowing for variation across the full distribution of suicide-related cognitions. Given evidence of ethnic differences in suicide-related outcomes in Trinidad and Tobago, with lower rates of suicidal ideation reported among Afro-Trinidadian individuals relative to other ethnic groups^{2,67}, self-identified ethnic heritage was included as a covariate in all analyses, in addition to classical sociodemographic categories such as age, gender, and education.

Materials and methods

Participants and procedure

The study was conducted using the online platform Qualtrics in 2023. Participation was restricted to English-speaking individuals living in Trinidad and Tobago. Participants were recruited through social media channels (including Facebook and X), community advertisements, and in-person invitation, resulting in a diverse sample of 869 individuals (36% identified as male, 62% as female, and 2% as other). The largest group self-identified as Afro-Trinidadian and Tobagonian (46%), followed by mixed heritage (34%), Caucasian-Trinidadian and Tobagonian (8%), Indian-Trinidadian and Tobagonian (6%), and other ethnic backgrounds (6%). Educational attainment ranged from less than high school (5%) to high school (41%), two-year degree (12%), bachelor's degree (32%), and master's or doctoral degree (10%). Age ranged from 18 to 82 years ($M = 29.25$, $SD = 11.49$). Participants completed questionnaires measuring suicide-related cognitions and self-forgiveness. The survey took approximately 15 min to complete. The study was conducted with the approval of the university ethics committee.

Measures

Suicide-related cognitions

Suicide-related cognitions were measured using the Brief Suicide Cognitions Scale (B-SCS)⁶⁸. The B-SCS is a 6-item self-report instrument assessing core suicide-relevant beliefs—unlovability, helplessness, and unbearability—that together form the “suicidal belief system,” a cognitive vulnerability associated with enduring risk for suicidal thoughts and behaviors. Participants rated the extent to which each statement was troubling them at the present moment (e.g., “Nothing can help me solve my problems”; “Suicide is the only way to end this pain”) on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores indicating greater severity of suicide-related cognitions. Psychometric studies have shown that the B-SCS scores demonstrate

a unidimensional factor structure, good estimated internal consistency, test–retest reliability, and strong concurrent, convergent, divergent, and predictive validity across both clinical and non-clinical samples⁶⁸. In the present study, Cronbach’s α was 0.86, and McDonald’s ω was also 0.93.

Self-forgiveness

Self-forgiveness as a process (state) was measured using the Self-Forgiveness Dual-Process Scale (SF-DPS)³⁴. This 10-item instrument assesses two distinct but related processes of self-forgiveness: *value reorientation* (VRO; 5 items) and *esteem restoration* (ERS; 5 items). The VRO subscale reflects a cognitive shift toward accepting responsibility for one’s perceived wrongdoing and committing to align future behavior with positive values (e.g., “I will try not to repeat my offense in the future”), whereas the ERS subscale captures the replacement of self-condemning emotions with self-affirming emotions (e.g., “I still love myself even though I did wrong”). Participants responded on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores indicating greater value reorientation or esteem restoration. In the original validation study, scores on both subscales demonstrated good estimated internal consistency and temporal stability over two weeks. In the present study, Cronbach’s α and McDonald’s ω were 0.86 for the VRO and 0.91 for the ERS.

Sensitivity power analysis

Given the fixed sample size ($N=869$), a sensitivity analysis was conducted to determine the minimum standardized effects detectable in the quantile regression models with 80% power at a two-sided $\alpha=0.05$. Based on the bootstrap standard errors obtained for the primary predictors, the analyses were sensitive to standardized effects of approximately $|\beta| = 0.10\text{--}0.18$ across the examined quantiles. Sensitivity was somewhat lower at the 75th percentile, where effects of approximately $|\beta| = 0.17\text{--}0.18$ were required to achieve 80% power.

Statistical analysis

All analyses were conducted using R version 4.5.0⁶⁹. Descriptive statistics were calculated for all study variables. Prior to hypothesis testing, the distributions of suicide-related cognitions, VRO, and ERS were examined for normality using Shapiro–Wilk tests, and homoscedasticity was assessed with the Breusch–Pagan test. Given significant deviations from normality and unequal error variances, non-parametric and robust methods were applied. Bivariate associations between continuous variables were estimated using Kendall’s tau correlation coefficients with 95% confidence intervals. To examine the unique effects of VRO and ERS on suicide-related cognitions while adjusting for sociodemographic covariates, quantile regression analyses were conducted at the 25th, 50th, and 75th percentiles. Robust linear regression using Huber’s M-estimator was also performed to evaluate model stability and facilitate comparison with a standard linear approach. All p-values were two-tailed, with statistical significance set at $p < .05$.

Results

Descriptive statistics for the primary study variables are presented in Table 1. The distributions of suicide-related cognitions, and VRO and ERS—the two domains of self-forgiveness—showed substantial deviations from normality, as indicated by moderate to high skewness and kurtosis values. Shapiro–Wilk tests confirmed significant non-normality for all three variables, with W values ranging from 0.84 to 0.89, $p_s < 0.001$. Furthermore, residuals from the linear regression model also deviated from normality ($W = 0.952$, $p < .001$), and the Breusch–Pagan test indicated a violation of homoscedasticity, $\chi^2_{(14)} = 38.48$, $p < .001$. VIFs, adjusted for model complexity, remained well below commonly used thresholds (e.g., 2.5⁷⁰), suggesting that multicollinearity was not a concern. Considering the observed violations of normality and unequal error variances, subsequent analyses employed non-parametric methods, including Kendall’s tau correlations, quantile regression, and robust linear regression using Huber’s M-estimator.

Kendall’s tau correlations revealed statistically significant associations between all core variables. Suicide-related cognitions were negatively correlated with both ERS ($\tau = -0.28$, $p < .001$) and VRO ($\tau = -0.11$, $p < .001$), the two facets of self-forgiveness. The self-forgiveness dimensions were also positively correlated with each other ($\tau = 0.19$, $p < .001$). According to general guidelines (e.g.⁷¹), Kendall’s tau values in the range of ± 0.10 to ± 0.30 reflect small to moderate associations.

Quantile regression results are presented in Table 2. At the 25th percentile ($\tau = 0.25$), ERS showed a significant negative association with suicide-related cognitions ($\beta = -0.28$, $p < .001$), whereas VRO was non-significant ($\beta = -0.01$, $p = .749$). At the median ($\tau = 0.50$), the negative association between ERS and suicide-related cognitions strengthened ($\beta = -0.47$, $p < .001$), while VRO remained non-significant ($\beta = -0.07$, $p = .079$). At the 75th percentile ($\tau = 0.75$), both self-forgiveness dimensions were significant: VRO was associated with lower suicide-

Variable	M (SD)	Med	Sk	K	Kendall’s tau correlations [95% CI]	
					ERS	VRO
Suicide-Related Cognitions	2.68 (1.62)	2.00	0.72	-0.72	-0.28*** [-0.33, -0.24]	-0.11*** [-0.16, -0.06]
Self-Forgiveness: Value reorientation (VRO)	5.89 (1.14)	6.00	-1.65	3.49	0.19*** [0.13, 0.24]	--
Self-Forgiveness: Esteem restoration (ERS)	5.46 (1.25)	5.80	-1.33	1.90	--	

Table 1. Descriptive statistics for main continuous variables. Note. *** $p < .001$.

Predictor	B	β	SE β	t	p	95% CI β	
						Lower	Upper
τ = 0.25							
Intercept	-3.97	-0.54	0.13	-4.21	<0.001	-0.79	-0.29
Self-Forgiveness: Value reorientation (VRO)	-0.01	-0.01	0.03	-0.32	0.749	-0.07	0.05
Self-Forgiveness: Esteem restoration (ERS)	-0.36	-0.28	0.05	-5.57	<0.001	-0.37	-0.18
Male vs. Female	-0.04	-0.02	0.06	-0.41	0.685	-0.13	0.09
Other vs. Female	-0.35	-0.21	0.27	-0.80	0.422	-0.74	0.31
Age	-0.01	-0.03	0.02	-1.37	0.173	-0.07	0.01
Mixed vs. Afro-Trinidadian	-0.01	-0.01	0.05	-0.01	0.993	-0.10	0.09
Indian vs. Afro-Trinidadian	0.05	0.03	0.13	0.26	0.796	-0.22	0.28
Caucasian vs. Afro-Trinidadian	1.26	0.78	0.18	4.25	<0.001	0.42	1.14
Other ethnic group vs. Afro-Trinidadian	-0.34	-0.21	0.45	-0.46	0.642	-1.09	0.67
High School vs. Less than High School	-0.23	-0.14	0.15	-0.95	0.341	-0.43	0.15
Two-year degree vs. Less than High School	-0.42	-0.26	0.15	-1.75	0.081	-0.54	0.03
Bachelor's degree vs. Less than High School	-0.37	-0.23	0.14	-1.68	0.093	-0.50	0.04
Master's/Doctorate vs. Less than High School	-0.33	-0.20	0.13	-1.5	0.135	-0.47	0.06
τ = 0.50							
Intercept	10.22	1.74	0.21	8.17	<0.001	1.32	2.15
Self-Forgiveness: Value reorientation (VRO)	-0.07	-0.07	0.04	-1.75	0.079	-0.14	0.01
Self-Forgiveness: Esteem restoration (ERS)	-0.61	-0.47	0.05	-8.75	<0.001	-0.57	-0.36
Male vs. Female	-0.23	-0.14	0.07	-2.10	0.036	-0.28	-0.01
Other vs. Female	-1.12	-0.69	0.43	-1.61	0.108	-1.54	0.15
Age	-0.01	-0.06	0.04	-1.60	0.111	-0.13	0.01
Mixed vs. Afro-Trinidadian	0.14	0.09	0.06	1.51	0.131	-0.03	0.20
Indian vs. Afro-Trinidadian	0.10	0.06	0.22	0.29	0.773	-0.37	0.50
Caucasian vs. Afro-Trinidadian	1.26	0.78	0.15	5.19	<0.001	0.49	1.08
Other ethnic group vs. Afro-Trinidadian	0.54	0.34	0.37	0.90	0.370	-0.40	1.07
High School vs. Less than High School	-1.35	-0.84	0.56	-1.49	0.137	-1.94	0.26
Two-year degree vs. Less than High School	-1.60	-0.99	0.57	-1.74	0.082	-2.10	0.12
Bachelor's degree vs. Less than High School	-1.67	-1.03	0.56	-1.84	0.066	-2.13	0.07
Master's/Doctorate vs. Less than High School	-1.53	-0.94	0.56	-1.68	0.094	-2.04	0.16
τ = 0.75							
Intercept	7.93	0.70	0.56	1.24	0.215	-0.40	1.81
Self-Forgiveness: Value reorientation (VRO)	-0.18	-0.13	0.06	-2.01	0.045	-0.26	-0.01
Self-Forgiveness: Esteem restoration (ERS)	-0.61	-0.47	0.07	-7.15	<0.001	-0.60	-0.34
Male vs. Female	-0.48	-0.29	0.14	-2.10	0.036	-0.57	-0.03
Other vs. Female	-1.06	-0.65	0.47	-1.40	0.163	-1.57	0.26
Age	-0.01	-0.08	0.07	-1.13	0.257	-0.23	0.06
Mixed vs. Afro-Trinidadian	0.04	0.02	0.14	0.17	0.868	-0.25	0.29
Indian vs. Afro-Trinidadian	0.23	0.14	0.2	0.73	0.464	-0.24	0.53
Caucasian vs. Afro-Trinidadian	1.79	1.11	0.28	3.96	<0.001	0.56	1.65
Other ethnic group vs. Afro-Trinidadian	-0.19	-0.12	0.53	-0.22	0.824	-1.15	0.92
High School vs. Less than High School	-1.69	-1.04	0.23	-4.48	<0.001	-1.50	-0.59
Two-year degree vs. Less than High School	-2.51	-1.55	0.23	-6.84	<0.001	-2.00	-1.11
Bachelor's degree vs. Less than High School	-2.11	-1.30	0.23	-5.66	<0.001	-1.76	-0.85
Master's/Doctorate vs. Less than High School	-2.12	-1.31	0.27	-4.72	<0.001	-1.85	-0.77

Table 2. Quantile regression predicting suicide-related cognitions at three quantiles (25th, 50th, and 75th Percentile). Note. p-values and 95% confidence intervals were obtained using bootstrapping (1,000 resamples). Pseudo $R^2 = 0.197$. Ethnic heritage was dummy-coded with Afro-Trinidadian and Tobagonian as the reference category; coefficients represent contrasts between each ethnic group and this reference group within a single model estimated on the full sample ($N=869$), not separate models fit within subsamples.

Predictor	B	β	SE β	t	p (approx)	95% CI β	
						Lower	Upper
Intercept	7.22	0.61	0.14	4.19	<0.001	0.33	0.89
Self-Forgiveness: Value reorientation (VRO)	-0.10	-0.07	0.04	-1.78	0.075	-0.13	0.01
Self-Forgiveness: Esteem restoration (ERS)	-0.49	-0.38	0.03	-12.21	<0.001	-0.44	-0.32
Male vs. Female	-0.19	-0.12	0.06	-1.91	0.056	-0.23	0.01
Other vs. Female	-0.97	-0.60	0.51	-1.18	0.238	-1.63	0.40
Age	-0.01	-0.06	0.03	-1.77	0.077	-0.12	0.01
Mixed vs. Afro-Trinidadian	0.06	0.04	0.06	0.54	0.589	-0.09	0.16
Indian vs. Afro-Trinidadian	0.10	0.06	0.12	0.47	0.638	-0.19	0.31
Caucasian vs. Afro-Trinidadian	1.36	0.84	0.11	7.27	<0.001	0.61	1.06
Other ethnic group vs. Afro-Trinidadian	-0.01	-0.01	0.29	-0.01	0.992	-0.58	0.58
High School vs. Less than High School	-0.99	-0.61	0.14	-4.13	<0.001	-0.90	-0.32
Two-year degree vs. Less than High School	-1.43	-0.88	0.16	-5.04	<0.001	-1.20	-0.56
Bachelor's degree vs. Less than High School	-1.31	-0.81	0.15	-5.36	<0.001	-1.11	-0.51
Master's/Doctorate vs. Less than High School	-1.18	-0.73	0.16	-4.47	<0.001	-1.05	-0.41

Table 3. Robust linear regression predicting suicide-related cognitions. Note. Coefficients estimated using robust linear regression with Huber's M-estimator. Approximate p-values and 95% confidence intervals were obtained using bootstrapping (1,000 resamples). Pseudo $R^2 = 0.211$. Ethnic heritage was dummy-coded with Afro-Trinidadian and Tobagonian as the reference category; coefficients represent contrasts between each ethnic group and this reference group within a single model estimated on the full sample ($N = 869$), not separate models fit within subsamples.

related cognitions ($\beta = -0.13$, $p = .045$), and ERS continued to show a robust negative association ($\beta = -0.47$, $p < .001$).

Several covariates exhibited quantile-specific patterns. Male participants reported lower suicide-related cognitions than females at the median ($\beta = -0.14$, $p = .036$) and upper quantile ($\beta = -0.29$, $p = .036$), but not at the lower quantile ($\beta = -0.02$, $p = .685$). Compared to the Afro-Trinidadian reference group, Caucasian participants showed higher suicide-related cognitions across quantiles ($\beta = 0.78$ at $\tau = 0.25$ and $\tau = 0.50$; $\beta = 1.11$ at $\tau = 0.75$; all $p_s < 0.001$). Education level was unrelated to suicide-related cognitions at $\tau = 0.25$ and $\tau = 0.50$, but at $\tau = 0.75$, higher education corresponded to substantially lower suicide-related cognitions (e.g., two-year degree: $\beta = -1.55$, $p < .001$; bachelor's degree: $\beta = -1.30$, $p < .001$).

Overall, the strongest negative associations were observed for ERS, particularly at the median and upper quantiles, with VRO showing a smaller but significant association only at the highest quantile. The pseudo- R^2 values were approximately 0.20, indicating moderate explanatory power across the examined quantiles.

For comparison, we also conducted a robust linear regression using Huber's M-estimator to account for non-normality and heteroscedasticity. Results (Table 3) showed that ERS again showed a significant negative association with suicide-related cognitions ($\beta = -0.38$, $p < .001$), whereas VRO was not significant ($\beta = -0.07$, $p = .075$). The pattern of covariate effects was largely consistent with the quantile regression findings: Caucasian participants reported higher suicide-related cognitions compared to the Afro-Trinidadian reference group ($\beta = 0.84$, $p < .001$). Higher educational attainment was linked to substantially lower suicide-related cognitions, with effects ranging from $\beta = -0.61$ for a high school diploma to $\beta = -0.88$ for a two-year degree and $\beta = -0.81$ for a bachelor's degree ($p_s < 0.001$). The model explained approximately 21% of the variance in suicide-related cognitions (pseudo- $R^2 = 0.211$). These results maintain the overall negative association between esteem restoration and suicide-related cognitions found in the quantile regression, but also demonstrate that a standard linear approach does not capture more subtle patterns—such as the effect of VRO, which became evident only at the 75th percentile—highlighting the advantage of quantile regression for detecting distribution-specific relationships.

Discussion

The present findings provide a nuanced picture of how the two components of self-forgiveness relate to suicide-related cognitions in a general community sample from Trinidad and Tobago. While theoretical accounts and prior work (e.g.^{31,63,64,66}), have underscored the particular relevance of eudaimonic resources such as purpose in life for suicide prevention, contrary to our initial hypotheses, the obtained results indicate that, in our sample, ERS demonstrated the most consistent negative relationship across quantiles, with its association strengthening from the median level and remaining robust at the 75th percentile. VRO, in turn, reached significance only at the highest quantile, suggesting that its association may become more salient at higher levels of suicide-related cognitions. These patterns—detectable only through quantile regression—reinforce the notion that psychological resources can operate differently across the risk continuum^{56–60}, with such heterogeneity evident even in general-population samples.

The fact that VRO showed a significant negative association with suicide-related cognitions only at the 75th quantile in our sample may suggest that individuals engage in these high-cost processes primarily when

suicide-related cognitions—and, by implication, moral or existential disruption³⁰—have reached a high level. In this context, VRO—as defined in the dual-process model of self-forgiveness³⁴—may become particularly relevant when psychological burden reaches a critical level. This interpretation is also consistent with Hobfoll's⁶¹ Conservation of Resources Theory, which provides a complementary perspective suggesting that such processes may restore meaning and mobilize higher-order values when more immediate coping strategies are insufficient. However, they are cognitively demanding, often requiring sustained self-reflection, tolerance of distress, and a willingness to confront morally aversive aspects of the self^{38,39}. Although potentially beneficial, these processes may entail a considerable psychological cost, which could help explain why VRO was associated with suicide-related cognitions only at the highest examined quantile. Such quantile-dependent differentiation of self-forgiveness's associations, though not always in the same direction, has also been documented elsewhere⁷².

In our analyses, the lower quantiles (25th and 50th) represented less burdened segments of the sample. In these contexts, emotional repair via ERS appeared sufficient—being the only significant correlate—to potentially be associated with lower feelings of shame, guilt, hopelessness, and perceived burdensomeness^{26,29}, and correspondingly lower suicide-related cognitions, without necessitating full moral engagement^{64,65}. While less transformative, and not necessarily conducive to genuine self-forgiveness as suggested by Woodyatt et al.³⁹, this form may still be associated with emotional relief and lower shame³⁸, thereby preserving valuable psychological resources in line with Hobfoll's⁶¹ theory.

These initially unexpected results correspond with the recent findings of Griffin et al.⁷³, who validated the same dual-process self-forgiveness scale in a clinical sample of veterans, healthcare workers, and first responders exposed to potentially morally injurious events. In their study, ERS more strongly predicted better mental health outcomes, whereas the benefits of VRO emerged only when ERS was already present. Viewed through the lens of the social connection hypothesis⁶⁶, this suggests that esteem restoration may function as a necessary precursor: only after stabilizing the self can reaffirming violated values foster belonging and genuine self-forgiveness³⁴. This helps explain why ERS remained more strongly associated even when VRO became significant, including at the 75th suicide-related-cognition quantile.

Our findings have implications for contextual models of forgiveness^{31,32}, which frame forgiveness as a natural antidote to the fundamental interface between resentment and suicidal behavior, and identify distinct mediating domains—including biopsychosocial functioning, existential angst emotions, and recovery capital—in the link between self-forgiveness and suicidal behaviors. In Webb et al.'s^{31,32} framework, existangst refers to negative emotions that have developed into philosophical-level psychological distress—that is, existential, teleological, and angst-driven emotional distress. It is possible that this pathway, in which an existential crisis could threaten core values and undermine moral identity, becomes particularly relevant only when overall suicide-related cognitions are elevated—when such cognitions are lower, such emotions might not yet translate into tangible threats to the value system. Under these less severe conditions, the observed associations might perhaps be explained by alternative mediating pathways (although this was not examined here), such as deficits in biopsychosocial functioning or limited environmental resources (cf. recovery capital), as deeper value-oriented restructuring may not yet be activated or required. Once existential distress crosses a critical threshold, VRO may gain importance, but ERS remained associated with more stable self-esteem. In contrast, value restoration is more time-demanding, and in line with Bandura's^{36,74} view, ERS is associated with lower levels of harsh self-sanctions, allowing individuals to preserve agency until such deeper processes become possible. We emphasize that these proposed explanations are speculative; longitudinal and mediational designs are needed to test them empirically.

Furthermore, obtained findings should be discussed in light of Stecz et al.⁶³ (alongside research highlighting the health-promoting role of eudaimonic motives, e.g.^{64,65}), on which our hypotheses were based. Stecz and colleagues reported that purpose in life—a eudaimonic construct—was significantly associated with orientation towards suicide prevention, a positive, future-oriented domain, but not with other dimensions such as suicide (in)comprehensibility or suicide as a solution, where religiousness or general mental health were more relevant. In turn, well-being research⁷⁵ shows that eudaimonic motives—like VRO—tend to align exclusively with positive constructs, whereas hedonic motives link to both positive and negative outcomes. This suggests that eudaimonic processes tied to VRO may be most relevant for fostering positive, life-affirming orientations and may not exert a uniform influence across all suicide-related attitudes—particularly those reflecting negative aspects, as reflected in the indicators assessed in our study.

The associations between self-forgiveness and suicide-related cognitions in this study were independent of classical sociodemographic covariates. Caucasian participants reported higher suicide-related cognitions than Afro-Trinidadian and Tobagonian participants, broadly consistent with prior evidence of lower risk among Afro-Trinidadians relative to other ethnic groups^{2,67}. This pattern may reflect a stronger association of religiousness with lower suicide-related cognitions among Afro-Trinidadians, which has been linked to resilience in local samples^{11,76}, with some evidence that higher religious involvement yields greater psychological benefits in this group¹². Women showed slightly higher scores than men at mid and upper quantiles, consistent with prior findings from this cultural context², though globally men complete suicide more often despite lower reported ideation⁷⁷. Higher education was associated with decreased scores, aligning with evidence that educational attainment confers enduring protective benefits against suicide-related cognitions⁷⁸.

Limitations

The present study has several limitations. First, it remains unclear whether the transgressions committed by participants involved profound value violations—a key factor that may influence whether hedonic (ERS) or eudaimonic (VRO) processes are more strongly engaged. Second, suicidality was measured as a single construct, despite literature indicating that suicidal ideation, planning, and attempts may have distinct psychological correlates and predictors⁶³. This may have obscured potential differential associations between components of

self-forgiveness and specific facets of suicide-related cognitions. Third, the study relied on a non-probability sample drawn from Trinidad and Tobago, which limits the generalizability of the findings to the broader national or regional population. A related limitation is the under-representation of Indian Trinidadians, who comprised only 6% of our sample, despite constituting a proportion of the national population that is typically comparable to or slightly larger than that of Afro-Trinidadians^{11,76}. This imbalance is important to acknowledge, as prior research has consistently indicated that Indian Trinidadians represent the highest risk group for suicide in the country. Future studies should therefore aim for more representative sampling to capture the perspectives of this vulnerable population more accurately. Fourth, the cross-sectional design precludes any causal inference, underscoring the need for longitudinal research to clarify the temporal direction of the observed associations. Given prior evidence that religiousness can exert protective effects against suicide^{11,63} and is associated with forgiveness processes¹², future research would benefit from taking this dimension into account when predicting suicidality. In the present study, we did not address religiousness directly, as our focus was on alternative approaches that may be particularly relevant in the context of ongoing secularization¹⁴. Finally, although self-identified ethnic heritage was included as a covariate, socioeconomic status (SES) was not directly measured and could not be disentangled from ethnicity in the present analyses. This limitation should not, however, be interpreted as implying a straightforward SES confound in either direction: longitudinal census data from Trinidad and Tobago indicate that historical narratives of White economic dominance are increasingly outdated, with income and occupational status becoming more concentrated among Afro- and Indian-Trinidadian groups in recent decades⁷⁹. Future research should directly assess SES to clarify its independent contribution relative to ethnic heritage.

Practical implications

Our findings suggest that self-forgiveness-focused interventions may be a promising direction worth testing for their potential relevance to suicidality, with existing workbook-based programs ranging from brief formats such as *Restore: The Journey Toward Self-Forgiveness* (90 min)^{21,22,80} to more extended approaches like the 7-hour self-forgiveness workbook by Griffin et al.³³. Such programs could further benefit from an expanded focus on techniques for transforming and restoring personal esteem, combined with self-compassion practices—an emphasis that may be particularly important in the context of suicide prevention (e.g., guiding participants to reframe self-condemning statements such as “I am worthless” into constructive self-appraisals like “I made a mistake, but can still love myself even though I did wrong,” supported by exercises that connect these new appraisals to meaningful personal strengths). This could be achieved through evidence-based strategies such as identifying and affirming personal strengths, practicing gratitude journaling, generating self-compassionate letters, or using imagery rescripting to envision oneself responding adaptively in similar future situations. These additions may help individuals more effectively manage guilt, shame, or self-directed anger. Integrating such components into both therapeutic interventions and suicide prevention programs might potentially equip individuals with practical tools associated with lower emotional distress, greater personal meaning, and sustained purpose — though this remains to be tested empirically.

Conclusions

This study provides preliminary evidence that the two core components of self-forgiveness—ERS (hedonic) and VRO (eudaimonic)—relate to suicide-related cognitions in nuanced ways in a general population sample from Trinidad and Tobago. Using quantile regression, we found that ERS was consistently associated with lower suicide-related cognitions across the distribution, with more pronounced links emerging at moderate and high levels. In contrast, VRO showed a significant association only at the highest levels of suicide-related cognitions, suggesting that its relevance may become more pronounced under greater psychological burden.

Data availability

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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References

- Pengpid, S. & Peltzer, K. The prevalence and correlates of suicidal behaviour among adolescents in Trinidad and Tobago. *J. Psychol. Afr.* **31**, 424–429. <https://doi.org/10.1080/14330237.2021.1928926> (2021).
- Ali, A. & Maharajh, H. D. Social predictors of suicidal behaviour in adolescents in Trinidad and Tobago. *Soc. Psychiatry Psychiatr. Epidemiol.* **40**, 186–191. <https://doi.org/10.1007/s00127-005-0846-9> (2005).
- Modeste-James, A., Huggins, C., Freedenthal, S. & Bellamy, J. L. Suicidal Ideation and Its Correlates Among Adolescents in Trinidad and Tobago. *Child Adolesc. Soc. Work J.* **42**, 151–161. <https://doi.org/10.1007/s10560-023-00953-w> (2025).
- Francois, D. K. & Hutchinson, G. Demographic features of homicide and suicide victims in Trinidad and Tobago 2013–2016. *Caribb. Med. J.* **81**, 13–21 (2019).
- Narine, L. Current state of health and health outcomes in Caribbean societies. In: *Caribbean psychology: Indigenous contributions to a global discipline*. Washington: American Psychological Association; 149–169. <https://doi.org/10.1037/14753-007>. (2016).
- Kukoyi, O. Y., Shuaib, F. M., Campbell-Forrester, S., Crossman, L. & Jolly, P. E. Suicidal Ideation and Suicide Attempt Among Adolescents in Western Jamaica. *Crisis* **31**, 317–327. <https://doi.org/10.1027/0227-5910/a000038> (2010).
- Liverpool, S., Prescod, J., Pereira, B. & Trotman, C. Prevalence of mental health and behaviour problems among adolescents in the English-speaking Caribbean: systematic review and meta-analysis. *Discover Mental Health*. **3**, 11. <https://doi.org/10.1007/s44192-023-00037-2> (2023).
- Roopnarine, J. L., Chadee, D. & Primus, M. A. Psychology in Guyana and Trinidad and Tobago. 259–70. https://doi.org/10.1007/978-3-030-87763-7_18 (2022).

9. Maharajh, H. D. & Abdool, P. S. Cultural Aspects of Suicide. *Sci. World J.* **5**, 736–746. <https://doi.org/10.1100/tsw.2005.88> (2005).
10. Blum, R. W. et al. Adolescent health in the Caribbean: Risk and protective factors. *Am. J. Public Health.* **93**, 456–460 (2003).
11. Toussaint, L., Wilson, C. M., Wilson, L. C. & Williams, D. R. Religiosity and suicide in a nationally representative sample of Trinidad and Tobago adolescents and young adults. *Soc. Psychiatry Psychiatr Epidemiol.* **50**, 1441–1450. <https://doi.org/10.1007/s00127-015-1045-y> (2015).
12. Skalski-Bednarz, S. B. et al. Religion and flourishing among Afro-Trinidadians: the influence of proneness to guilt/shame and forgiveness by God on the relationship between religious commitment and health. *Front. Public Health.* **12**. <https://doi.org/10.3389/fpubh.2024.1443960> (2024).
13. Mascayano, F. et al. Stigma toward mental illness in Latin America and the Caribbean: A systematic review. *Brazilian J. Psychiatry.* **38**, 73–85 (2016).
14. Casanova, J. Global Religious and Secular Dynamics. *Brill. Res. Perspect. Relig. Politics.* **1**, 1–74. <https://doi.org/10.1163/25895850-12340001> (2019).
15. Skalski-Bednarz, S. B. et al. Pathways to flourishing: The roles of self- and divine forgiveness in mitigating the adverse effects of stress and substance use among adults in Trinidad and Tobago. *Religions (Basel).* **9**, 1060. <https://doi.org/10.3390/rel15091060> (2024).
16. Yuodelis-Flores, C. & Ries, R. K. Addiction and suicide: A review. *Am. J. Addict.* **24**, 98–104. <https://doi.org/10.1111/ajad.12185> (2015).
17. Dvorak, R. D., Lamis, D. A. & Malone, P. S. Alcohol use, depressive symptoms, and impulsivity as risk factors for suicide proneness among college students. *J. Affect. Disord.* **149**, 326–334. <https://doi.org/10.1016/j.jad.2013.01.046> (2013).
18. Bagge, C. L., Conner, K. R., Reed, L., Dawkins, M. & Murray, K. Alcohol Use to Facilitate a Suicide Attempt: An Event-Based Examination. *J. Stud. Alcohol Drugs.* **76**, 474–481. <https://doi.org/10.15288/jsad.2015.76.474> (2015).
19. Amiri, S. & Behnezhad, S. Alcohol use and risk of suicide: a systematic review and Meta-analysis. *J. Addict. Dis.* **38**, 200–213. <https://doi.org/10.1080/10550887.2020.1736757> (2020).
20. Skalski-Bednarz, S. B. The interplay of forgiveness by God and self-forgiveness: a longitudinal study of moderating effects on stress overload in a religious Canadian sample. *BMC Psychol.* **12**, 717. <https://doi.org/10.1186/s40359-024-02238-y> (2024).
21. Toussaint, L., Barry, M., Bornfriend, L. & Markman, M. Restore: the journey toward self-forgiveness: a randomized trial of patient education on self-forgiveness in cancer patients and caregivers. *J. Health Care Chaplain.* **20**, 54–74. <https://doi.org/10.1080/08854726.2014.902714> (2014).
22. Skalski-Bednarz, S. B., Toussaint, L. L., Surzykiewicz, J., Beyond, H. I. V. & Shame Effects of Self-Forgiveness in Improving Mental Health in HIV-Positive Individuals in Poland. *J. Relig. Health.* **6**, 4232–4254. <https://doi.org/10.1007/s10943-024-02084-7> (2024).
23. Strelan, P. The Measurement of Dispositional Self-Forgiveness. *Handbook of the Psychology of Self-Forgiveness.* 75–86. https://doi.org/10.1007/978-3-319-60573-9_6 (2017).
24. Toussaint, L. L., Webb, J. R. & Hirsch, J. K. Self-Forgiveness and Health: A Stress-and-Coping Model. *Handbook of the Psychology of Self-Forgiveness.* 87–99. https://doi.org/10.1007/978-3-319-60573-9_7 (2017).
25. Lazarus, R. S. & Folkman, S. *Stress, appraisal, and coping* (Springer Publishing Company, 1984).
26. Hirsch, J. K., Webb, J. R., Toussaint, L. L. & Self-Forgiveness Self-Harm, and Suicidal Behavior: Understanding the Role of Forgiving the Self in the Act of Hurting One's Self. In: *Handbook of the Psychology of Self-Forgiveness.* Cham: Springer International Publishing; 249–264. https://doi.org/10.1007/978-3-319-60573-9_18 (2017).
27. Carpenter, T. P. et al. Dispositional self-forgiveness in firefighters predicts less help-seeking stigma and fewer mental health challenges. *Stigma Health.* **5**, 29–37. <https://doi.org/10.1037/sah0000172> (2020).
28. Gilo, T., Feigelman, W. & Levi-Belz, Y. Forgive but not forget: From self-forgiveness to posttraumatic growth among suicide-loss survivors. *Death Stud.* **46**, 1870–1879. <https://doi.org/10.1080/07481187.2020.1864064> (2022).
29. Cleare, S., Gumley, A. & O'Connor, R. C. Self-compassion, self-forgiveness, suicidal ideation, and self-harm: A systematic review. *Clin. Psychol. Psychother.* **26**, 511–530. <https://doi.org/10.1002/cpp.2372> (2019).
30. Van Orden, K. A. et al. The interpersonal theory of suicide. *Psychol. Rev.* **117**, 575–600. <https://doi.org/10.1037/a0018697> (2010).
31. Webb, J. & Boye, C. Self-Forgiveness and Self-Condensation in the Context of Addictive Behavior and Suicidal Behavior. *Subst. Abuse Rehabil.* **15**, 21–30. <https://doi.org/10.2147/SAR.S396964> (2024).
32. Webb, J. R. *Understanding Forgiveness and Addiction: Theory, Research, and Clinical Application* (Routledge, 2021).
33. Griffin, B. J. et al. Efficacy of a self-forgiveness workbook: A randomized controlled trial with interpersonal offenders. *J. Couns. Psychol.* **62**, 124–136. <https://doi.org/10.1037/cou0000060> (2015).
34. Griffin, B. J., Worthington, E. L., Davis, D. E., Hook, J. N. & Maguen, S. Development of the Self-Forgiveness Dual-Process Scale. *J. Couns. Psychol.* **65**, 715–726. <https://doi.org/10.1037/cou0000293> (2018).
35. Bandura, A., Barbaranelli, C., Caprara, G. V. & Pastorelli, C. Mechanisms of moral disengagement in the exercise of moral agency. *J. Pers. Soc. Psychol.* **71**, 364–374. <https://doi.org/10.1037/0022-3514.71.2.364> (1996).
36. Bandura, A. Selective Moral Disengagement in the Exercise of Moral Agency. *J. Moral. Educ.* **31**, 101–119. <https://doi.org/10.1080/0305724022014322> (2002).
37. Davis, D. E. et al. Making a decision to forgive. *J. Couns. Psychol.* **62**, 280–288. <https://doi.org/10.1037/COU0000054> (2015).
38. Woodyatt, L. & Wenzel, M. The psychological immune response in the face of transgressions: Pseudo self-forgiveness and threat to belonging. *J. Exp. Soc. Psychol.* **49**, 951–958. <https://doi.org/10.1016/j.jesp.2013.05.016> (2013).
39. Woodyatt, L., Wenzel, M. & Ferber, M. Two pathways to self-forgiveness: A hedonic path via self-compassion and a eudaimonic path via the reaffirmation of violated values. *Br. J. Soc. Psychol.* **56**, 515–536. <https://doi.org/10.1111/bjso.12194> (2017).
40. Gilbert, P. & Procter, S. Compassionate mind training for people with high shame and self-criticism: overview and pilot study of a group therapy approach. *Clin. Psychol. Psychother.* **13**, 353–379. <https://doi.org/10.1002/cpp.507> (2006).
41. Neff, K. D. & Germer, C. K. A Pilot Study and Randomized Controlled Trial of the Mindful Self-Compassion Program. *J. Clin. Psychol.* **69**, 28–44. <https://doi.org/10.1002/jclp.21923> (2013).
42. Neff, K. D., Hsieh, Y.-P. & Dejitterat, K. Self-compassion, Achievement Goals, and Coping with Academic Failure. *Self Identity.* **4**, 263–287. <https://doi.org/10.1080/1357650044000317> (2005).
43. Neff, K. D. The Development and Validation of a Scale to Measure Self-Compassion. *Self Identity.* **2**, 223–250. <https://doi.org/10.1080/15298860309027> (2003).
44. Skalski-Bednarz, S. B., Toussaint, L. L., Uram, P., Kocur, D. & Krok, D. Self-compassion mediates the influence of mindfulness on subsequent self-forgiveness in a Polish sample. *Sci. Rep.* **15**, 32704. <https://doi.org/10.1038/s41598-025-21198-w> (2025).
45. Toussaint, L. L., Uram, P., Surzykiewicz, J. & Skalski-Bednarz, S. B. The Self-Compassionate Path to Self-Forgiveness: Self-Kindness Enhances and Isolation Inhibits. *Psychol. Rep.* <https://doi.org/10.1177/00332941251400657> (2025).
46. ShamsAlam, B., Farahani, H., Watson, P. & Bagheri, S. A network approach to shame: The central roles of self-criticism, self-compassion and self-forgiveness in an aged-diverse sample. *J. Affect. Disord Rep.* **20**, 100890. <https://doi.org/10.1016/j.jadr.2025.100890> (2025).
47. Shnabel, N., Nadler, A., Canetti-Nisim, D. & Ullrich, J. The Role of Acceptance and Empowerment in Promoting Reconciliation from the Perspective of the Needs-Based Model. *Soc. Issues Policy Rev.* **2**, 159–186. <https://doi.org/10.1111/j.1751-2409.2008.00014.x> (2008).
48. Wenzel, M. & Okimoto, T. G. How acts of forgiveness restore a sense of justice: Addressing status/power and value concerns raised by transgressions. *Eur. J. Soc. Psychol.* **40**, 401–417. <https://doi.org/10.1002/ejsp.629> (2010).

49. Wenzel, M., Woodyatt, L. & Hedrick, K. No genuine self-forgiveness without accepting responsibility: Value reaffirmation as a key to maintaining positive self-regard. *Eur. J. Soc. Psychol.* **42**, 617–627. <https://doi.org/10.1002/ejsp.1873> (2012).
50. Toussaint, L. L. et al. 'Doh Beat Up' and 'Doh Take It on': Exploring Direct and Indirect Associations Between Religious Commitment, Self-Forgiveness and Self-Condensation in Trinidad and Tobago. *Religions (Basel)*. **17**, 634. <https://doi.org/10.3390/rel17060634> (2026).
51. Ford, J., Klibert, J. J., Tarantino, N. & Lamis, D. A. Savouring and Self-compassion as Protective Factors for Depression. *Stress Health*. **33**, 119–128. <https://doi.org/10.1002/smi.2687> (2017).
52. Boase, E.-R. & McLaren, S. Discrimination and suicide risk among transgender and gender-diverse adults: The moderating roles of self-compassion, self-coldness, and gender identity. *Psychol. Sex. Orientat. Gend. Divers.* **11**, 606–618. <https://doi.org/10.1037/sgd0000634> (2024).
53. Toussaint, L., Shields, G. S., Dorn, G. & Slavich, G. M. Effects of lifetime stress exposure on mental and physical health in young adulthood: How stress degrades and forgiveness protects health. *J. Health Psychol.* **21**, 1004–1014. <https://doi.org/10.1177/1359105314544132> (2014).
54. Toussaint, L. & Webb, J. R. Theoretical and empirical connections between forgiveness, mental health, and well-being. In: (ed Worthington, E. L. Jr) *Handbook of forgiveness*. New York, NY: Routledge; 349–362. (2005).
55. Skalski-Bednarz, S. B., Mróz, J. & Kaleta, K. Divine forgiveness measured by the Polish Divine Forgiveness Scale predicts reduced posttraumatic stress disorder symptoms in Catholics living with human immunodeficiency virus. *Psycholog. Relig. Spiritual.* <https://doi.org/10.1037/rel0000639> (2026).
56. Radford, S. et al. Trait Mindfulness as a Limiting Factor for Residual Depressive Symptoms: An Explorative Study Using Quantile Regression. *PLoS One*. **9**, e100022. <https://doi.org/10.1371/journal.pone.0100022> (2014).
57. Roxas, M. M., David, A. P., Aruta, J. J. B. R. & Compassion Forgiveness and Subjective Well-Being among Filipino Counseling Professionals. *Int. J. Advancement Counselling*. **41**, 272–283. <https://doi.org/10.1007/s10447-019-09374-w> (2019).
58. Zhang, Q., Ting-Toomey, S., Oetzel, J. G. & Zhang, J. The Emotional Side of Forgiveness: A Cross-Cultural Investigation of the Role of Anger and Compassion and Face Threat in Interpersonal Forgiveness and Reconciliation. *J. Int. Intercultural Communication*. **8**, 311–329. <https://doi.org/10.1080/17513057.2015.1087094> (2015).
59. Parks, A. C., Della Porta, M. D., Pierce, R. S., Zilca, R. & Lyubomirsky, S. Pursuing happiness in everyday life: The characteristics and behaviors of online happiness seekers. *Emotion* **12**, 1222–1234. <https://doi.org/10.1037/a0028587> (2012).
60. Sergeant, S. & Mongrain, M. Distressed users report a better response to online positive psychology interventions than nondistressed users. *Can. Psychol.* **56**, 322–331. <https://doi.org/10.1037/cap0000034> (2015).
61. Hobfoll, S. E. Conservation of resources theory: Its implication for stress, health, and resilience. In: (ed Folkman, S.) *The Oxford handbook of stress, health, and coping*. Oxford University Press; 127–147. (2011).
62. Suh, H. & Jeong, J. Association of Self-Compassion With Suicidal Thoughts and Behaviors and Non-suicidal Self Injury: A Meta-Analysis. *Front. Psychol.* **12**. <https://doi.org/10.3389/fpsyg.2021.633482> (2021).
63. Stecz, P., Slezáková, A., Millová, K. & Nowakowska-Domagala, K. The Predictive Role of Positive Mental Health for Attitudes Towards Suicide and Suicide Prevention: Is the Well-Being of Students of the Helping Professions a Worthwhile Goal for Suicide Prevention? *J. Happiness Stud.* **21**, 1965–1984. <https://doi.org/10.1007/s10902-019-00163-1> (2020).
64. Zeng, Z. & Chen, H. Distinct Associations of Hedonic and Eudaimonic Motives with Well-Being: Mediating Role of Self-Control. *Int. J. Environ. Res. Public Health*. **17**, 5547. <https://doi.org/10.3390/ijerph17155547> (2020).
65. Goodman, F. R., Disabato, D. J., Kashdan, T. B. & Kauffman, S. B. Measuring well-being: A comparison of subjective well-being and PERMA. *J. Posit. Psychol.* **13**, 321–332. <https://doi.org/10.1080/17439760.2017.1388434> (2018).
66. Griffin, B. J. et al. Perpetrators' reactions to perceived interpersonal wrongdoing: The associations of guilt and shame with forgiving, punishing, and excusing oneself. *Self Identity*. **15**, 650–661. <https://doi.org/10.1080/15298868.2016.1187669> (2016).
67. Ruiz Camacho, R. & Sukhram, S. D. Indo-Caribbean Youth and Suicidal Behavior: A Systematic Review. *Int. J. Environ. Res. Public Health*. **21**, 801. <https://doi.org/10.3390/ijerph21060801> (2024).
68. Rudd, M. D. & Bryan, C. J. The Brief Suicide Cognitions Scale: Development and Clinical Application. *Front. Psychiatry*. **12**. <https://doi.org/10.3389/fpsyg.2021.737393> (2021).
69. R Core Team. *R: A language and environment for statistical computing* (R Foundation for Statistical Computing, 2022). <https://www.r-project.org/>
70. O'Brien, R. M. A Caution Regarding Rules of Thumb for Variance Inflation Factors. *Qual. Quant.* **41**, 673–690. <https://doi.org/10.1007/s11135-006-9018-6> (2007).
71. Kraemer, H. C. et al. Measures of Clinical Significance. *J. Am. Acad. Child. Adolesc. Psychiatry*. **42**, 1524–1529. <https://doi.org/10.1097/00004583-200312000-00022> (2003).
72. Skalski-Bednarz, S. B., Toussaint, L. L., Uram, P. & Atroszko, P. Still logged in? Self-forgiveness is linked to lower fear of missing out (FoMO) only at lower levels. *Educational Dev. Psychol.* 1–13. <https://doi.org/10.1080/20590776.2026.2693487> (2026).
73. Griffin, B. J. et al. Properties of the modified self-forgiveness dual-process scale in populations at risk for moral injury. *Stress Health*. **40**. <https://doi.org/10.1002/smi.3413> (2024).
74. Bandura, A. *Self-efficacy: the exercise of control* (W.H. Freeman, 1997).
75. Gentzler, A. L., DeLong, K. L., Palmer, C. A. & Huta, V. Hedonic and eudaimonic motives to pursue well-being in three samples of youth. *Motiv Emot.* **45**, 312–326. <https://doi.org/10.1007/s11031-021-09882-6> (2021).
76. Stoltenborgh, M., Bakermans-Kranenburg, M. J., Alink, L. R. A. & van IJzendoorn, M. H. The Prevalence of Child Maltreatment across the Globe: Review of a Series of Meta-Analyses. *Child Abuse Rev.* **24**, 37–50. <https://doi.org/10.1002/car.2353> (2015).
77. Sher, L. Suicide in men: an underappreciated public health challenge. *Eur. Arch. Psychiatry Clin. Neurosci.* **270**, 277–278. <https://doi.org/10.1007/s00406-019-01041-w> (2020).
78. Phillips, J. A. & Hempstead, K. Differences in U.S. Suicide Rates by Educational Attainment, 2000–2014. *Am. J. Prev. Med.* **53**, e123–e130. <https://doi.org/10.1016/j.amepre.2017.04.010> (2017).
79. Kelly, M. D. A. The changing terrain of racial inequality in Trinidad and Tobago. *Res. Soc. Stratif Mobil.* **86**, 100826. <https://doi.org/10.1016/j.rssm.2023.100826> (2023).
80. Toussaint, L., Neal, K. L. & Barry, M. *Restore: The Journey to Self-Forgiveness: Evaluation of an Online Self-Forgiveness Curriculum in College Students*. *J. Coll. Character*. **25**, 1–19. <https://doi.org/10.1080/2194587X.2023.2294201> (2024).

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Author contributions

S.B.S-B., J.W., and L.L.T. jointly conceptualized and designed the study. C.M.W. and L.L.T. collected the data. S.B.S-B. conducted the statistical analyses and drafted the initial manuscript. J.W., L.L.T., and E.L.W. contributed

to the interpretation of results and critically revised the manuscript. C.M.W., D.R.W., S.R., J.S., and E.L.W. provided theoretical input and critical feedback throughout the writing process. All authors reviewed and approved the final version of the manuscript.

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Declarations

Competing interests

The authors declare no competing interests.

Human ethics and consent to participate

All procedures involving human participants were conducted in accordance with the ethical standards of the institutional and/or national research committees, the 1964 Helsinki Declaration and its later amendments, and the American Psychological Association (APA) Ethical Guidelines. The study was approved by the Institutional Review Board of University of the Southern Caribbean (USC-RE-REC-002-2023-0274; 23 February 2023). All participants provided informed consent after receiving detailed information about the study's aims and procedures.

Consent for publication

Participants were informed that participation was voluntary and that they could withdraw at any point. They agreed that their anonymized data could be analyzed and published for scientific purposes.

Additional information

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