

Est.
1841

YORK
ST JOHN
UNIVERSITY

Duffy, Jessica ORCID logoORCID:
<https://orcid.org/0009-0004-8159-8776>, Cole, Scott ORCID
logoORCID: <https://orcid.org/0000-0001-8176-283X>, Charura,
Divine ORCID logoORCID: <https://orcid.org/0000-0002-3509-9392>
and Shevchenko, Jennifer ORCID logoORCID:
<https://orcid.org/0000-0002-8717-0437> (2024) Anxiety, Self-
Satisfaction and Self-Defining Events: Exploring the Inter-Related
Dimensions of the Self. Identity. pp. 1-13.

Downloaded from: <https://ray.yorks.ac.uk/id/eprint/10733/>

The version presented here may differ from the published version or version of record. If
you intend to cite from the work you are advised to consult the publisher's version:

<https://doi.org/10.1080/15283488.2024.2390148>

Research at York St John (RaY) is an institutional repository. It supports the principles of
open access by making the research outputs of the University available in digital form.
Copyright of the items stored in RaY reside with the authors and/or other copyright
owners. Users may access full text items free of charge, and may download a copy for
private study or non-commercial research. For further reuse terms, see licence terms
governing individual outputs. [Institutional Repository Policy Statement](#)

RaY

Research at the University of York St John

For more information please contact RaY at ray@yorks.ac.uk



Identity

An International Journal of Theory and Research

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/hidn20

Anxiety, Self-Satisfaction and Self-Defining Events: Exploring the Inter-Related Dimensions of the Self

Jessica Duffy, Scott Cole, Divine Charura & Jennifer Shevchenko

To cite this article: Jessica Duffy, Scott Cole, Divine Charura & Jennifer Shevchenko (24 Sep 2024): Anxiety, Self-Satisfaction and Self-Defining Events: Exploring the Inter-Related Dimensions of the Self, *Identity*, DOI: [10.1080/15283488.2024.2390148](https://doi.org/10.1080/15283488.2024.2390148)

To link to this article: <https://doi.org/10.1080/15283488.2024.2390148>



© 2024 The Author(s). Published with license by Taylor & Francis Group, LLC.



Published online: 24 Sep 2024.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

Anxiety, Self-Satisfaction and Self-Defining Events: Exploring the Inter-Related Dimensions of the Self

Jessica Duffy, Scott Cole, Divine Charura, and Jennifer Shevchenko

School of Education, Language and Psychology, York St John University, York, UK

ABSTRACT

Increasing self-satisfaction could reduce anxiety symptomology; however, strategies to enhance self-satisfaction are relatively unexplored. The primary aim of the present research was to examine the relationship between self-defining events (past and future), self-satisfaction, and anxiety. In total, 155 students (78.1% female, mean age = 20.54, $SD = 5.49$) were recruited from an English University. Participants were asked to record the content and valence of three self-defining memories and self-defining future-projections. Path analysis showed that past and future valence were positively related to self-satisfaction, which was negatively related to anxiety. Content analysis showed a significant positive relationship between self-satisfaction and the frequency of achievement-orientated past events and recreational future events. In addition, there was a significant negative relationship between self-satisfaction and the frequency of life-threatening past events. Overall, these findings present new avenues for future interventions designed to increase self-satisfaction through targeting the valence of self-defining past and future events. In addition, the findings from the content analysis could facilitate the development of more targeted interventions that for instance, focus on promoting achievement-oriented and recreational experiences while mitigating the impact of life-threatening events. These strategies could prove effective in enhancing self-satisfaction and subsequently reducing anxiety.

KEYWORDS

Anxiety; self-satisfaction; self-defining events

Introduction

A student is dissatisfied with their sense of self, believing that they are incompetent and not what they ought to be. This scenario illustrates an example of low self-satisfaction, a psychological construct that refers to how individuals evaluate their own features, to determine level of self-contentment (Cecen, 2023). It has predominantly been investigated as a domain of life satisfaction (e.g., Huebner & Gilman, 2002); however, a recent scale was developed to assess satisfaction with the self specifically. The *self-satisfaction scale (3S)* (Cecen, 2023) assesses contentment with the self across seven specific domains including: personality, cognition, psychological, physical health, appearance, sexual and social. Although self-satisfaction is highly correlated with related measures such as self-esteem (i.e., feelings of self-worth; Cecen, 2023), they are still distinct concepts. For instance, in the example illustrated above, the student's dissatisfaction could coexist with high self-esteem. The student may feel that they have high potential (and thus, high self worth) but are currently dissatisfied with their sense of self because they have failed to achieve their own personal standards.

Level of self-satisfaction reflects an individual's internal relationship with themselves and as such, can significantly influence anxiety symptomology (Diener & Diener, 2009; Muris et al., 1998).

CONTACT Jennifer Shevchenko  j.shevchenko@yorks.ac.uk  School of Education, Language and Psychology, York St John University, York YO31 7EX

© 2024 The Author(s). Published with license by Taylor & Francis Group, LLC.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

However, although research shows that low self-satisfaction, or self-dissatisfaction, is linked to high anxiety (Muris et al., 1998), the factors that contribute to this relationship are less understood. The present study aimed to explore the role of the extended self (the conception of oneself that extends beyond the present into the personal past and future) in determining level of self-satisfaction and thus, anxiety symptomology in a student sample. University-level students are at particular risk of developing an anxiety disorder (Asher BlackDeer et al., 2023; Chi et al., 2023) thus, for the present study, it was important to understand what contributes to high anxiety in this population specifically.

The valence of self-defining events

Self-satisfaction is rooted in the present and represents how individuals feel about themselves as they are currently. However, it is suggested that self-satisfaction is determined through a process of self-evaluation, where individuals will consult knowledge about the self that extends beyond the present (Cecen, 2023). This could include memories of past events and projections of who one could become in the future. However, not all past and future events will be referred to during the process of self-evaluation; most memories and future projections are not important for one's identity. Instead, individuals will refer to self-defining events i.e., salient memories and future projections that reflect importance to the self (Conway et al., 2004; D'Argembeau et al., 2012). Self-defining events connect the present-self with their extended self counterparts and aid in the formation of an overall life story (D'Argembeau et al., 2012; Singer & Salovey, 1993). Self-defining events are based at least one year from the present and represent clear images that hold significance to the self (Singer & Blagov, 2000, 2004). When represented, self-defining events generate strong feelings that reflect enduring themes. This could include becoming a parent for the first time or the death of a close relative.

The process of linking self-defining events to the present-self are called self-event connections (McAdams, 1996). Self-event connections help to explain who one is in the present and are generated to create a sense of continuity across time (Pasupathi et al., 2007). These connections form the foundation of our self-concept, shaping how we perceive ourselves in the present moment. As such, individuals who draw on more negative past and future events to form connections are suggested to evaluate the present-self, and thus their level of self-satisfaction, more critically (Banks & Salmon, 2013; Holm & Thomsen, 2018). For instance, during self-evaluation, a student may recall failing to achieve their target grades in high school and imagine that they will continue to be unsuccessful during their university studies. In this scenario, the student is likely to evaluate their capabilities and level of self-satisfaction more critically than if they were to draw positive self-event connections. Thus, the valence of the extended self could play an important role in determining self-satisfaction and hence could be a target for interventions designed to reduce anxiety symptomology.

Indeed, some research has shown the potential benefits of positive memory implantation for reducing anxiety (Nourkova & Vasilenko, 2018). In this study, participants were placed into a hypnotic state and positive past events were "implanted" into their long-term memory, through mental imagery techniques. The individuals who received the positive memory implantation reported a significant decrease in anxiety after a four-month delay. Similarly, research suggests potential benefits of memory rescripting for anxiety reduction. Memory rescripting involves rewriting negative past experiences to result in positive outcomes (Strachan et al., 2020). Additionally, although relatively under-researched, initial evidence indicates potential benefits of interventions focussing on positive future-self scenarios for anxiety reduction (Duffy et al., 2024). In these studies, the participants were asked to complete a positive thinking intervention called the Best Possible Self Task (King, 2001) which requires participants to elaborate on their ideal future. Overall, the best possible self-task has been found to significantly reduce anxiety (Duffy et al., 2024).

Positive thinking interventions are suggested to be effective at reducing anxiety because they correct a bias to recall and imagine more negative self-defining events (Marsh et al., 2019). However, research exploring the relationship between anxiety and the valence of past and future events has reported inconsistent findings. For instance, some research has shown that high

anxiety is associated with more negative self-defining events (Krans et al., 2014; Wenzel et al., 2012), whereas other research has reported no significant relationship between anxiety and the valence of self-defining events (Irvine, 2017; Rubin, 2005). Thus, positive, past and future, thinking interventions may not reduce anxiety by correcting a negative thinking bias. An alternative explanation is that positive thinking interventions reduce anxiety indirectly through the present-self, where, positive self-defining events boost present-self view, which can then reduce anxiety. The present study aimed to examine this theory using self-satisfaction as a measure of the present-self. Consequently, the primary aim of the present study was to explore whether the relationship between extended-self valence (past and future) and anxiety is mediated by self-satisfaction. Importantly, this synthesizes areas of research that have historically been studied independently, and in disciplinary silos (e.g., self-satisfaction examined mainly in the personality and individual differences literature) – in order to highlight new links between these constructs.

The content of self-defining events

The present study also aimed to explore the relationship between self-satisfaction and the content of self-defining events. Here, content is defined as the predominant theme represented within event descriptions (Thorne & McLean, 2001). Investigating the content of self-defining events, in addition to their valence, is crucial as it provides insights into the specific domains of thought content that may serve as indicators of self-satisfaction. Understanding these dimensions of self-satisfaction could lead to a more comprehensive understanding of the relationship between self-defining events and self-satisfaction, which could facilitate the development of more targeted interventions for reducing anxiety. These results could also inform narrative-based therapies where distressing thoughts are identified and the client and counselor work together to coauthor alternative stories (Madigan, 2011).

To facilitate the investigation, a coding manual, developed by Thorne and McLean (2001) was utilized which classifies the content of events into one of the following categories: *life threatening events*, *recreational events*, *relationship events*, and *achievement orientated events*. To our knowledge, the relationship between self-satisfaction and the content of self-defining past and future events has yet to be investigated. As such, the present study will draw upon related fields of research to understand how self-satisfaction could relate to the content of self-defining events in a student sample.

Research with university-level students indicates that the most prevalent self-defining events often relate to interpersonal relationships (Blagov & Singer, 2004). This is unsurprising as self-defining events typically reflect current concerns, and during late adolescence, maintaining relationships with parents and peers is a priority (Lawrence & Cerniglia, 2020). In addition, research demonstrates that active and extensive social networks in the present are predictive of higher levels of life satisfaction and happiness (Amati et al., 2018). The link between interpersonal relationships and positive outcomes can be attributed to their role in boosting self-esteem and fulfilling the innate need for belongingness (Leary & Baumeister, 2000). As such, given the relationship between interpersonal relationships and positive outcomes, the frequency of events in this category could be related to self-satisfaction. Thus, individuals who create more inter-personal events (in the past or future) could display higher levels of self-satisfaction.

The second category is self-defining events that center around threats, including events that pose a threat to the individual or someone they know (Thorne & McLean, 2001). Previous research has demonstrated a significant association between past trauma and both life and self-satisfaction (Buccioli & Zarri, 2020; Cecen & Gümüş, 2024). Indeed, evidence shows that past trauma can significantly impact the development and stability of an individual's sense of self (Kouvelis & Kangas, 2021) and can result in individuals expressing difficulties in defining their personal attributes clearly (i.e., low self-concept clarity; Binsale, 2017). As a result, individuals with past trauma could struggle to define their positive attributes leading to feelings of low self-worth and potentially low self-satisfaction (Wong

et al., 2016). As such, the frequency of life-threatening events based in the past could be related to levels of self-satisfaction in the present.

The third category is recreational events which include events related to hobbies and travel (Thorne & McLean, 2001). These events are typically pursued for pleasure, and research shows that plans involving recreational events are linked to life-satisfaction (Riddick & Stewart, 1994). In general, making enjoyable plans for the future (and considering their outcomes) is associated to higher life satisfaction and overall well-being (Azizli et al., 2015; MacLeod, 2012). Thus, in relation to the present study, individuals could evaluate themselves, and their levels of self-satisfaction, more negatively if they have less enjoyable events planned in the future. Therefore, individuals who create less recreational self-defining future events could display lower levels of self-satisfaction.

Finally, the last category is achievement-orientated events which include efforts to achieve a goal (Thorne & McLean, 2001). Achievements, particularly academic achievements, are highly salient for university-level students with many reporting concerns over failure (Hjeltnes et al., 2015). In one sense, achievement-related past events could facilitate a positive self-image (and thus, potentially high self-satisfaction) and boost belief in capabilities (Purkey, 1970). However, expectations of future achievements could also have a similar effect on self-view and thus could be just as important for self-satisfaction (Maruyama et al., 1981). Thus, people could evaluate their level of self-satisfaction based on the achievements they have fulfilled in the past and the achievements they could fulfill in the future. Individuals who have more achievement-related events could be more satisfied with who they are in the present.

The current study

The primary aim of the present research was to examine a mediation pathway to understand the relationship between the valence of self-defining events (past and future), self-satisfaction and anxiety. Consistent with previous research (Muris et al., 1998), it was hypothesized that there would be a significant negative relationship between self-satisfaction and anxiety, where self-satisfaction will increase as anxiety decreases. Also, since individuals could utilize past and future self-knowledge to determine level of self-satisfaction, it was hypothesized that there would be a significant positive relationship between self-satisfaction and the valence of the extended self. Thus, as events from the past and the future become more positive, level of self-satisfaction will increase. However, consistent with previous research (Irvine, 2017; Rubin, 2005) it was hypothesized that there would be no significant relationship between anxiety and the valence of the extended self. Instead, the present study proposed a path model where past and future valence could indirectly impact anxiety through self-satisfaction. Thus, the valence of the extended-self could determine level of self-satisfaction which, in turn, could contribute to anxiety symptomology.

In addition, the present study aimed to investigate the relationship between self-satisfaction and the content of self-defining events. First, regarding self-defining past events, it was hypothesized that there would be significant positive relationship between self-satisfaction and the frequency of achievement-oriented events and relationship events, where self-satisfaction will increase as the frequency of achievement-oriented and relationship events increase. In addition, it was hypothesized that there would be a significant negative relationship between self-satisfaction and the frequency of life-threatening events, where self-satisfaction will decrease as the frequency of life-threatening events increase. Next, regarding self-defining future events, it was hypothesized that there would be significant positive relationship between self-satisfaction and the frequency of achievement-oriented events, relationship events and recreational events, where self-satisfaction will increase as the frequency of achievement-oriented, relationship, and recreational events increase.

Methods

Participants

One hundred and fifty-five participants were recruited through university research participation (78.1% female, mean age = 20.54, $SD = 5.49$). The participants received points as partial fulfillment to a module requirement. All of the participants were recruited from a mid-sized public university in Northern England. During data collection, the university demographic consisted of predominantly white students residing in the UK. All participants provided informed consent and ethics approval was provided by a university ethics committee. A minimal sample size of 105 was determined based on a priori power analysis conducted on MedPower (partial $r = .3$, $\alpha = .05$ and power = .80; Kenny, 2017).

Materials

Generalised anxiety disorder questionnaire (GAD-7)

The Generalised Anxiety Disorder Questionnaire (GAD-7) (Spitzer et al., 2006) is a 7-item measure assessing generalized anxiety; however, it is also suitable for use in heterogeneous samples (Beard & Björgvinsson, 2014). The present study employed the GAD-7 as a measure of anxiety symptom severity rather than a screening tool for generalized anxiety disorder specifically. Items are rated on 4-point scales (0 = not at all, 3 = nearly every day). Scores range from 0 to 21. Greater scores indicate greater anxiety symptomology. The GAD-7 demonstrates good reliability and validity (Byrd-Bredbenner et al., 2020).

Self-defining memories and future projections task

Three self-defining memories and future projections were collected with the adapted version of the self-defining memory task (D'Argembeau et al., 2012; Singer & Blagov., 2001). First, participants were provided with a definition of self-defining events “*Self-defining events are personal events (memories or future events) with the following specific attributes: (1) Needs to be based at least 1 year from the present, (2) Needs to be important and vividly represented, (3) Needs to be something that you or others would use to explain who you are, (4) Needs to be an event related to an important and enduring theme, issue, conflict, or concern from your life, (5) It could be either a positive or a negative event; the only important aspect is that it generates strong feelings, (6) It should be an event that you have thought about many times*”. Participants were then introduced to a scenario “*We need you now to imagine a situation where you've met someone you like very much and, during a walk, you both agree to help the other get to know the “real you.” In the course of the conversation, several personal events, past or future, are evoked, events that convey powerfully the person you currently are.*” And were asked to type 3 past events and 3 future events that define who they are and rate each event on a measure of valence (“*How positive is your self-defining past/future event?*”). Valence was assessed on a 5-point Likert scale (*Very negative = 1–Very positive = 5*) with higher scores indicating more positive events.

Self-satisfaction scale (3S)

The Self-Satisfaction Scale (3S; Cecen, 2023) assesses satisfaction with the self across seven domains: social, physical health, cognitive, psychological, physical appearance, sexual, and personality characteristics. Items are rated on 5-point scales (0=completely disagree – 4 = completely agree). Higher scores indicate higher self-satisfaction. The 3S demonstrates good reliability and validity (Cecen, 2023).

Procedure

The study was presented on Qualtrics (<https://www.qualtrics.com>), and the participants could complete the study in a place of their choosing. Following the consent procedure, the participants completed demographics, the self-satisfaction scale, and the GAD-7. The order in which the

questionnaires were presented was randomized. The participants then completed the self-defining events task and recorded three past and future events. The study was approved by York St John university ethics committee.

Data analysis

Event valence

Bivariate relationships were assessed with SPSS version 29. Path Analysis with AMOS.29 was used to examine the mediation model with 5000 bootstrap samples. The valence of past and future events were the predictors, self-satisfaction was the mediator, and anxiety was the outcome. Skewness and Kurtosis values indicated no departure from normality. Maximum likelihood was used to estimate model fit. The model was considered acceptable if the Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) were greater than .9, and the Root Mean Square Error of Approximation (RMSEA) was below .08 (Byrne, 2012; Hu & Bentler, 1998). The indirect effects were considered significant if the 95% confidence intervals did not contain zero. All data have been made publicly available at the open science framework repository and can be accessed at https://osf.io/vec7x/?view_only=5e0daa2d59944dafa21edbc187b81615.

Event content coding

The self-defining events (past and future) were coded into one of the four categories established by Thorne and McLean (2001). The four event categories were life-threatening events, leisure events, achievement events, and relationship events (Thorne & McLean, 2001, 2002). Life threatening events are defined as events that pose a threat to the responder or someone they know, including physical or sexual assault, injury, illness, or death. Leisure events are defined as recreational activities including hobbies and travel. Achievement events include efforts to achieve goals regardless of the outcome (pass or fail). Finally, relationship events detail inter-personal relationships including positive and negative experiences. Two researchers independently coded 10% of all events and inter-rater reliability was calculated using Cohen's Kappa. Agreement between raters was good ($k = .77$). Disagreements between the two researchers were discussed in order to reach a consensus. Percentage of events in each category was calculated, and bivariate correlations were used to assess the relationship between self-satisfaction and percentage frequency.

Results

To examine the main hypothesis, a series of correlations were first performed to assess the relationship between self-satisfaction, anxiety and self-defining events¹. A path analysis was then conducted to investigate whether self-satisfaction mediates the relationship between extended-self valence and anxiety. To examine the second hypothesis, a content analysis was performed and events were categorized into one of four categories: life-threatening events, interpersonal relationships, achievements, and recreational events. Correlational analyses were then performed to examine the relationship between self-satisfaction and the frequency of events in the four coded categories.

Event valence

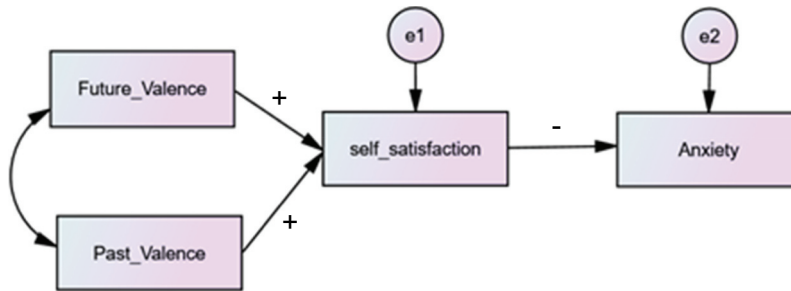
Bivariate correlations

Descriptive statistics and bivariate correlations were performed to assess the relationship between anxiety, self-satisfaction, and the valence of past and future events (see Table 1). First, higher anxiety

Table 1. Cronbach's alpha, descriptive statistics and bivariate correlations with 95% confidence intervals.

	<i>a</i>	<i>M (SD)</i>	1	2	3
(1) Anxiety	.9	9.19 (5.06)			
(2) Self-Satisfaction	.95	58.9 (22.13)	-.49*** [-.61, -.36]		
(3) Past valence		3.15 (.99)	-.11 [-.27, .05]	.29*** [.14, .44]	
(4) Future valence		4.54 (.56)	-.07 [-.23, .09]	.28** [.13, .43]	.18* [.01, .33]

* = $p < .05$, ** = $p < .01$, *** = $p < .001$.

**Figure 1.** Path analysis depicting the proposed relationship between extended-self valence, self-satisfaction and anxiety.

was significantly associated to lower self-satisfaction ($rs(153) = -.49, p < .001$). Next, higher self-satisfaction was significantly associated to higher (more positive) past ($rs(153) = .29, p < .001$) and future events ($rs(153) = .28, p < .001$). Higher past valence was also associated to higher future valence ($rs(153) = .18, p = .028$). However, there was no significant relationship between anxiety and the valence of past ($rs(153) = -.11, p = .170$) or future events ($rs(153) = -.07, p = .380$).

Path analysis

The model, illustrated in Figure 1, indicated acceptable fit (RMSEA=.06, TLI = .953, CFI = .984). Analysis of estimates showed that all paths were significant, indicating that self-satisfaction mediated the relationship between event valence and anxiety. Specifically, both past ($\beta = 6, SE = 1.7, p < .001$) and future ($\beta = 8.74, SE = 3.03, p = .004$) valence were positively related to self-satisfaction which was negatively related to anxiety ($\beta = -.11, SE = .02, p < .001$). There was also a significant covariance between past and future valence ($\beta = .1, SE = .05, p = .022$). Bootstrapped indirect effects with 95% confidence intervals showed that self-satisfaction significantly mediated the relationship between past valence and anxiety ($b = -.13, 95\% \text{ CI } [-.22, -.06]$). In addition, self-satisfaction significantly mediated the relationship between future valence and anxiety ($b = -.11, 95\% \text{ CI } [-.19, -.04]$).

Event content

On average past events contained 300.12 ($Mdn = 183.67$) characters (letters and punctuation without space) and future events contained 158.39 ($Mdn = 122.33$) characters. A Wilcoxon test confirmed that past events contained significantly more characters compared to future events $Z = -9.62, p < .001$. However, there was no significant relationship between self-satisfaction and the average character length of past events $rs(153) = -.09, p = .265$ and future events $rs(153) = -.06, p = .494$. Similarly, there was no significant relationship between anxiety and the average character length of past events $rs(153) = -.04, p = .636$ and future events $rs(153) = -.00, p = .964$.

In total, participants recorded 462 past self-defining events and 463 future self-defining events. Figure 2 depicts the frequency of events in each category. First regarding past events, in total, 102 were related to life-threats, 46 were related to recreation, 163 were related to interpersonal relationships, and 95 were related to achievements. Next, regarding future events, in total, 15 were related to life-threats, 38 were related to recreation, 123 were related to interpersonal relationships, and 251 were

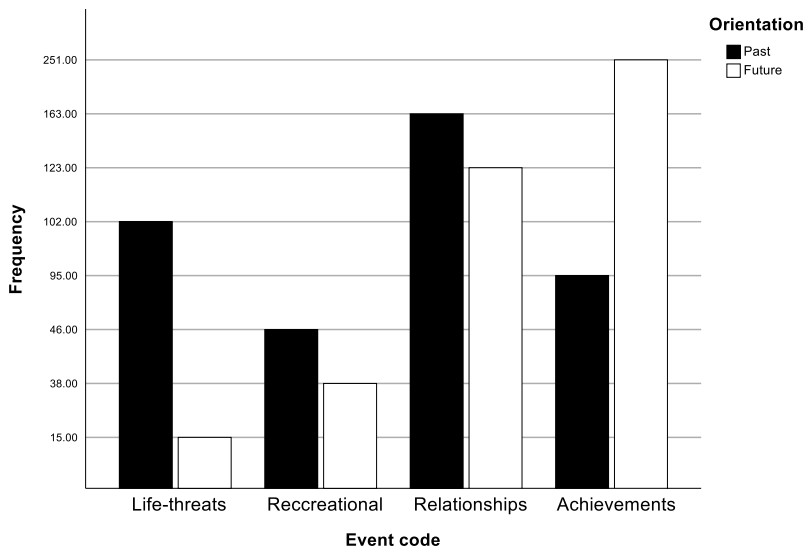


Figure 2. Frequency of each event according to assigned code and orientation.

related to achievements. All other events were rated as uncategorized (12.12% of past events and 7.78% of future events).

First regarding past events, bivariate correlations showed that higher self-satisfaction was significantly associated to lower frequency of life-threatening events $r_s(153) = -.16, p = .045$. Also, higher self-satisfaction was significantly associated to higher frequency of achievement-related events $r_s(153) = .23, p = .004$. However, there was no significant relationship between self-satisfaction and the frequency of recreational events $r_s(153) = -.01, p = .952$ or relationship-events $r_s(153) = -.03, p = .758$. Next, regarding future events, higher self-satisfaction was significantly associated to a higher frequency of recreational events $r_s(153) = .24, p = .003$. However, there was no significant relationship between self-satisfaction and the frequency of life threatening events $r_s(153) = -.05, p = .523$, relationship events $r_s(153) = -.07, p = .405$, or achievement-related events $r_s(153) = .06, p = .437$.

Discussion

The primary aim of the present research was to examine a pathway to understand the relationship between the valence of self-defining events (past and future), self-satisfaction and anxiety. The secondary aim was to examine the relationship between self-satisfaction and the content of self-defining events. Overall, as hypothesized, path analysis demonstrated that the relationship between extended self-valence and anxiety is mediated by self-satisfaction, which offers new insights into how anxiety is related to past and future thinking. Specially, both past and future valence were positively related to self-satisfaction which was negatively related to anxiety. This study is the first to report the link between self-satisfaction and the extended self, highlighting how the different temporal dimensions of the self could interact to contribute to anxiety symptomatology. The individual components of the model are discussed below.

First, as hypothesized, both past and future valence were positively related to self-satisfaction, thus, as the valence of the extended-self increased (becomes more positive), self-satisfaction also increased. As discussed in the introduction, self-satisfaction is determined through a process of self-evaluation where individuals consult knowledge about the self that extends beyond the present. As such, individuals engaging in the process of self-evaluation draw upon representations from the past and projections of their future to determine their current levels of satisfaction. Consequently, negative representations of the extended self can facilitate negative self-evaluation, leading to low self-

satisfaction. Next, as hypothesized, there was a significant negative relationship between self-satisfaction and anxiety symptomology. Thus, as self-satisfaction decreased, anxiety symptomology increased. This aligns with existing research that has highlighted the link between anxiety and self-satisfaction (Muris et al., 1998).

In addition, as hypothesized, we did not find a significant relationship between anxiety and the valence of past and future self-defining events. This is consistent with previous research showing that anxiety is not related to more negative self-defining events (Irvine, 2017; Rubin, 2005), which is somewhat surprising considering the effectiveness of positive thinking interventions for reducing symptomology (e.g., Nourkova & Vasilenko, 2018; Wu et al., 2023). Thus, individuals with high anxiety do not display a bias to recall and imagine more negative self-defining events; however, negative self-defining events can contribute to low self-satisfaction which can facilitate high anxiety. This suggests that other factors contribute to low self-satisfaction in anxious populations (since it is not facilitated by extended-self valence) and future research should explore these further. However, intriguingly, there remains an untested potential that interventions designed to target the valence of past and future events could potentially reduce anxiety, by boosting self-satisfaction.

In addition to exploring the relationship between self-satisfaction, anxiety, and the valence of self-defining events, our study also investigated the content of these events and their relationship to self-satisfaction (which is rarely assessed in cognitive studies of anxiety (e.g., Irvine, 2017; Krans et al., 2014)). Events were categorized into distinct categories, including life-threatening events, recreational events, relationships events, and achievement-related events.

First, consistent with our hypotheses, the correlational analyses revealed a significant positive relationship between self-satisfaction and the frequency of achievement-oriented events based in the past. Thus, as the frequency of achievement-orientated events increased, self-satisfaction increased. Indeed, it is suggested that achievement-related past events facilitate a positive self-image and boost belief in capabilities (Purkey, 1970) which could explain their link to self-satisfaction. However, contrary to hypotheses, self-satisfaction was not significantly related to the frequency of achievement-orientated events in the future. One potential explanation for this could be the perceived likelihood of future events (Ernst & D'Argembeau, 2017). It is plausible that individuals' perceptions of the likelihood of future achievements, even if objectively realistic, may influence how these events impact the present self. For instance, a capable student could have reported graduating from university as a self-defining future event and, although this event could realistically happen, the student could doubt their own capabilities to achieve this future achievement. Thus, if individuals perceive future achievements as improbable, these events may not exert the same influence on the present-self as past achievements do. Future research should investigate the potential interplay between perceived likelihood and the impact of future achievements.

The results also showed, in line with our hypotheses, a significant negative relationship between self-satisfaction and the frequency of life-threatening events based in the past. Thus, as the frequency of life-threatening events increased, self-satisfaction decreased. This is consistent with previous research that had found a significant relationship between trauma and satisfaction (with the self and life). As mentioned in the introduction, individuals with past trauma struggle to define their positive attributes which can lead to feelings of low self-worth and potentially low self-satisfaction (Wong et al., 2016). Thus, the link between self-satisfaction and the frequency of life-threatening events could reflect the amount of adverse life events an individual has experienced. However, individuals can overcome trauma and, thus, prevent it from impacting their levels of self-satisfaction (Cromer & Smyth, 2010) which could explain the weak relationship reported in the present study, $r = -.16$.

Also consistent with our hypotheses, the results showed a significant positive relationship between self-satisfaction and the frequency of recreational future events. As the frequency of recreational events increased, self-satisfaction also increased. This is consistent with research that shows making enjoyable plans for the future (and considering their outcomes) is associated to higher life satisfaction and overall well-being (Azizli et al., 2015; MacLeod, 2012).

Finally, in contrast to our hypotheses, the results showed no significant relationship between self-satisfaction and the frequency of events related to inter-personal relationships in the past or future. This finding was surprising considering the link between interpersonal relationships and positive outcomes such as higher levels of life satisfaction and happiness (Amati et al., 2018). However, this discrepancy could be due to differences between life-satisfaction and self-satisfaction. Specifically, life-satisfaction refers to how individuals evaluate external resources, which is distinct from self-satisfaction that is determined by inner criteria (Cecen, 2023). Inter-personal relationships in this context could be interpreted as an external resource and as such, distinct from self-satisfaction. For instance, an individual could have few inter-personal relations and yet still be satisfied with their social capabilities and sense of self. However, the results of the present study do not necessarily undermine the importance of interpersonal relationships for positive outcomes. Indeed, inter-personal relationship was one of the most frequent types of thought in the present study, and thus, highly salient for student populations.

Overall, the results from the content analysis could lead to a more comprehensive understanding of the relationship between self-defining events and self-satisfaction, which could facilitate the development of more targeted interventions for reducing anxiety. For instance, positive future interventions (designed specifically for students) could focus on recreational events.

Limitations and future directions

Although the present article provides valuable insights into anxiety and self-related cognition, it is important to acknowledge some important limitations. First, since the present article recruited a student population that was predominantly female, it is important to consider the representativeness of the sample when interpreting the results. This is particularly important when interpreting the content of the self-defining events since the salience (and frequency) of specific events can change with age (Blagov & Singer, 2004) and the interpretation (and valence) of events can change according to gender (Boals, 2010). The sample consisted of students from one UK university. During data collection, the university demographic consisted of students that were predominantly white and residing in the UK. This information is also important when interpreting the results of the present study and further research is needed to explore the generalizability of these findings to different cultures and ethnicities. Furthermore, since a non-clinical sample was recruited, the present article cannot generalize these findings to clinical populations. Instead, the results of the present study can only generalize to students with *probable generalised anxiety (those without a diagnosis of an anxiety disorder)*. Future research should replicate the present study with a clinical population. In addition, since the anxiety and self-satisfaction measures were collected prior to the self-defining memory task, it is plausible that the questionnaires primed the participants responses. Although this precaution was necessary to avoid events from impacting present mood (and hence ratings of mood), future research could counterbalance the order of the measures to assess their impact. Finally, the present study cannot infer causation because it employed a cross-sectional design. Future research should investigate the relationship between the variables longitudinally, for instance, how changes in self-satisfaction influence anxiety symptomatology over time?

Conclusion

In summary, the present article aimed to examine the relationship between the valence of self-defining events (past and future), self-satisfaction, and anxiety. The results demonstrated that both past and future valence were positively related to self-satisfaction, which was negatively related to anxiety. Thus, more negative past and future events can contribute to low self-satisfaction, which

can increase anxiety symptomology. In addition, a content analysis showed a significant positive relationship between self-satisfaction and the frequency of achievement-orientated past events and recreational future events. Thus, as self-satisfaction increased the frequency of achievement-orientated past events, and recreational future events also increased. In addition, there was a significant negative relationship between self-satisfaction and life-threatening past events, where self-satisfaction decreased as thought frequency increased. Overall, these findings present new avenues for future interventions designed to reduce anxiety through targeting the valence and content of self-defining past and future events.

Note

1. In the present study the domains of self-satisfaction were collapsed into one measure. This decision was made because each domain of self-satisfaction was significantly related to anxiety symptomology $p < .001$ and there were high inter-correlations between the different domains. This allowed the present study to focus on the content of the extended self, as opposed to the descriptive content of the present self. However, the authors recognize that it would be interesting for future research to explore how the valence of past and future events relate to specific domains of self-satisfaction. To achieve this, future research could ask participants to record past and future events to represent each of the seven domains of self-satisfaction.

Disclosure statement

No potential conflict of interest was reported by the author(s).

References

- Amati, V., Meggiolaro, S., Rivellini, G., & Zaccarin, S. (2018). Social relations and life satisfaction: The role of friends. *Genus*, 74(1), 1–18. <https://doi.org/10.1186/s41118-018-0032-z>
- Asher BlackDeer, A., Patterson Silver Wolf PhD, D. A., Maguin PhD, E., & Beeler-Stinn PhD, S. (2023). Depression and anxiety among college students: Understanding the impact on grade average and differences in gender and ethnicity. *Journal of American College Health*, 71(4), 1091–1102. <https://doi.org/10.1080/07448481.2021.1920954>
- Azizli, N., Atkinson, B. E., Baughman, H. M., & Giammarco, E. A. (2015). Relationships between general self-efficacy, planning for the future, and life satisfaction. *Personality & Individual Differences*, 82, 58–60. <https://doi.org/10.1016/j.paid.2015.03.006>
- Banks, M. V., & Salmon, K. (2013). Reasoning about the self in positive and negative ways: Relationship to psychological functioning in young adulthood. *Memory*, 21(1), 10–26. <https://doi.org/10.1080/09658211.2012.707213>
- Beard, C., & Björgvinsson, T. (2014). Beyond generalized anxiety disorder: Psychometric properties of the GAD-7 in a heterogeneous psychiatric sample. *Journal of Anxiety Disorders*, 28(6), 547–552. <https://doi.org/10.1016/j.janxdis.2014.06.002>
- Binsale, L. J. (2017). *Self-concept clarity, trauma and psychopathology*. Lancaster University (United Kingdom).
- Blagov, P. S., & Singer, J. A. (2004). Four dimensions of self-defining memories (specificity, meaning, content, and affect) and their relationships to self-restraint, distress, and repressive defensiveness. *Journal of Personality*, 72(3), 481–511. <https://doi.org/10.1111/j.0022-3506.2004.00270.x>
- Boals, A. (2010). Events that have become central to identity: Gender differences in the centrality of events scale for positive and negative events. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory & Cognition*, 24(1), 107–121. <https://doi.org/10.1002/acp.1548>
- Buccioli, A., & Zarri, L. (2020). Wounds that time can't heal: Life satisfaction and exposure to traumatic events. *Journal of Economic Psychology*, 76, 102241. <https://doi.org/10.1016/j.joep.2019.102241>
- Byrd-Bredbenner, C., Eck, K., & Quick, V. (2020). Psychometric properties of the generalized anxiety disorder-7 and generalized anxiety disorder-mini in United States university students. *Frontiers in Psychology*, 11, 550533. <https://doi.org/10.3389/fpsyg.2020.550533>
- Byrne, B. M. (2012). *Structural equation modelling with AMOS: Basic concepts, applications, and programming*. Routledge, Taylor & Francis Group.
- Cecen, A. R. (2023). Self satisfaction scale (3S): Development and initial validation of a new measure of subjective well-being. *Current Psychology*, 42(6), 4555–4566. <https://doi.org/10.1007/s12144-021-01790-9>

- Cecen, A. R., & Gümüş, Z. (2024). The underlying mechanism for childhood psychological maltreatment and self-satisfaction: The serial mediating roles of self-critical rumination and self-compassion. *International Journal of Mental Health and Addiction*, 1–17. <https://doi.org/10.1007/s11469-023-01228-2>
- Chi, T., Cheng, L., & Zhang, Z. (2023). Global prevalence and trend of anxiety among graduate students: A systematic review and meta-analysis. *Brain and Behavior*, 13(4), e2909. <https://doi.org/10.1002/brb3.2909>
- Conway, M. A., Singer, J. A., & Tagini, A. (2004). The self and autobiographical memory: Correspondence and coherence. *Social Cognition*, 22(5), 491–529. <https://doi.org/10.1521/soco.22.5.491.50768>
- Cromer, L. D., & Smyth, J. M. (2010). Making meaning of trauma: Trauma exposure doesn't tell the whole story. *Journal of Contemporary Psychotherapy*, 40(2), 65–72. <https://doi.org/10.1007/s10879-009-9130-8>
- D'Argembeau, A., Lardi, C., & Van der Linden, M. (2012). Self-defining future projections: Exploring the identity function of thinking about the future. *Memory*, 20(2), 110–120. <https://doi.org/10.1080/09658211.2011.647697>
- Diener, E., & Diener, M. (2009). Cross-cultural correlates of life satisfaction and self-esteem. In E. Diener (Ed.), *Culture and well-being. Social indicators research series* (Vol. 38). Springer. https://doi.org/10.1007/978-90-481-2352-0_4
- Duffy, J., Salt, G., Cole, S., Charura, D., & Shevchenko, J. (2024, March 14). Anxiety and future-self clarity: Can future thinking influence self-esteem? <https://doi.org/10.31234/osf.io/6p9f4>
- Ernst, A., & D'Argembeau, A. (2017). Make it real: Belief in occurrence within episodic future thought. *Memory & Cognition*, 45(6), 1045–1061. <https://doi.org/10.3758/s13421-017-0714-3>
- Hjeltnes, A., Binder, P. E., Moltu, C., & Dundas, I. (2015). Facing the fear of failure: An explorative qualitative study of client experiences in a mindfulness-based stress reduction program for university students with academic evaluation anxiety. *International Journal of Qualitative Studies on Health and Well-Being*, 10(1), 27990. <https://doi.org/10.3402/qhw.v10.27990>
- Holm, T., & Thomsen, D. K. (2018). Self-event connections in life stories, self-concept clarity, and dissociation: Examining their relations with symptoms of psychopathology. *Imagination, Cognition and Personality*, 37(3), 293–317. <https://doi.org/10.1177/0276236617733839>
- Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3(4), 424–453. <https://doi.org/10.1037/1082-989X.3.4.424>
- Huebner, E. S., & Gilman, R. (2002). An introduction to the multidimensional students' life satisfaction scale. *Social Indicators Research*, 60(1/3), 115–122. <https://doi.org/10.1023/A:1021252812882>
- Irvine, S. (2017). Psychiatric disorders memory and the future: The effect of anxiety and depression on self-defining memory and self-defining future projections. *Honors theses*, 250. <https://digitalworks.union.edu/theses/250>
- Kenny, D. A. (2017). *MedPower: An interactive tool for the estimation of power in tests of mediation* [computer software]. <https://davidakenny.shinyapps.io/MedPower/>
- King, L. A. (2001). The health benefits of writing about life goals. *Personality & Social Psychology Bulletin*, 27(7), 798–807. <https://doi.org/10.1177/0146167201277003>
- Kouvelis, G., & Kangas, M. (2021). Evaluating the association between interpersonal trauma and self-identity: A systematic review. *Traumatology*, 27(2), 118–148. <https://doi.org/10.1037/trm0000325>
- Krans, J., de Bree, J., & Bryant, R. A. (2014). Autobiographical memory bias in social anxiety. *Memory*, 22(8), 890–897. <https://doi.org/10.1080/09658211.2013.844261>
- Lawrence, K. C., & Cerniglia, L. (2020). Traumatizing factors influencing interpersonal relationships of university students. *Cogent Psychology*, 7(1), 1835383. <https://doi.org/10.1080/23311908.2020.1835383>
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In *Advances in experimental social psychology* (Vol. 32, pp. 1–62). Academic Press. [https://doi.org/10.1016/S0065-2601\(00\)80003-9](https://doi.org/10.1016/S0065-2601(00)80003-9)
- MacLeod, A. (2012). Goals and plans: Their relationship to well-being. In Efklides, A., Moraitou, D. (eds), *A positive psychology perspective on quality of life* (Vol. 51, pp. 33–50). Netherlands: Springer.
- Madigan, S. (2011). *Narrative therapy*. American Psychological Association.
- Marsh, L., Edginton, T., Conway, M. A., & Loveday, C. (2019). Positivity bias in past and future episodic thinking: Relationship with anxiety, depression, and retrieval-induced forgetting. *The Quarterly Journal of Experimental Psychology*, 72(3), 508–522. <https://doi.org/10.1177/1747021818758620>
- Maruyama, G. M., Rubin, R. A., & Kingsbury, G. G. (1981). Self-esteem and educational achievement: Independent constructs with a common cause? *Journal of Personality & Social Psychology*, 40(5), 962–975. <https://doi.org/10.1037/0022-3514.40.5.962>
- McAdams, D. P. (1996). Narrating the self in adulthood. In J. E. Birren, G. M. Kenyon, J.-E. Ruth, J. J. F. Schroots, & T. Svensson (Eds.), *Aging and biography: Explorations in adult development* (pp. 131–148). Springer Publishing Co.
- Muris, P., Merckelbach, H., Mayer, B., & Snieder, N. (1998). The relationship between anxiety disorder symptoms and negative self-statements in normal children. *Social Behavior & Personality: An International Journal*, 26(3), 307–316. <https://doi.org/10.2224/sbp.1998.26.3.307>
- Nourkova, V. V., & Vasilenko, D. A. (2018). On the advantage of autobiographical memory pliability: Implantation of positive self-defining memories reduces trait anxiety. *Memory*, 26(7), 869–881. <https://doi.org/10.1080/09658211.2017.1420195>
- Pasupathi, M., Mansour, E., & Brubaker, J. R. (2007). Developing a life story: Constructing relations between self and experience in autobiographical narratives. *Human Development*, 50(2–3), 85–110. <https://doi.org/10.1159/000100939>

- Purkey, W. W. (1970). Self concept and school achievement.
- Riddick, C. C., & Stewart, D. G. (1994). An examination of the life satisfaction and importance of leisure in the lives of older female retirees: A comparison of blacks to whites. *Journal of Leisure Research*, 26(1), 75–87. <https://doi.org/10.1080/00222216.1994.11969945>
- Rubin, D. (2005). A basic-systems approach to autobiographical memory. *Current Directions in Psychological Science*, 14(2), 79–83. <https://doi.org/10.1111/j.0963-7214.2005.00339.x>
- Singer, J. A., & Blagov, P. S. (2000). *Classification system and scoring manual for self-defining autobiographical memories* [Unpublished manuscript]. Connecticut College.
- Singer, J. A., & Blagov, P. S. (2004). The integrative function of narrative processing: Autobiographical memory, self-defining memories, and the life story of identity. In D. R. Beike, J. M. Lampinen, & D. A. Behrend (Eds.), *The self and memory* (pp. 117–137). Psychology Press.
- Singer, J. A., & Salovey, P. (1993). *The remembered self: Emotion and memory in personality*. Free Press.
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092–1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Strachan, L. P., Hyett, M. P., & McEvoy, P. M. (2020). Imagery rescripting for anxiety disorders and obsessive-compulsive disorder: Recent advances and future directions. *Current Psychiatry Reports*, 22(4), 1–8. <https://doi.org/10.1007/s11920-020-1139-4>
- Thorne, A., & McLean, K. C. (2001). *Manual for coding events in self-defining memories* [Unpublished manuscript]. University of California,
- Thorne, A., & McLean, K. C. (2002). Gendered reminiscence practices and self-definition in late adolescence. *Sex Roles*, 46(9/10), 267–277. <https://doi.org/10.1023/A:1020261211979>
- Wenze, S. J., Gunthert, K. C., & German, R. E. (2012). Biases in affective forecasting and recall in individuals with depression and anxiety symptoms. *Personality & Social Psychology Bulletin*, 38(7), 895–906. <https://doi.org/10.1177/0146167212447242>
- Wong, A. E., Vallacher, R. R., & Nowak, A. (2016). Intrinsic dynamics of state self-esteem: The role of self-concept clarity. *Personality & Individual Differences*, 100, 167–172. <https://doi.org/10.1016/j.paid.2016.05.024>
- Wu, L., Hanssen, M. M., & Peters, M. L. (2023). The effectiveness and mechanisms of a brief online best-possible-self intervention among young adults from mainland China. *The Journal of Positive Psychology*, 1–14. <https://doi.org/10.1080/17439760.2023.2297204>