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ARTICLE

Antecedents of valence-activation measures of emotional well-being

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Abstract: In several areas of emotion-related research, antecedents, associations, and outcomes differ if affect varies in both valence and activation. Aiming to show that this would likewise be true of common valence-activation measures of emotional well-being (EWB), this study tests how EWB would be related to antecedents if valence differs in low-to-high activation, moderate activation, and high-to-low activation. A random sample of Swedish citizens aged 15 years and older (n=901) answered a self-report questionnaire. In general agreement with the hypotheses, multivariate linear regression analyses showed that low-to-high activation valence is more strongly linked to information about security than information about success or opportunity, that moderate activation valence is more strongly linked to information about success than information about security or opportunity, and that high-to-low activation valence is more strongly linked to information about opportunity than information about success or security. Age and gender influenced the three EWB measures without altering the hypothesized results.

Keywords: activation, antecedent, emotional well-being, measure, valence

1. Introduction

Subjective well-being (SWB) has in past research been conceptualized as a multi-dimensional construct (Busseri & Sadava, 2011; Busseri & Quoidbach, 2022; Tov, 2018) by distinguishing between life satisfaction (LS) and emotional well-being (EWB). LS refers to a cognitive judgment of satisfaction with life or domains of life. The focus in this study is EWB referring to the difference between frequency of positive and negative affect in day-to-day experiences. Several self-report methods are used to measure EWB, also referred to as affective well-being or affect balance. A difference is whether these methods are online such that immediate affect (current moods or emotion episodes) is assessed (Stone et al., 1999) or entail retrospective reports based on memory of the frequency or duration and intensity of positive affect (PA) and negative affect (NA) experienced during a past period, including feelings such as happy, enjoyment, depressed, and worried (Kahneman et al., 2004; Schwartz et al., 2008). The *Positive and Negative Affect Scale* (PANAS; Watson et al., 1988) has frequently been used for measuring EWB in both these ways.

Other research has shown that affect[1] is described by two orthogonal dimensions, a pleasantness–unpleasantness dimension labelled valence and an active–passive dimension labelled activation or arousal (referred to as the affect grid; see Kuppens et al., 2013; Russell, 1980,

[1] Affect is a general term referring to emotional phenomena. The less inclusive term core affect is used by Russell (2003) to describe "a neurophysiological state consciously accessible as the simplest raw (nonreflective) feelings evident in moods and emotions" (p. 148).

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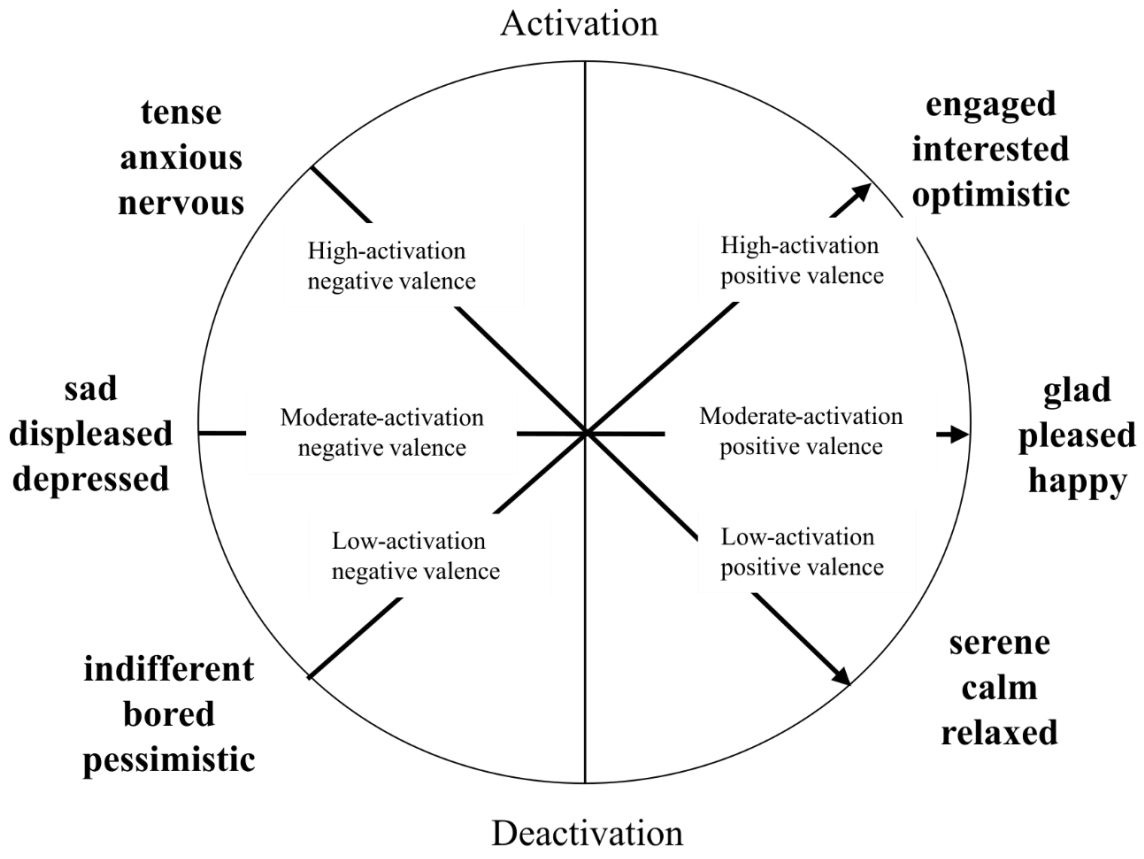
2003; Yik et al., 2011). Diener and Lucas (2000) proposed that measures of EWB should be based on a dimensional description varying in valence and activation. In subsequent research EWB has commonly been measured as the single valence dimension of the affect grid, although researchers sometimes include scales that also measure high or low activation.

The two-dimensional representation of activation and valence is proposed to include several hypothesized affect states distributed along the periphery of a circle. The states are ordered from high similarity to maximal dissimilarity of opposed states (e.g. pleased-displeased). The intensity of the states increases with the distance from the midpoint. Russell (1980, 2003) and Yik et al. (2011) accordingly recognized additional axes of the affect grid that are oblique to the principal orthogonal axes. The *Swedish Core Affect Scale* (SCAS; Västfjäll et al., 2002; Västfjäll & Gärling, 2007) was developed to measure two oblique axes in addition to valence and activation, one ranging from high-activation positive valence to low-activation negative valence and another axis orthogonal to the first ranging from low-activation positive valence to high-activation negative valence (see Figure 1). Longo (2015) found that measures of valence varying in high or low activation lack discriminant validity compared to measures of moderate (neither high nor low) activation. It was concluded that the latter is an appropriate measure of EWB that is correlated with LS and that differences in activation would not add anything over and above valence.

Figure 1. The proposed axes of high-to-low activation valence, moderate activation valence, and low-to-high activation valence corresponding to different opposed affect states



Note. The boldfaced adjectives (translated into English) are those that were used in the study to define the end-points of ratings.

The conclusion by Longo (2015) is contested by a recent narrative review of a vast number of studies (McManus et al., 2024) finding that 89% demonstrated consistent differences between low-activation positive valence (e.g. calmness, feeling relaxed) and high-activation positive valence (e.g. engagement, interest). The review covers several widely different emotion-related research areas in which these differences have been observed. A general conclusion from the review is that high-activation and low-activation valence tends to have different antecedents, associations, and outcomes.

Additional studies suggest more directly that activation plays important roles for EWB. In personal interviews, Delle Fave et al. (2016) asked people in 12 countries on five continents to define the meaning of happiness. In reporting affective qualities, about 30% of the participants mentioned words such as peace of mind, harmony, and contentment, while 14% mentioned words such as joy, vitality, and enthusiasm. McManus et al. (2024) identified the former words as expressing low-activation positive valence and the latter as expressing high-activation positive valence. A finding corroborating these results is that in a survey of residents of 116 countries, a majority preferred low-activation positive valence states (being calm) to high-activation positive valence states (being excited) (Lomas et al., 2023). Other studies have shown that in Eastern cultures low-activation positive valence is preferred to high-activation positive valence, while in Western cultures this preference is reversed (Tsai et al., 2006). Furthermore, it has been found that compared to high-activation positive valence, in adulthood both preference for and frequency of experiences of low-activation positive valence increase with age (Bjälkebring et al., 2015; Mogilner et al., 2011). Another result is that women compared to men experience a lower frequency of low-activation positive valence mediated by socioeconomic factors (e.g. having children) but also a lower frequency of high-activation positive valence (Simon & Nath, 2004). The latter may be related to a female preference for low-activation valence (Gomez et al., 2013).

The differences in EWB varying in both valence and activation should be investigated further because it has implications for measurement, understanding, and applications. Specifically, the prevalent use in EWB research of latent measures that treat affect scales as interchangeable across activation levels (Busseri & Sadava, 2011; Busseri & Quoidbach, 2022) is challenged since the influence of activation is implicitly downplayed. This may obscure crucial nuances in EWB and its antecedents.

The aim of this study is to investigate how EWB is differently related to antecedents when measured as valence for low, moderate and high activation. Warr (1990) conducted a study in which measures of two oblique axes of the affect grid (ranging from contended to anxious and from enthusiastic to depressed) were compared to measures of the principal valence axis (ranging from pleased to displeased). The results showed that the three EWB measures differed in how they discriminated between gender, age, and occupational level. Another possibility to demonstrate differences in antecedents of EWB depending on different activation levels is offered by Yaden and Haybron (2022). In drawing on the philosophically grounded emotion state theory (Haybron, 2008), they hypothesize that EWB is a relatively enduring emotional state that is changed by information about security (versus threat), success (versus failure or loss), and opportunity (versus lack thereof). They argue that "… conditions can be favorable for well-being by being safe and secure; but even if one is secure, a further question is whether the environment offers rich opportunities for successful engagement; but, of course, it also matters whether the individual enjoys actual successes or gains" (p. 154). Three broad EWB dimensions were then suggested: Attunement (e.g. states of tranquility), endorsement (e.g. positive moods in response to successes and gains), and engagement (e.g. sense of energy or vitality as well as interest or flow). We conjecture that these dimensions map on the axes in the affect grid ranging from low-

activation positive valence to high-activation negative valence (attunement related to security), moderate activation positive valence to moderate activation negative valence (endorsement related to success), and high-activation positive valence to low-activation negative valence (engagement related to opportunities). If our conjecture is valid, EWB measures of valence for low-to-high, moderate and high-to-low activation should have the expected relationships with information about security, success, and opportunity.

In further developing the hypotheses tested in the empirical study to be reported, our point of departure is the finding that EWB is influenced by the experienced rate of progress of attaining valued goals (Gärling et al., 2016; Klug & Maier, 2014; Neal et al., 2023). According to the theory proposed by Carver (2001, 2015), success depends on that an expected rate of progress is achieved. Carver also proposes that high-activation positive valence is directly related to the expected rate of attainment of positively valued goals (rewards), whereas low-activation positive valence is directly related to the expected rate of attainment of goals of avoiding threats (punishments). We suggest that high-activation valence would increase by information about opportunity because it conveys the possibility of pursuing positively valued goals. In a similar manner low-activation valence would increase by information about security because it conveys the possibility of avoiding threats. McManus et al. (2024) provided indirect support in their review by showing that high-activation valence is associated with achievement and low-activation valence with a sense of security.

The hypotheses subject to test are (H1) that EWB measured as the intensity of the affect state that varies along the axis in the affect grid ranging from low-activation positive valence to high-activation negative valence is more strongly related to information about security than information about success or opportunity, (H2) that EWB measured as the intensity of the affect state that varies along the axis from moderate-activation positive valence to moderate-activation negative valence is more strongly related to information about success than information about security or opportunity, and (H3) that EWB measured as the intensity of the affect state that varies along the axis ranging from high-activation positive valence to low-activation negative valence is more strongly related to information about opportunity than information about security or success.

In a survey questionnaire, EWB was measured by means of retrospective self-report ratings on the adjective scales in SCAS (Västfjäll et al., 2002; Västfjäll & Gärling, 2007). As Figure 1 shows, in SCAS moderate-activation positive valence would, for instance, change from *glad* to *engaged* if activation is higher and *calm* if activation is lower, while a moderate-activation negative valence would change from *sad* to *tense* if activation is higher and *indifferent* if activation is lower.

Multiple ratings of participants' perceptions were obtained as measures of information about security and opportunity. If success is defined as being related to how individuals evaluate their accomplishments, LS would be an appropriate measure of success. Supporting this argument, the relationship between LS and EWB is generally positive with correlation coefficients ranging from moderate to strong (from 0.40 to 0.90; see Berlin & Fors Connolly, 2019). In addition, Longo (2015) showed that LS has a stronger positive correlation with valence for moderate activation than for high or low activation. The argument is also consistent with the demonstration in many previous studies that LS is positively correlated with actual life success (Lyubomirsky et al., 2005).

Previous research reviewed by McManus et al. (2022) found that some socioeconomic factors (e.g. age, gender) had differential influences on experiences of low-activation and high-activation positive valence. Warr (1990) added occupational level. Therefore, since these socioeconomic factors and possibly others may influence the hypothesized relationships, we decided to

investigate possible such influences by including socioeconomic factors in the analyses of the results.

2. Method

2.1 Questionnaire and participants

Replicating the 11th wave of the European Social Survey (ESS) in Sweden, data were collected by means of a combined online and paper-and-pencil questionnaire which originally was answered in face-to-face interviews. A stratified sampling technique was employed, drawing random samples from each of Sweden's eight NUTS-2 regions. Of the 3,000 individuals invited to participate, half were offered a conditional incentive of SEK 300 in gift cards, while the other half received no incentive. The aim was to investigate potential non-response bias effects. Since this was not a concern in this study, the two samples were combined in the analysis. The final net sample comprised 1,074 individuals (35.8% response rate). The analyses in this study included 901 participants who provided complete responses to the relevant survey questions.

Table A1 in the Appendix presents socioeconomic sample statistics (n=901). The age distribution was relatively even across most categories, with the largest proportion of participants in the 55-64 age group (20%) and the smallest proportion in the 85+ age group (1.1%). The gender distribution showed a slightly higher proportion of women (52.5%) than men (47.5%). A majority of participants had 10-14 years (40.2%) or 15-19 years (34.9%) of education, while only 5.2% had 20 years or more. The lowest category of 0-4 years of education comprised 8.4% of the sample. About two-thirds of the participants were cohabiting (66.7%) and one-third living alone (33.3%). The household income distribution showed considerable variation. The most common income category was SEK 72,000 or more per month (17.2%), followed by SEK 31,000 - 38,999 (15.5%) and SEK 47,000 - 56,999 (13.5%). The lowest categories, less than SEK 13,000 and SEK 13,000 - 15,999, had the smallest proportions of participants (3.2% and 4.2%, respectively). A vast majority of participants were employed or in some other employment status (96.1%) with 3.9% unemployed.

2.2 Measures

EWB was measured by means of retrospective ratings of the frequency of positive and negative affect experienced during the past week. Six unipolar adjective scales with seven numeric steps ranging from "never" (0) to "always" (6) were used. Each scale (see Table 1 below and Figure 1) was defined by three adjectives in SCAS (Västfjäll et al., 2002; Västfjäll & Gärling, 2007) validated for Swedish samples. Participants indicated on three of the scales how often during the past week they felt positive affect low (serene, calm, relaxed), moderate (glad, pleased, happy), or high in activation (interested, engaged, optimistic). On the other three scales participants indicated how often they felt negative affect low (indifferent, bored, pessimistic), moderate (sad, displeased, depressed), or high in activation (tense, anxious, nervous). The correlations between the ratings of positive and negative valence was -0.56 for low-to-high activation, -0.55 for moderate activation, and -0.57 for high-to-low activation. Three bipolar indexes were constructed by averaging the positive valence and reverse-coded (Y'=6-Y) negative valence ratings for low-to-high activation valence (L/HA-Val, $\alpha = 0.71$), moderate activation valence (MA-Val, $\alpha = 0.69$), and high-to-low activation valence (H/LA-Val, $\alpha = 0.71$).

Table 1. Adjectives (translated into English with the Swedish words within parentheses) varying in valence and activation used to define the end-points of ratings. (See also Figure 1)

	Valence	
	Negative	**Positive**
Low-to-high activation	tense [spänd]	serene [avspänd]
	anxious [orolig]	calm [lugn]
	nervous [nervös]	relaxed [avslappnad]
Moderate activation	sad [ledsen]	glad [glad]
	displeased [missnöjd]	pleased [belåten]
	depressed [nedslagen]	happy [munter]
High-to-low activation	indifferent [oengagerad]	engaged [intresserad]
	bored [uttråkad]	interested [engagerad]
	pessimistic [pessimistik]	optimistic [optimistisk]

An index of information about success was constructed by averaging ratings on three scales conventionally used to assess LS. The instructions for one scale (in Swedish here and below translated into English[2]) read: "Imagine a ladder with steps numbered from 0 at the bottom to 10 at the top. Assume that the top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. If the top step is 10 and the bottom step is 0, on which step of the ladder do you personally stand right now?" The instructions for the second scale read: ”All things considered, how satisfied [nöjd] are you with your life as a whole nowadays?” Ratings were made on an 11-point numeric scale from "Extremely unsatisfied" (0) to "Extremely satisfied" (10). The instructions for the third scale read: "Taking all things together, how happy [lycklig] would you say you are?" Ratings were made on an 11-point numeric scale from "Extremely unhappy" (0) to " Extremely happy" (10). Cronbach's α for the average of the three scales was 0.88.

Indexes of perceived security and opportunity were obtained by asking the participants to rate their agreements with statements using a five-point numeric scale ranging from "strongly disagree"(1) to "strongly agree" (5). The statements (in Swedish here translated into English) were developed for this study. Perceived security was measured by means of ratings of three statements ("I have resources sufficient to manage difficulties"; "I feel secure"; "In my life, I have stability and predictability"; $\alpha = 0.69$), perceived opportunity by means of ratings of another three statements ("I have opportunities to do what I want in life"; "My current situation allows me to explore things that are interesting"; "My life is full of opportunities"; $\alpha = 0.81$).

2.3 Data analysis

To examine the relationships between the three measures of EWB and their hypothesized antecedents, we conducted a multivariate multiple linear regression analysis in R (version 4.4.3) entering all three EWB measures as dependent variables and perceived security, perceived success, and perceived opportunity as independent variables. Three models were estimated, one for each EWB measure. To isolate the unique influence on the respective EWB measure, the other two measures were entered as covariates. The models were estimated with and without the socioeconomic control variables. Following the regression analyses, statistical significance tests

[2]The key Swedish words are given within parentheses. Note that the word “happy” [lycklig] is the translation of a different Swedish word [munter] in the EWB measure.

of the hypotheses were made of the differences in each regression analysis between the regression coefficients for perceived security, perceived success, and perceived opportunity. The tests were implemented using the linear hypothesis function in the R package (Fox & Weisberg, 2019) to evaluate the null hypothesis of no difference between the regression coefficients while accounting for their covariance.

3. Results

Means, standard deviations, and product-moment correlations for the indexes are shown in Table A2 in the Appendix.

Table 2 displays the results of the multivariate multiple linear regression analyses of L/HA-Val, MA-Val, and H/LA-Val as dependent variables controlling for the other two. In Model 1 only perceived security, perceived success, and perceived opportunity are entered. Adding the socioeconomic factors in Model 2 yields closely similar results which were further analyzed. In agreement with the hypotheses, for L/HA-Val only perceived security was significant (β = .13, p < .001) and significantly higher than both perceived success ($t(889)$ = 2.74, p = .006) and perceived opportunity ($t(889)$ = 2.61, p = .009). For MA-Val only perceived success was significant (β = .31, p < .001) and significantly higher than perceived security ($t(889)$ = 4.40, p = .036) and perceived opportunity ($t(898)$ = 2.53, p = .012). For H/LA-Val perceived opportunity (β = .11, p = .004) and perceived success (β = .09, p = .018) were both significant. The difference between perceived opportunity and perceived success marginally failed to reach significance at p=.05 ($t(898)$ = 1.59, p = .113) as did the difference between perceived opportunity and perceived security ($t(889)$ =1.46, p = .143). Of the socioeconomic factors added in Model 2, only age and gender were significant (p < .05). The regression coefficient for age was positive for L/HA-Val and H/LA-Val but negative for MA-Val; the regression coefficients for gender (woman) was negative for L/HA-Val and MA-Val but positive for H/LA-Val.

4. Discussion

This study investigated how emotional well-being (EWB) measured as affect states varying in valence for low-to-high, moderate, and high-to-low activation is differently related to information about security, success, and opportunity. In multivariate multiple linear regression analyses of the different measures of EWB, support was obtained for all three proposed hypotheses in that (H1) low-to-high activation valence had a stronger relationship with perceived security than perceived success or perceived opportunity, (H2) moderate activation valence a stronger relationship with perceived success than perceived security or perceived opportunity, and (H3) high-to-low activation valence a stronger relationship with perceived opportunity than perceived security or perceived success. The outcome of statistical tests of the differences between regression coefficients supported hypotheses H1 and H2 but not fully hypothesis H3 because high-to-low activation valence had statistically significant relationships with both perceived opportunity and perceived success and the differences between perceived opportunity and perceived security and between perceived opportunity and perceived security were only marginally significant.

The support for the hypotheses remained largely unaltered when socioeconomic factors were entered into the regression analyses. Only age and gender were statistically significant. Proving that our results are consistent with previous findings (McManus et al., 2024), the positive regression coefficients for age differed in being larger for low-to-high activation valence than high-to-low activation valence suggesting that low-activation valence increases with age as Bjälkebring et al. (2015) and Mogilner et al. (2011) found. However, inconsistent with that women tend to prefer low-activation positive valence (Gomez et al., 2013), regression coefficients for

Table 2. Standardized regression coefficients (β), *t* statistics, and *p* values from multivariate multiple linear regression analysis with the measures of emotional well-being as dependent variables, perceived security, perceived success, perceived opportunity, and socioeconomic factors as independent variables (n=901).

	Model 1									Model 2								
Independent	L/HA-Val			MA-Val			H/LA-Val			L/HA-Val			MA-Val			H/LA-Val		
variables	β	t	p	β	t	p	β	t	p	β	t	p	β	t	p	β	t	p
EWB L/HA-Val	—	—	—	0.33	12.61	< .001	0.19	5.71	< .001	—	—	—	0.35	12.81	< .001	0.16	4.52	< .001
EWB MA-Val	0.46	12.61	< .001	—	—	—	0.38	9.97	< .001	0.45	12.81	< .001	—	—	—	0.41	10.76	< .001
EWB H/LA-Val	0.19	5.71	< .001	0.27	9.97	< .001	—	—	—	0.14	4.52	< .001	0.28	10.76	< .001	—	—	—
Security	0.12	3.08	.002	0.05	1.54	.123	-0.01	-0.26	.798	0.13	3.68	< .001	0.04	1.35	.176	0.00	-0.12	.903
Success	0.09	2.48	.013	0.26	8.74	< .001	0.16	4.30	< .001	0.05	1.40	.163	0.31	9.84	< .001	0.09	2.37	.018
Opportunity	-0.07	-1.91	.056	0.07	2.34	.020	0.08	2.09	.037	-0.02	-0.67	.500	0.04	1.29	.199	0.11	2.87	.004
Gender (woman)	—	—	—	—	—	—	—	—	—	-0.06	-2.46	.014	-0.05	-2.46	.014	0.07	2.62	.009
Income (SEK)	—	—	—	—	—	—	—	—	—	-0.01	-0.22	.824	-0.03	-1.41	.160	0.02	0.80	.426
Age	—	—	—	—	—	—	—	—	—	0.24	8.97	< .001	-0.10	-4.39	< .001	0.10	3.53	< .001
Cohabiting	—	—	—	—	—	—	—	—	—	-0.05	-1.78	.076	-0.02	-0.88	.381	0.04	1.54	.123
Unemployed	—	—	—	—	—	—	—	—	—	0.01	0.21	.833	0.01	0.44	.663	0.00	0.03	.980
Education (years)	—	—	—	—	—	—	—	—	—	-0.01	-0.34	.735	-0.03	-1.46	.145	0.05	1.96	.051
Adj R^2		0.47			0.62			0.46			0.52			0.63			0.47	

Note. EWB=Emotional Well-Being. L/HA-Val = Low/High-Activation Valence; MA-Val = Moderate-Activation Valence; H/LA-Val = High/Low-Activation Valence; Gender (1=women, 0=man); Cohabiting (1=yes, 0=no); Unemployed (1=yes, 0=no); A Swedish Crown (SEK) was about equal to 0.10 USD.

gender were negative and equally large for low-to-high and moderate activation but higher and positive for high-to-low activation valence.

Perceived success was measured in the way life satisfaction (LS) is frequently measured (Raudenská, 2023). The rationale was that LS measures tap how people subjectively evaluate success of their accomplishments in life and that research has also shown that the measures are positively correlated with actual life success (Lyubomirsky et al., 2005). Empirical studies (Berlin & Fors Connolly, 2019; Longo, 2015) have furthermore demonstrated that LS is positively correlated with measures of moderate-activation valence. Despite these arguments and evidence, our results showed that perceived success (LS) not only correlated positively with moderate-activation valence but almost as strongly with high-activation valence. A possible explanation is that LS also depends on other antecedents than success. Fors Connolly and Gärling (2024) demonstrated that perceived opportunity is one. A more narrowly defined measure of perceived success would likely have eliminated the observed partial deviation from hypothesis H3.

We conclude that our main findings support that EWB measured as affect states varying from positive to negative valence have different antecedents if simultaneously varying in low-to-high, moderate or high-to-low activation. The results are in this respect consistent with the conclusion from the review by McManus et al. (2024). Our hypotheses about antecedents were based on the philosophically/phenomenologically grounded conceptualization proposed by Yaden and Haybron (2022), but we argue that the results may be explained by the psychological theory proposed by Carver (2001, 2015). This theory is supported by several empirical studies (e.g. Gärling et al., 2016; Klug & Maier, 2014; Neal et al., 2023). That moderate-activation positive valence is related to success, as well as to some lower degree also related to opportunity and security, would be consistent with that progress towards valued goals (whether positive or avoidance of negative) proceed as expected. The opportunity statements (e.g. "I have opportunities to do what I want in life") rated by the participants seem to signal the possibility to reach positively valued goals, and the security statements (e.g. "I have resources to manage difficulties") to signal a capacity to avoid threats. Although additional research is needed to substantiate these suggestions, it is parsimonious to assume that the Yaden-Haybron hypotheses are possible to derive from the theory of pursuing goals proposed by Carver.

Yaden and Haybron (2022) consider EWB to be an enduring mood state. It would therefore be a relevant well-being metric; because it is a measure of how people feel during their day-to-day activities, it may be equally or even more relevant than a cognitive judgment of satisfaction with life. Three theoretical dimensions of psychological well-being have been proposed (Trudel-Fitzgerald et al., 2019): hedonic well-being (e.g. feeling happy, more frequently experiencing positive affect than negative affect), evaluative well-being (e.g. being satisfied with life as a whole or with life domains such as work, family, and leisure), and eudaimonic well-being (e.g., finding purpose in life, feeling a sense of mastery and autonomy). Arguably, the additional EWB measures investigated in this study reflect different states of hedonic well-being that deserve more attention.

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Author contribution statement

FFC conceptualized the study, conducted and reported the data analyses. TG wrote the main text and prepared the figure. Both authors reviewed the final manuscript.

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The authors declare that they have no conflicts of interest.

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All data used in this article are publicly available on the Open Science Framework (OSF) repository: https://tinyurl.com/fr8ptb8y

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The article presents original work not published or submitted elsewhere.

Human ethics and consent to participate

Informed consent was obtained from all individual participants. Ethical approval was not required because The Swedish Act concerning the Ethical Review of Research Involving Humans (2003:460) states that studies using informed consent require approval only if using a method that physically or mentally influence the participants or involve sensitive information traceable to the individual participants. Neither of these conditions apply to the fully anonymized dataset used in this study or its collection.

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Appendices

Table A1. Socioeconomic statistics obtained from the questionnaire to participants (n=901)

Variable	Category	n	Percent
Age (years)	15-24	109	12.1
	25-34	118	13.1
	35-44	120	13.3
	45-54	128	14.2
	55-64	180	20
	65-74	148	16.4
	75-84	88	9.8
	≥85	10	1.1
Gender	Man	422	47.5
	Women	467	52.5
Education (number of years)	0 - 4	76	8.4
	5 - 9	102	11.3
	10 - 14	362	40.2
	15 - 19	314	34.9
	≤20	47	5.2
Marital Status	Living alone	300	33.3
	Cohabiting	601	66.7
Household income (SEK)	≤12.999	29	3.2
	13.000 - 15.999	38	4.2
	16.000 - 21.999	54	6
	22.000 - 25.999	59	6.5
	26.000 - 30.999	91	10.1
	31.000 - 38.999	140	15.5
	39.000 - 46.999	101	11.2
	47.000 - 56.999	122	13.5
	57.000 - 71.999	112	12.4
	≥72.000	155	17.2
Unemployment	Employed/other	866	96.1
	Unemployed	35	3.9

Note. A Swedish Crown (SEK) was about equal to 0.11 USD.

Table A2. Means (M), standard deviations (SD), and intercorrelations of measures of emotional well-being, perceived security, perceived success, perceived opportunity and socioeconomic factors (n=901)

			Intercorrelations										
Variable	M	SD	L/HA-Val	MA-Val	H/LA-Val	Sec	Suc	Opp	Age	Gen	Edu	Cohab	Inc
EWB L/HA-Val	4.72	1.21											
EWB MA-Val	4.84	1.09	0.66										
EWB H/LA-Val	4.81	1.14	0.55	0.64									
Security	3.86	0.62	0.43	0.52	0.42								
Success	7.18	1.58	0.52	0.65	0.54	0.61							
Opportunity	3.71	0.71	0.38	0.51	0.43	0.73	0.60						
Age (years)	50.64	19.25	0.33	0.13	0.22	-0.01	0.19	-0.05					
Gender (woman)	0.52	0.50	-0.13	-0.10	-0.01	-0.10	-0.01	-0.08	-0.08				
Education (years)	12.91	4.94	0.04	0.04	0.11	0.11	0.11	0.10	0.01	0.04			
Cohabiting	0.67	0.47	0.13	0.13	0.19	0.16	0.27	0.09	0.27	-0.05	0.10		
Income (SEK)	6.70	2.53	0.08	0.13	0.15	0.27	0.26	0.23	-0.11	-0.07	0.21	0.39	
Unemployed	0.04	0.19	-0.17	-0.18	-0.17	-0.21	-0.30	-0.14	-0.16	0.03	-0.01	-0.14	-0.15

Note. EWB=Emotional Well-Being. L/HA-Val = Low-to-High Activation Valence; MA-Val = Moderate-Activation Valence; H/LA-Val = High-to-Low Activation Valence; Opp = Opportunity; Suc = Success; Sec = Security; Gen = Gender (1=woman, 0=man); Cohab = Cohabiting (1=yes, 0=no); Edu = Education; Unempl = Unemployed (1=yes, 0=no); 1 SEK (Swedish Crown) about equal to 0.11 USD. All correlations ≥|0.100| are statistically significant at $p < .05$ (two-tailed).