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ORIGINAL ARTICLE

The Development and Validation of the Stoic Attitudes and Behaviours Scale

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Abstract

Background The Stoic Attitudes and Behaviours Scale (SABS) was developed to measure Stoicism as a life philosophy. In contrast, previous scales purporting to assess Stoicism have typically relied on a colloquial understanding of 'stoic'—a concept distinct from philosophical Stoicism and often linked to poorer health outcomes.

Methods Philosophy and psychotherapy experts iteratively developed five versions of SABS, identifying six core Stoic dimensions. The final 60-item version was completed by over 8000 participants across 116 countries. Subsamples also completed validated measures of life satisfaction, flourishing, affect balance, and emotional functioning.

Results Exploratory graph analysis and confirmatory factor analysis supported a seven-factor, 40-item solution with good internal consistency. Factors reflected Stoic dimensions including beliefs about happiness, virtue, benevolence and compassion, and ethical development. SABS scores were positively correlated with flourishing, resilience, and positive affect, and negatively correlated with anger and negative emotions.

Conclusions The SABS is the first validated instrument to assess philosophical Stoicism, clearly distinguishing it from colloquial 'stoicism'. While Stoicism is associated with well-being and emotional balance, colloquial 'stoicism' correlates with poorer outcomes. Further research should examine the SABS in clinical and general population samples.

Keywords Stoicism · Cognitive behaviour therapy · Well-being · Flourishing · Anger · Resilience

Introduction

Stoicism is a life philosophy developed initially by Zeno of Citium around the third century BCE. It reached its zenith in ancient Rome, where its most famous proponents included Seneca, Epictetus, and the Emperor Marcus Aurelius. In contemporary times, Stoic philosophy re-emerged as a major influence on Cognitive Behaviour Therapy (CBT: Beck, 1976; Ellis, 1962; Robertson & Codd, 2019), which has been described as the gold standard of effective psychotherapy (David et al., 2018). In the twenty-first century, Stoicism has enjoyed a further resurgence as a practical philosophy of life, as evidenced by many best-selling books (e.g., Holiday, 2014; Irvine, 2009; Pigliucci,

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2017; Robertson 2018; Sellars, 2020), online communities (e.g., Modern Stoicism [https://modernstoicism.com/], The Stoic Fellowship [https://www.stoicfellowship.com/]), and renewed interest in its application in healthcare and other professional settings (e.g., Brown et al., 2022).

However, the term 'stoicism' (lowercase) in contemporary usage—which we will refer to as 'colloquial stoicism'—has diverged from its philosophical origins to denote the endurance of hardship without complaint or emotional expression (Merriam-Webster, 2003; Oxford English Dictionary, n.d.). These negative connotations of stoicism are captured in some of the scales that purport to measure Stoicism, such as the Liverpool Stoicism Scale (LSS: Wagstaff & Rowledge, 1995; Murray et al., 2008) and the Pathak-Wieten Stoicism Ideology Scale (PW-SIS: Pathak et al., 2017). Previous bibliometric mapping of the conceptualization of Stoicism in the psychological literature has identified that the concept is primarily operationalized as emotional suppression and lack of emotional expression and conceptually linked to negative well-being (Karl, 2025).

Evidence suggests that these *prima facie* unhelpful negative attitudes and behaviours of colloquial stoicism do indeed have negative consequences. The LSS has been found to be negatively associated with quality of life and the Big Five personality trait of openness to feelings (Murray et al., 2008). The authors of the PW-SIS conclude that stoicism represents a set of *dysfunctional* health attitudes and behaviours that encourage an internal resistance to the person's objective needs (Pathak et al., 2017). Moreover, less formal assessments of stoicism have been linked to adverse outcomes such as delays in help-seeking (MacLean et al., 2017), caregiver strain (Almberg et al., 1997), and suicide after economic stress (Alston 2012). Thus, colloquial stoicism has significant downsides in practice. We contend that it fails to represent the philosophy of life advanced by the ancient philosophers and modern Stoics.

Contrary to colloquial stoicism, advocates for philosophical Stoicism[1] claim that it is a philosophy of life that *promotes* well-being.". The fact that the core ideas of Stoicism have reappeared in—and been incorporated into—effective contemporary psychotherapy and positive psychology offers compelling, if indirect, evidence for this claim. Two key Stoic ideas are the *dichotomy of control*—that some things are under our direct control (our actions and thinking) while others are not—and the *cognitive theory of emotions*—that our beliefs largely determine our emotions. These principles are central to CBT (DiGiuseppe et al., 2016). Another core Stoic idea is the importance of cultivating *a good character* through the four cardinal virtues of wisdom, justice, courage, and self-control (Pigliucci, 2017; Robertson, 2018; LeBon, 2022). Contemporary positive psychology has demonstrated that these qualities—often called *character strengths*—significantly and *positively* correlate with well-being (Peterson & Seligman, 2004).

A major factor accounting for the absence of more direct empirical evidence for the relationship between Stoic philosophy and enhanced human functioning is the lack of validated instruments that measure the degree of agreement with authentic Stoic attitudes and behaviours, as opposed to the scales mentioned previously that do not capture the life philosophy. Such a scale grounded in philosophical traditions could be used to test empirically the effects of interventions that purport to teach the philosophy of Stoicism and changes in Stoic attitudes and behaviour, which in turn could be evaluated as mediators of change in well-being and psychopathology. This paper presents the development of such a scale: The Stoic Attitudes and Behaviours Scale (SABS). The SABS is an attempt to measure an individual's adherence to the core practices of Stoic philosophy. We present the development of the scale, its internal structure based on state-of-the-art psychometric principles, and its initial validation. We also explore its association with well-being, anger, and resilience using self-report measures of well-being and mental health.

Methods

Participants

Stoicism Students

Participants were first-time attendees of online e-learning events put on by Modern Stoicism between 2019 and 2022, comprising 4 “Stoic Weeks” and one longer course (SMRT). The 6162 participants resided in 116 Countries. The US (33%), UK (21.2%), and other English-speaking countries (Canada, Australia, Ireland, and New Zealand, 16.8%) together accounted for 71% of participants, and another 21.1% came from 33 other European countries. The remainder (7.4%) came from across the world, with each country accounting for a small percentage of participants and drawn from non-English-speaking countries. We did not collect data on economic background, education level, or English proficiency. However, we recognise that because these participants attended an online event concerning personal growth based on a Western philosophy of life, they were more likely to be non-representative of the larger population.

Of the 6162 participants, 3635, or 59%, identified as male; 2355, or 40%, identified as female; less than 1%

[1] From this point forward, capitalized Stoicism refers to the traditional philosophy rather than the modern colloquial idea of resisting the expression of emotion.

declined to answer or indicated their gender as other. We asked participants to indicate their age in categories. 57, or 0.9%, indicated their age as under 18; 41.1%, as 18–25; 22.1%, as 26–35; 22.8%, as 36–45; 19.7%, as 46–55; 13.5%, as 56–65; and 6.9% indicated their age as above 65.

Sample 2

This sample consisted of three separate groups that were used for different analyses.

International Qualtrics Panel

We recruited a sample of 495 participants from Qualtrics from English-speaking countries. Australia was the home of 91 (18.4%) participants, 82 (16.6%) were from Canada, 84 (17%) were from New Zealand, 78 (15.8%) were from South Africa, 81 (16.4%) were from the UK, and 79 (16%) were from the USA. For this group, the mean age was 42.1 (SD 13.75 and ranged from 23 to 81. Two hundred forty-six indicated their gender as male, with 238 indicating female. Five were transgender, one was gender fluid, and five declined to state their gender.

US Undergraduates

A total of 429 undergraduate students from a private, sectarian a university in the northeastern US participated in exchange for course credit. The sample had a mean age of 20.53 years old, a standard deviation of 2.14, and a median of 20.0. One hundred and eleven were males, 312 were females, and twelve identified as transgender or gender fluid. All but 11 of these students were US residents or citizens, while 12 were international students.

New Zealand Undergraduates

A total of 979 first-year undergraduate students participated. Participants were students in an introductory course to psychology at a New Zealand University. They took part in the study in exchange for research participation credit, online in their own time.

This subsample had a mean age of 19.67 years with a standard deviation of 4.5 years. The ages ranged from 17 to 59. Seven hundred twenty-three identified as female, 222 as male, and 34 identified as transgender or gender fluid. Eight hundred and eighty-one were citizens or permanent residents of New Zealand. A majority of this sample identified as White-Caucasian. However, a substantial number wrote in that they were of various Asian and Pacific Island ethnicities, and more than a third identified as mixed-race background. This group completed the SABS and the PW-SIS.

Measures

Stoic Attitudes and Behaviours Scale

Core Concepts Members of the Modern Stoicism (2023) group, an interdisciplinary, not-for-profit organization comprising classicists, philosophers, psychotherapists, and academic psychologists undertook the development of the Stoic Attitudes and Behaviours (SABS) Scale in 2013**.** Based on the standard corpus of Stoic literature, they identified six major principles that comprise the foundation of Stoicism, as follows:

(1) *The Dichotomy of Control*. This principle was emphasised by the ancient Stoic Epictetus (Enchiridion 5; 90 BCE/1996) and is based on the observation that people do not have complete control over many things that may affect them, such as what other people think, what happened in the past, and what might happen in the future. What is under direct control is how people think about their experiences and what they choose to do. As such, Stoics view it as advisable to relinquish the hope of controlling things that are inherently beyond control and focus on what they can control, namely, how they choose to act and think about things.

(2) *Developing a Good Character.* Stoicism proposes that people can be both ethical and happy and that developing a good character helps people achieve both (Sharpe, 2013; LeBon, 2022). Four central, "cardinal" virtues are identified as contributing to good character: wisdom, courage, self-control (sometimes called moderation or temperance), and justice (in a broad sense, to include concern for others as well as fairness) Stoics recommend that people cultivate these virtues and prioritize keeping a good character above everything else. People should always do the right thing rather than take what might be the easier—but less good—option.

(3) *Stoic Mindfulness and Cognitive Therapy*. Epictetus (Enchiridion 5; 90 BCE/1996) famously wrote, "People are disturbed not by things, but by the views which they take of things." Events do not have the power to distress us, although they might disappoint us. Otherwise, how could two people respond so differently to the same event? This idea combines two elements: *noticing* and *changing* our interpretations and judgments. The first element is more closely associated with mindfulness practices, and the second is with cognitive restructuring in CBT. We have already noted the close connection between Stoicism and CBT. Mindfulness practices are often associated with Buddhism. However, a form of Stoic mindfulness called *prosoche* was emphasised

by Epictetus (Discourses 4.12, Epictetus, 2014). While some modern authors perceive substantial agreement between Stoic and Buddhist principles underlying mindfulness interventions (Robertson, 2018) and others hold that there are subtle but essential differences (Lopez, 2017), noticing one's thoughts is an important aspect of Stoic practice.

(4) *Theory of the Good Life*. Stoics believe that character development or virtue is necessary and sufficient for *eudaimonia* (Sharpe, 2013). The Greek term *eudaimonia* is sometimes translated as happiness, but "flourishing" or "the good life" conveys its meaning more accurately. *Eudaimonia* connotes a life well lived rather than merely a life of feeling good. Stoics believe that people need only a good character for *eudaimonia*. Other things that people usually consider important—such as status, money, good health, other people thinking well of us, and even the well-being of our loved ones—may be of value but are not essential for crafting a well-lived life.

(5) *Oikeiosis. S*ometimes translated as "natural affection" or appropriation, the Greek word *oikeiosis* is best understood as our potential for rational and moral progress. Cicero's Cato (Book III, Cicero, 1931) explains that we begin life with an instinct for self-preservation. As humans age and become more rational, they understand that others are like us and worthy of care. With this growth, which Stoics assert is a natural process, people expand their care from themselves to others. It is a notion particularly associated with the later Stoic philosopher Hierocles (Ramelli, 2009). He wrote about treating others usually considered outside our "circle of concern" more like those within it—for example, by calling a stranger "friend" and a friend "brother." This process is, therefore, also closely connected to benevolence and cosmopolitanism, the notion that we are all "citizens of the world" and have a duty of care for all rational beings.

(6) *Stoic Physics and Worldview.* The ancient Stoics were pantheists, identifying God with the rational order of the universe (logos). They believed this divine principle infused the cosmos—especially humans—with rationality and connected all things. The Stoics were also determinists, holding that everything happens according to a divine plan or natural order. Humans, however, have the crucial freedom to choose their attitudes and actions in response to this plan. Marcus Aurelius, in his *Meditations*, repeatedly urges acceptance of fate as part of the greater good of the cosmos (e.g., Aurelius, 2011, 2.3). At times, he goes further, prefiguring Nietzsche's idea of *amor fati*: not only accepting one's fate but embracing it with love. These elements of Stoicism are not theoretically independent from each other. The Stoics held that ethics, physics, and logic are all intertwined (Laertius, 2018). For example, if someone believes that virtue is sufficient for *eudaimonia* (Principle 4), they are also likely to think that one should develop the virtues (Principle 2). Similarly, the Stoic worldview (Principle 6) adds weight to Stoic mindfulness and cognitive therapy (Principle 3). If everything is for the best, this can help us accept apparent adversities. Thus, Stoic philosophy would predict that any measure of these elements would involve intercorrelated subcomponents.

However, modern Stoics (e.g., Chakrapani & LeBon, 2021) debate the importance of some of these ancient Stoic principles for well-being and emotional regulation. Many modern Stoics maintain that the strongest relations of Stoic beliefs with flourishing and the good life are between Principles 1, 2, and 3 and, to some extent, Principle 4. There is disagreement among modern Stoics concerning how much people need to subscribe to Stoic Physics and Worldview (Principle 6). Similarly, Oikeiosis (Principle 5) is given more prominence by some modern Stoics (such as Gill, 2023) than others.

Instruments The SABS scale has been developed iteratively by an interdisciplinary group of philosophers and psychologists. The current version consists of 60 items. Participants were asked to indicate on a 7-point Likert scale how much they agree with each statement from Strongly Agree (7) to Strongly Disagree (1), with worded anchors (see Appendix A for full details about the 60-item SABS and the history of its development).

For testing convergent validity, we included The Three Disciplines Questionnaire (Pigliucci & Lopez, 2019) and the Stoic Elevator Scale (LeBon, 2022), two scales developed by established Modern Stoic experts independently of the SABS to measure the life philosophy of Stoicism.

The Three Disciplines Questionnaire

Pigliucci and Lopez (2019) developed the Three Disciplines Scale in their self-help Stoicism treatment manual to help readers gauge their attitude change. The terms disciplines of desire, action, and assent were provided by Hadot (1998) to organize the Stoic principles identified by Epictetus and Marcus Aurelius.

The scale comprises nine items (three per discipline) rated on a 10-point scale from 1 (“doesn't describe me at all”) to 10 (“describes me perfectly”). All items are reverse-coded so that higher scores reflect greater adherence to Stoic disciplines. The Discipline of Desire aims to reduce

attachment to external outcomes and includes items such as "I get really upset when I don't get what I want or things don't go my way." The Discipline of Action refers to intentional action and prosocial attitudes, with items like "I tend to act impulsively, on the basis of my initial urges without questioning them." The Discipline of Assent refers to mindfulness and analysis of judgments, including items such as "I rarely notice what I'm thinking throughout the day."

Analysis of our sample (N = 1608) demonstrated good internal consistency and confirmed the expected three-factor structure via parallel analysis. Descriptive statistics and detailed psychometric properties are presented in Appendix C.

The Stoic Elevator Scale

The Stoic Elevator Scale was designed by LeBon (2022) as a brief, 10-item measure to rapidly assess an individual's degree of Stoicism across five theoretical dimensions: Dichotomy of Control, Cultivating and Using the Virtues, Managing Thoughts and Emotions, Prioritising the Virtues, and Stoic Worldview and Physics. Each dimension is assessed by two items rated on a 7-point Likert scale. Example items include "I let go of those things I can't control" (Dichotomy of Control) and "I cultivate the virtues of wisdom, courage, self-control and justice" (Cultivating Virtues).

Analysis in our sample (N = 1326) revealed good internal consistency, with parallel analysis indicating a four-factor empirical structure. Both scales demonstrated roughly normal score distributions. Complete descriptive statistics and psychometric properties are provided in Appendix C.

For testing discriminant validity purposes against the scales, we hypothesised that measured emotional suppression (colloquial stoicism) more rather than the life philosophy of Stoicism, we included the Liverpool Stoicism Scale (α = .83; Murray et al., 2008) and the Pathak-Wieten Stoicism Ideology Scale (PW-SIS; α = .78; Pathak et al., 2017). The LSS includes items such as: "I tend not to express my emotions," which implies emotions are experienced but suppressed; "I would not cry at the funeral of a close friend or relative," suggesting affective detachment; and "Expressing one's emotions is a sign of weakness," suggesting an underlying aversion to showing emotions. Similarly, the PW-SIS includes items such as "I expect myself to avoid feeling intense emotions," "I would not allow myself to be bothered by the fear of death," and "I don't believe in talking about my personal problems."

For concurrent criterion validity with well-being, we included the following instruments: the Satisfaction With Life Scale (SWL; α = .87; Diener et al., 1985), the Flourishing Scale (α = .87; Diener et al., 2009), the Scale of Positive and Negative Experience (SPANE: positive α = .87, negative α = .81; Diener et al., 2009), the World Health Organization Wellbeing Index (WHO-5; α = .93–.94; Topp et al., 2015), the Anger Disorder Scale–Short Form (ADS-SF; α = .86; DiGiuseppe & Tafrate, 2004), and the Brief Resilience Scale (BRS; α = ..70–.95; Smith et al., 2008). These scales are described in more detail in Appendix B.

Procedure

Table 1 below indicates the number in each group and the scales delivered for each group.

Stoicism Students

Participants in an on-line course on Stoicism were invited to take the measures online as part of their undertaking the course. All five groups completed the SABS 5.0, Satisfaction

Table 1 The sources of each group used in this study, the group size, and the measures they completed

Source		Number of participants	Common scales	Additional scales completed (in addition to SABS5.0)
Stoicism students	Stoic week 2019	1171	SABS5.0	Flourishing, SPANE, satisfaction with life scale, anger disorder scale
Stoicism students	Stoic week 2020	1123	SABS5.0	Flourishing, SPANE, satisfaction with life scale, three disciplines scale
Stoicism students	SMRT 2020	1983	SABS5.0	Flourishing, SPANE, satisfaction with life scale, Liverpool stoicism scale, brief resilience scale
Stoicism students	Stoic week 2021	854	SABS5.0	Flourishing, SPANE, satisfaction with life scale, WHO-5
Stoicism students	Stoic week 2022	1041	SABS5.0	Flourishing, SPANE, satisfaction with life scale, stoic elevator scale
Qualtrics international		495	SABS5.0	Flourishing, SPANE, satisfaction with life scale, ADS-Anger–Flourishing
US undergraduates		429	SABS5.0	Flourishing, SPANE, satisfaction with life scale, ADS-Anger–Flourishing
New Zealand undergraduates		945	SABS5.0	Pathak-Wieten stoicism ideology scale

with Life scale, SPANE, and Flourishing scale. Each group completed other measures as well.

Analytic Strategy

A data-driven procedure, exploratory graph analysis (EGA; Golino & Epskamp, 2016; Golino et al., 2020), has recently become available for determining the number of factors and their item composition. EGA uses network analysis, which is not subject to the same restrictive assumptions as the traditional latent variable model, yet is conceptually and mathematically highly similar to more common factor analytic methods. Some key advantages of networks are that there is a) no need for factor rotation which reduces ambiguity around choices and interpretation of differently rotated structures and b) it is a fully data driven approach for identifying possible factors and relevant items per factor via pre-specified criteria, which reduces researcher degrees of freedom and increases replicability. Important for our purposes, Golino et al. (2020) showed that EGA performs better in identifying the actual number of factors (see also Cosemans et al., 2022) than classical approaches common with factor analysis, such as the Kaiser (eigenvalue > 1) criterion and scree plots, and at least as well as parallel analysis (Horn, 1965). EGA has a more straightforward interpretation than factor analysis; it does not rely on interpreting a matrix of factor patterns and loadings because the network can be plotted in a two-dimensional space with nodes (i.e., items) dispersed according to their connection to neighbourhood nodes, making the visual identification of communities easy to depict (Golino et al., 2020, 2021a, b).

The developers of EGA have incorporated further capabilities for dealing with item redundancy (e.g., Oltmanns & Widiger, 2016). To address redundancy, unique variable analysis (UVA; Christensen, Garrido, et al., 2020) was carried out as a first step in item analysis. The number, composition, and stability of the underlying dimensions of the remaining variables were determined using the bootstrapped version of EGA, from which an estimate can be gained of the reproducibility of dimensions and their item composition. Structural consistency is the bootstrapped EGA counterpart to the classical test theory concept of reliability and is defined as the extent to which a dimension is interrelated and homogeneous in the presence of other related dimensions (Christensen et al., 2020). It is operationalized as the proportion of times that each dimension estimated via EGA has the same item composition across a set of replicate bootstrap samples (Christensen & Golino, 2019). Item replicability (or item stability) indicates how often items replicate in their empirically derived dimension and other dimensions. Instruments with low item replicabilities tend to have a very unstable dimensionality structure that does not replicate within bootstrapped samples.

As the SABS contains both positively and negatively keyed (i.e., reverse-scored) items, the procedure proposed by Garcia-Pardina et al. (2022) was applied, whereby a unit-weighted random intercept factor for direct and reverse-scored items is first extracted to control for wording effects, following which the residual matrix is analysed. This approach was applied within each bootstrapped permutation. The results were then re-analysed from the standpoint of confirmatory factor analysis to ground the findings in more widely familiar terms. A final set of analyses was carried out concerning the potential higher-order dimensionality of the SABS. The extent to which the SABS can be considered unidimensional versus multidimensional was evaluated using bifactor modelling.

The resulting subscales were correlated with potential criterion variables in the standard manner to establish validity.

Results

We explored the structure of the SABS for the sample consisting of first-time students of Stoicism (Sample 1, N = 6172). The sample was split into three subsamples comprising equal thirds. The first two-thirds were used as development samples. Decisions regarding the disposition of items were made based on analysis carried out in parallel within both index subsamples. The results were then cross-validated with the third subsample, and a final analysis of the item composition was completed within the full sample.

Dimensional Composition

The first step was to identify redundant variables that represent local dependencies (items with strong residual associations beyond what is accounted for by their common latent factor) that could distort the measurement model. We used the UVA function to perform a unique variable analysis (Christensen et al., 2020). This function presents the user with target variables and candidate redundant variables identified based on weighted topographical overlap (wTO) of ≥ =.25 and implements the user's decision concerning which steps to take to address the redundancy. The option of removing one of the redundant variables was selected. Eleven pairs of items were identified that had wTOs > .25 in both index subsamples. One item from each pair was retained, and the other was eliminated. One important caveat is that this method examines the statistical correlation, that is, the functional equivalence of items, but it is blind to the theoretical content of highly correlated items. This may

result in removing meaningful content from a scale. We took great care of this issue and the selected items based on the clarity of wording of the core philosophical content, simplicity, and more general applicability. An exception was made for the worldview items, where all three items were flagged as being redundant, and following the decision rule would have meant eliminating all but one item and foregoing the possibility of including this dimension that is viewed as essential by some Stoic theorists.

An initial exploratory graph analysis was then carried out in both subsamples using the EGAnet R package 2.0 (Golino et al., 2024), applying the graphical least absolute shrinkage and selection operator (***EBIC*** GLASSO) and the Louvain community detection algorithm. Six communities were found according to EGA in both subsamples.

The graph of results for the first sample appears in Fig. 1.

To determine the stability of the initial six-dimension solution we carried out an item stability analysis as described by Christensen and Golino (2019). The 49 non-redundant items were entered into a bootstrapped EGA analysis (bootEGA) using the random intercept method, the Louvain algorithm of community detection, and parametric bootstrapping whereby simulated samples with the same statistical parameters as the original sample are generated and analysed (rather than randomly sampling from the original sample). This combination of analytic options was the best fit for the SABS, based on considerations identified in the simulation studies of Golino and Epskamp (2016) and Christensen et al. (2024). Over the 500 iterations, in the first index subsample, seven dimensions were chosen 41% of the time, six dimensions 48% of the time, five dimensions 6.6% of the time, and eight dimensions .4% of the time. The equivalent respective frequencies in the second index subsample were 42%, 54%, .2%, and .2%. The median network thus consisted of six dimensions; however, the fact that a seven-dimension solution was found over a substantial percentage of bootstraps suggested the six-dimension solution was not stable. Low dimensional stability-the percentage of time a dimension was exactly replicated- for some dimensions confirmed this instability. Christensen et al. (2021) suggest 75% as a cutoff for acceptable stability. In the first index sample, four dimensions met or exceeded this threshold, but two of the six dimensions were below the threshold, with stabilities of 42% and 70%. Correspondingly, seven of 52 items had item stabilities <.75.

In the second index subsample, three dimensions were below 75%, with stabilities of 42%, 61%, and 31%, and nine items had stabilities <.75. Using this stability information, in conjunction with the items' network loadings, we used a threshold of .20, which is comparable to a factor loading of .40, and information from the network diagrams regarding the item's graphical placement in the network, we removed the item with the lowest stability and that appeared to most confound the overall dimensional structure, and for which this was true in both index subsamples. We repeated the analysis without that item, and this process continued until the remaining items and dimensions had at least 75% stability in both index subsamples. These results appear in Fig. 2.

During this item reduction process, seven dimensions became the median solution across the bootstrapped subsamples in both index subsamples. The seven-dimension solution was stable in the first but not the second subsample. However, the same solution was found in the hold-out cross-validation as in the first index subsample, and this same solution was found to be stable within the entire sample pooled across the three subsamples.

The final network loadings from the total sample, with all seven dimensions included, are shown in Table 2, using the updated network loading procedure recently made available by (Christensen et al., 2024), according to which network loadings of >.20 but <.35 are considered small, loading between .35 and 50 are moderate, and those >.50 are large.

The dimensions were labelled as follows. (1) Beliefs about happiness (corresponding to Theory of the Good Life); (2) Stoic Mindfulness (corresponding to Stoic Mindfulness and Cognitive Therapy); (3) Virtue (corresponding to the Stoic development of good character principles); (4) Benevolence and Compassion (corresponding to the natural affection element of *Oikeiosis*); (5) Beliefs About Control (corresponding with the dichotomy of control); (6) Ethical Development (which relates to the growth aspect of *Oikeiosis*); and (7) Stoic Worldview, corresponding to the Stoic Physics and Worldview principle. Within the entire sample, the respective stabilities of the dimensions were 100%, 99%, 53%, 100%, 100%, 100%, 100%, and 100%.

Hierarchical Structure and Fit to Data

To connect the network approach strategy pursued in the current study to longer standing methods, we submitted the measurement structure based on the network analysis to the *lavaan* R package (Rosseel et al., 2022) for confirmatory factor analyses for a 7-factor solution. We used the Diagonally Weighted Least Squares estimation, which handles categorical and ordinal variables. The network structure fit the data well within the first index subsample according to conventional thresholds, χ^2 (719)=3201.2, p<.001, CFI=.96, TLI=.96, RMSEA=.041, SRMR=.048, and χ^2/df=4.45.

For the second index subsample, the CFA result also had an excellent fit χ^2 (719)=3538.6, p<.001, CFI=.95, TLI=.95, RMSEA=.044, SRMR=.051, and χ^2/df=4.91.

For the cross-validation subsample, the results were similar, χ^2 (719)=2829.1, p<.001, CFI=.97, TLI=.96,

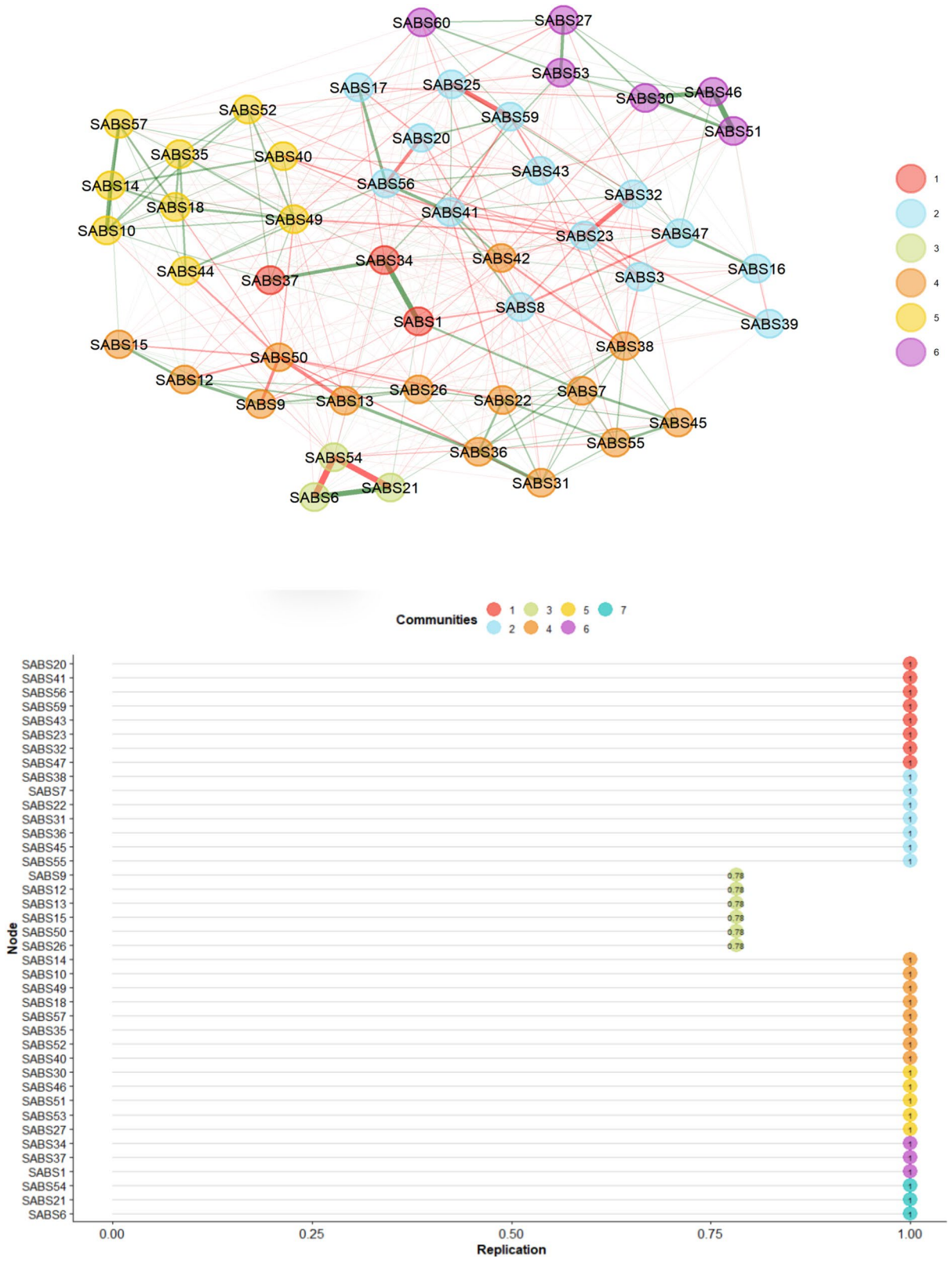

Fig. 1 Initial exploratory graph analysis of SABS items after removal of most redundancies (first index sample)

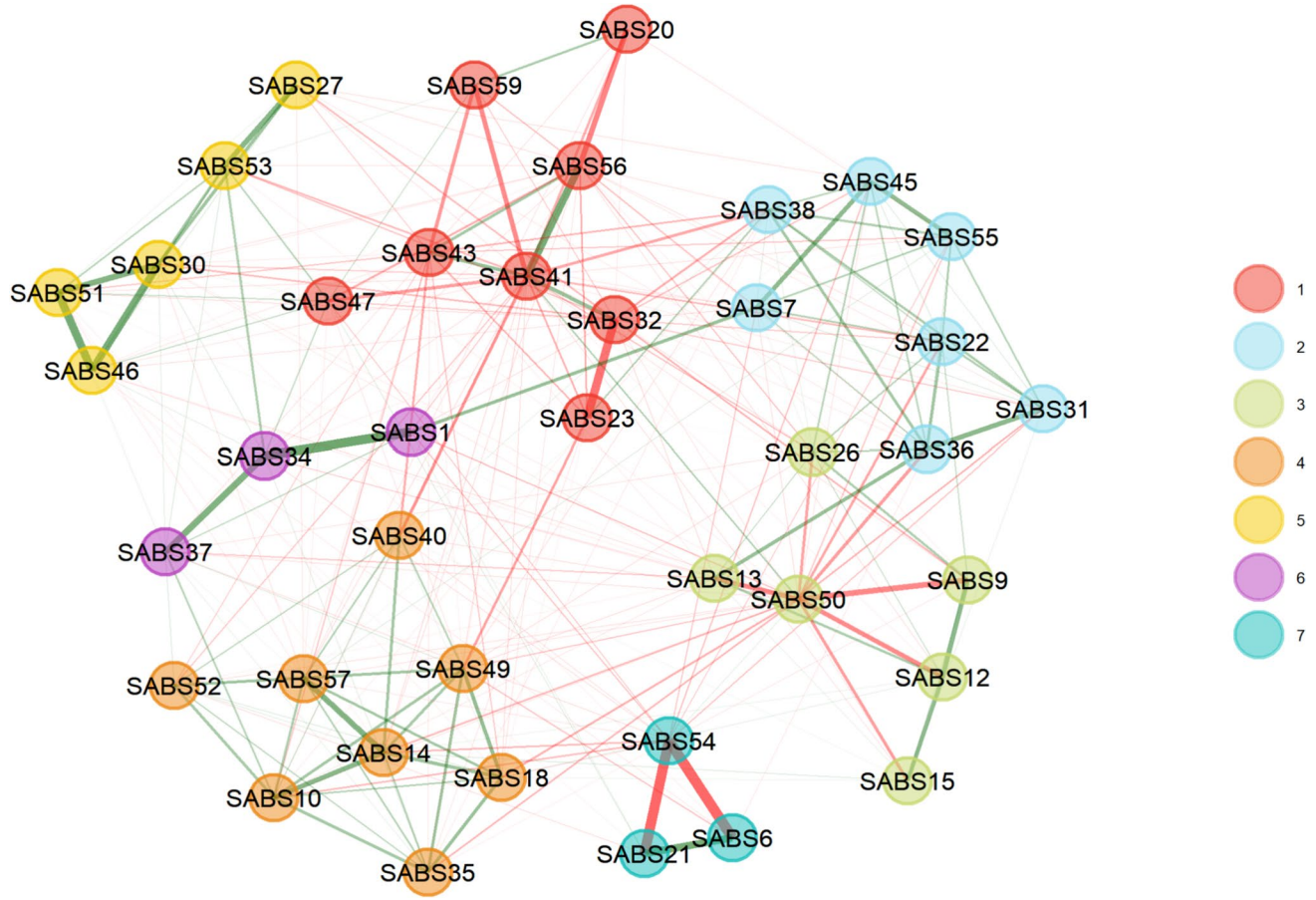

Fig. 2 SABS EGA graph and dimensional stability with seven dimensions

RMSEA=.038, SRMR=.046. A similar fit was found in the full sample, χ^2 (719)=9050.2, p<.001, CFI=.96, TLI=.95, RMSEA=.043, SRMR=.0487. For all three subsamples, the fit indices displayed an adequate to excellent fit (Hooper et al., 2008).

We used McDonald's omega coefficient to assess the internal consistency for the SABS total and subscale scores, as widely recommended and preferable to the traditional alpha coefficient (e.g., Liu et al., 2023). We performed the analysis with the OMEGA function of the psych R package (Revelle, 2021) with Schmid-Leiman rotation and maximum likelihood estimation (due to the lack of a WLSMV option in the psych package). Reise et al. (2018) note that bifactor models typically achieve a comparable fit to the equivalent correlated factors model. This was the case in the current study, with the RMSEA=.043 comparable to what was found with the CFA. The fully unidimensional model (RMSEA=.12) fits less well than the bifactor model. Omega can be interpreted along the same lines as alpha traditionally is, according to which the SABS total and subscale scores had acceptable internal consistency, ranging from .88 for Factor 1 down to .76 for Factors 5 and 7. Variations of the omega coefficient within a bifactor structure can offer a sense of whether the general factor is largely unidimensional and the extent to which subscale score precision is reliant on general factor variance (see Widaman & Revelle 2023). The omega coefficient for the general factor was .95. This reduced to .71 for hierarchical omega suggesting that a substantial proportion of the reliable variance was due to the subscale factors. The general factor's explained common variance (ECV) was .39, which is also inconsistent with unidimensionality (which would be indicated by a higher ECV). The model-based Omegas for the factor scales within the bifactor model were .88, .85, .81, .80, .76, .82, and .76 for the Beliefs about Happiness, Stoic Mindfulness, Virtue, Benevolence and Compassion, Beliefs about Control, Ethical Development, and Stoic Worldview dimensions, respectively. However, these were reduced to .51, .37, 47, 52, .39, .71, and .40, respectively, for the omega hierarchical subscale, suggesting that much of the subscale reliability was derived from the overall general factor. Taken together, the evidence paints a mixed picture: although the general factor appears to dominate in terms of variance explained, the relatively low ECV and nontrivial residual variance in subscales suggest that the SABS is not adequately represented by a single underlying dimension (Table 3).

Table 2 Final network loadings across the seven dimensions for the retained 40 SABS items

Item	Item content	Dimension						
		BAH	SM	V	B&C	BAC	ED	SW
SABS41	If things don't go well for me, I can't lead a good life	0.630						
SABS56	If things don't go well for my family, I can't lead a good life	0.503						
SABS32	I need to be well thought of by others in order to be happy	0.357						
SABS59	It is possible to lead a happy life even when we have lost success or wealth	0.357						
SABS23	I cannot really be harmed by what other people say	0.324						
SABS43	I need to be in good health in order to be happy	0.304						
SABS20	It is possible to lead a happy life even after the death of someone we love	0.265						
SABS47	As long as you have the right attitude, you can lead a good life even in the most difficult circumstances	0.191						
SABS36	I pay attention to my thoughts about what I intend to do before I act on them		0.404					
SABS45	Every day, I spend some time thinking about how I can best face challenges in the day ahead		0.358					
SABS55	I think about what the ideal wise and good person would do when faced with misfortunes in life		0.343					
SABS31	I pay attention to my judgments about good or bad things or people as I am making them		0.342					
SABS7	I regularly spend time reflecting on what is most important to enable me to live a good and happy life		0.292					
SABS22	When making an important decision, I ask myself, "What really matters here?"		0.288					
SABS38	When a negative thought enters my mind, I remind myself that it is just an interpretation of the situation		0.282					
SABS50	I often do what I feel like doing rather than doing what I believe to be the right thing		0.240	0.595				
SABS12	I usually do the right thing			0.481				
SABS9	I do the right thing even when I feel afraid			0.341				
SABS13	I do not act on urges when it would be unwise to act on them			0.247				
SABS15	I treat everyone fairly			0.231				
SABS26	When I have a problem, I am good at taking constructive action in a timely manner			0.221				
SABS14	I am committed to helping humanity in general				0.536			
SABS10	It is my duty to help others				0.441			
SABS49	I care about the suffering of others				0.410			
SABS18	I take active steps to reduce the suffering of others				0.388			
SABS57	I am committed to helping in my local community				0.336			
SABS35	I am committed to helping my friends				0.325			
SABS52	I see my happiness as fully compatible with caring for other people				0.245			
SABS40	I view other people as fellow-members of the brother/sisterhood of humankind				0.222			
SABS30	Nothing except our judgments and voluntary actions are truly under our control in life					0.522		
SABS46	Our voluntary actions are among the only things truly under our control in life					0.479		
SABS51	Our judgments are amongst the only things truly under our control in life					0.421		
SABS53	The best idea is to give up trying to control people and instead focus on our own actions and our judgments and character					0.314		
SABS27	We can't really control other people					0.272		
SABS34	It is good to think about life as an ongoing journey towards becoming a better person						0.594	
SABS1	I think about my life as an ongoing project to become a better person						0.402	
SABS37	I want to become a better person ethically						0.295	
SABS54	There is no overall plan to the universe							0.573
SABS21	The universe embodies wisdom							0.526
SABS6	The universe is benevolent in its overall plan							0.517

Item numbers correspond to original SABS 5.0 version

Network loadings are partial correlations calculated in the overall sample (N = 6179). Only loadings ≥ .2 are shown. F1 = Beliefs about happiness; F2 = Stoic mindfulness; F3 = Virtue; F4 = Benevolence and compassion; F5 = Beliefs about control; F6 = Ethical development; F7 = Stoic worldview

Table 3 McDonald's omega coefficients for internal consistency of the stoic attitudes and behaviours scale totals scores and subscales scores for each wave of data collection, and hierarchical omega for the stoic week samples using CFA

Sample	SABS total	Group size	F1	F2	F3	F4	F5	F6	F7
			Beliefs about happiness	Stoic mindfulness	Virtue	Benevolence and compassion	Beliefs about control	Ethical development	Stoic worldview
Number of items	40		8	7	6	8	5	3	3
SMRT 2020	.90	1983	.79	.82	.77	.85	.76	.70	.78
Stoic week 2019	.91	1171	.79	.84	.78	.85	.77	.68	.77
Stoic week 2020	.90	1123	.79	.83	.74	.85	.77	.70	.81
Stoic week 2021	.91	854	.78	.83	.76	.84	.77	.71	.79
Stoic week 2022	.89	1041	.79	.82	.73	.83	.78	.69	.79
Combined samples bifactor model	.95	6172	.88	.85	.81	.80	.76	.82	.76
Omega hierarchical		61,712	.51	.37	.47	.52	.39	.71	.40

SABS = Stoic attitudes and behaviours scale

Table 4 SABS dimensions across sample 1 (stoic week and SMRT), and two groups of samples 2 (Qualtrics general sample, and undergraduates)

SABS subscales	Omega values for the stoic students sample	Omega values for the Qualtrics general	Omega values for the pooled undergraduates
F1-Beliefs about happiness	.88	.70	.72*
F2-Stoic mindfulness	.85	.86	.85
F3-Virtue	.81	.74	.95
F4-Benevolence and compassion	.80	.91	.92
F5-Beliefs about control	.76	.80	.84
F6-Ethical development	.82	.84	.91
F7-Stoic worldview	.76	.71	.63

*Could only be computed after removing items 23 and 41. The alpha coefficient is.59 with both items included and.76 with these items removed

SABS Dimensions in the Qualtrics General Population and Undergraduate Student Samples

As these samples were not large enough for determining dimension composition as had been done in the Stoic Week sample, only the basic psychometric sufficiency of the scales was considered to gain a basic sense of whether it could be anticipated that the SABS could be scored in the same way in the general population as was indicated for those specifically interested in Stoic philosophy. Omega coefficients were calculated for each of the subscales derived in the Stoic Week subsample within the Qualtrics panel sample. The Omega coefficients were primarily comparable to those of the first sample, with the exception of a lower, though still acceptable, omega for the Beliefs about Happiness subscale (.70), with the omegas for the remaining scales in ascending order being Stoic Worldview (.71), Virtue (.74), Beliefs about Control (.80), Ethical Development (.84), Stoic Mindfulness (.86), Benevolence and Compassion (.91). We, thus, concluded that the subscales were scorable within this subsample. Table 4 presents the Omega Coefficients across three samples: Stoic Week and SMRT (combined, as in sample 1), Qualtrics General Sample, and the US Undergraduates.

Validity Analyses

Differences Between Samples

We conducted descriptive analyses of the SABS total and subscale scores across three samples: the Stoic Week sample, the student sample, and the general population sample (Qualtrics). Scores were calculated by summing item responses within each scale and dividing by the number of items to obtain mean scores. To assess normality, we used skewness and kurtosis values greater than ± 1 as indicators of substantial deviation from a normal distribution (Tabachnick et al., 2020). Several subscales—particularly *Beliefs about Control* and *Ethical Development* in the Stoic Week sample—displayed significant skewness and kurtosis, consistent with potential ceiling effects among participants already engaged with Stoic ideas. According to Cohen and Cohen's (1983) guidelines, the effect size for differences in the total SABS score between groups was exceptionally large, indicating substantial variation in Stoic attitudes and behaviours across the samples.

Table 5 SABS correlations with stoic elevator scale and three discipline questionnaire, total and subscale correlations

SABS	Stoic elevator scale N = 1041						Three disciplines questionnaire N = 1123			
	Total	Control	Virtue	Manage emotions	Prioritize virtue	World view	Total	Desire	Action	Assent
Total	.765	.527	.621	.544	.580	.506	.578	.438	.498	.455
F1	.511	.452	.361	.459	.311	.252	.424	.427	.265	.322
F2	.661	.469	.632	.521	.422	.326	.517	.328	.393	.506
F3	.6202	.498	.495	.495	.536	.225	.624	.547	.641	.392
F4	.455	.206	.395	.227	.541	.321	.376	.250	.385	.268
F5	.228	.22061	.192	.182	.196	.262	.187	.155	.146	.152
F6	.325	.167	.268	.186	.262	.305	.206	.144	.171	.228*
F7	.380	.172	.254	.157	.159	.652	.100	.054	.101	.083

All correlations were significant with $p < .001$

Table 6 Correlation of the SABS total scores with measures of well-being, and with measures of anger and resilience in a subsamples of first-time participants in stoic week and SMRT (sample 1)

Subsample	No	Satisfaction with life	SPANE	Flourish	Anger disorders scale	Brief resilience scale	WHO-5
Stoic week 2019	1171	.46	.56	.64	−.42		
SMRT 2020	1983	.4	.5	.6		.51	
Stoic week 2020	1123	.46	.5	.61			
Stoic week 2021	854	.47	.58	.59			.54
Stoic week 2022	1041	.42	.52	.57			
Total	6172	.43	.53	.5			

Demographic Differences

We combined all the samples and correlated the SABS Total and Subscale scores with age. There was a small positive and significant correlation between age and higher SABS scores.

Convergent Validity

Table 5 presents the correlations between the SABS scores with the Three Disciplines Scale and the Stoic Elevator Scale Scores, two other scales developed independently, designed to measure the life philosophy of Stoicism. All these correlations were significant beyond the $p < .001$ level. The SABS total and subscales scores have large, significant, and positive correlations with the other measures developed by modern Stoics, representing the principles of Stoicism. These findings support the convergent validity of the SABS.

Criterion Validity of Stoicism with Good Psychological Functioning

As noted earlier, we included a variety of scales to measure good psychological functioning alongside the SABS scale.

Table 6 below presents the SABS scores alongside three validated scales designed to measure well-being, which were administered across each of the subsamples in the Stoicism student sample (first-time participants in Stoic Week and SMRT). These scales demonstrated excellent consistency across subsamples, with correlations of .43 for life satisfaction, .53 for the balance of positive over negative emotions, and .50 for flourishing. The WHO-5, a measure of subjective well-being and overall mental health, was used in only one subsample and showed a correlation of .54 with the SABS. Additionally, in one subsample, the SABS exhibited a .51 correlation with resilience, as assessed by the Brief Resilience Scale and −.42 with the Anger Disorders Scale. These results strongly support the hypothesis that Stoicism shows significant concurrent criterion validity with good psychological functioning.

Discriminant Validity of Stoicism (the Life Philosophy) with Stoicism (as Used Colloquially)

In addition, one subsample in the Stoicism student sample measured the relationship between the Liverpool Stoicism Scale (LSS) and the SABS, and with the well-being measures. The Liverpool Stoicism scale had a negative but insignificant correlation with the SABS (−.1, n.s.). This confirms the hypothesis that colloquial stoicism is a distinct construct from Stoicism, the life philosophy. Colloquial stoicism as measured by the LSS also had a small negative insignificant correlation with the Satisfaction with Life (r = −.01) and SPANE measures (r = −.06) and a larger negative correlation with the Flourishing scale (r = −.25), confirming the significant downside of (colloquial) stoicism noted earlier.

Table 7 presents the correlations of the SABS total and subscale scores with the PW-SIS total scores. Overall, as with the other lower-case scale, there was a negative correlation between the SABS and the PW-SIS (−.15). None of

Table 7 Correlation between the stoicism measure—the SABS scores, with the colloquial stoicism measure—the PW-SIS, in the New Zealand student sample. N = 979

	F1	F2	F3	F4	F5	F6	F7	SABS total score
PW-SIS-Total	−.22***	−0.06	−.25***	−0.08	−0.02	−.13**	0.02	−.15**

the SABS dimensions were significantly and positively correlated with the PW-SIS. The correlations were extremely small and nonsignificant or negative and significant. Of note, the Beliefs about Happiness, Virtue and Ethical Development, and total scores were significantly and negatively correlated with the PW-SIS.

These findings support the discriminant validity of the SABS, indicating that although the Liverpool and PW-SIS instruments are labelled as 'Stoicism' measures, they assess conceptually different constructs.

Discussion

Summary of Findings

The SABS was developed through a rigorous and iterative process involving clinical practitioners and philosophers, repeated pilot testing, and advanced psychometric techniques. A 40-item scale with seven dimensions emerged, aligning closely with six foundational principles of Stoic philosophy. The final version of the scale, including item wording and dimensional assignment, is provided in Appendix D (see Table 10) for reference and potential use in future research or practice. Validation was conducted across a large sample, with participants completing the SABS alongside measures of mental health and well-being.

Items reflecting the sixth Stoic principle, Oikeiosis (self-affection and connection with others), loaded onto two distinct factors. The first, Benevolence and Compassion, captured interpersonal concern and caring behaviours. The second, Ethical Development, represented the lifelong process of cultivating character and aligning with nature. This theoretical distinction was supported across all three samples.

These results were supported by confirmatory factor analyses in each sample, providing strong evidence for the SABS's factor structure and internal consistency.

There was most likely a self-selection bias in Study 1, where participants with prior interest in Stoicism—particularly through eLearning events—may have been predisposed to agree strongly with Stoic principles. The presence of ceiling effects may have limited variability and thus reduced the ability to detect stronger associations with other psychological variables in this sample.

The SABS demonstrated discriminant validity through significant negative correlations with the LSS and PW-SIS, which measure the more colloquial sense of stoicism. As predicted, these measures showed moderate inverse relationships with well-being, whereas the SABS was positively associated with flourishing, resilience, and life satisfaction, and negatively associated with dysfunctional anger.

A secondary contribution of this study is the first comprehensive psychometric evaluation of two previously unvalidated Stoicism measures. Both the Three Disciplines Questionnaire and the Stoic Elevator Scale demonstrated good internal consistency ($\omega = 0.84$) and acceptable factor structures in our large samples, providing an empirical foundation for their reliability. These findings offer valuable psychometric evidence for researchers interested in using these brief measures to assess specific aspects of Stoic philosophy in future studies. While these scales served as convergent validity measures for our primary validation of the SABS, the psychometric data we provide may aid future research seeking to employ shorter assessments of Stoic principles.

While we acknowledge that future research should examine the incremental validity of the SABS against other emerging Stoicism measures, our findings suggest that the SABS already offers incremental validity over existing scales included in this study. Specifically, the SABS assesses seven distinct dimensions of Stoic philosophy compared to the Three Disciplines Questionnaire's three-factor structure, providing a more comprehensive assessment of Stoic attitudes and behaviours. The SABS covers dimensions not captured by the Three Disciplines Questionnaire, including Beliefs about Happiness, Benevolence and Compassion, Beliefs about Control, Ethical Development, and Stoic Worldview, alongside the mindfulness and virtue-related constructs addressed by existing measures. This broader coverage suggests that the SABS may provide incremental predictive validity for well-being outcomes beyond what shorter, more focused measures can offer. The strong correlations between the SABS total score and existing measures (.58 with the Three Disciplines Questionnaire and .77 with the Stoic Elevator Scale) indicate good convergent validity while still leaving substantial unique variance, suggesting that the SABS captures important aspects of Stoic philosophy not fully assessed by other current instruments. Future research using hierarchical regression analyses could formally test this incremental contribution across various outcome measures.

As hypothesized, Stoicism as a life philosophy was positively associated with well-being. The SABS total and subscale scores showed strong relationships to validated

measures of life satisfaction, positive affect balance, flourishing, and resilience. In contrast, colloquial stoicism, as measured by the LSS and PW-SIS, was moderately negatively associated with well-being.

Limitations

We believe that the development of the 40-item SABS offers a valuable contribution for researchers interested in Stoicism and its application in psychology. However, several limitations should be acknowledged.

Like many data reduction techniques, Exploratory Graph Analysis (EGA) has limitations when applied to abstract philosophical concepts. Quantitative approaches may struggle to capture the nuanced and interrelated nature of Stoic ideas, which do not always translate neatly into distinct, measurable dimensions. Whilst EGA offers some advantages—such as not requiring assumptions about latent variables and allowing for bidirectional associations—it remains a simplification of a complex philosophical system. Moreover, the historical and cultural contexts essential to understanding Stoicism cannot be fully accounted for in a psychometric model. This challenge is inherent to any attempt to adapt classical philosophy for empirical use in contemporary settings.

Additionally, although the present study was not designed to formally assess incremental validity, we recognise its importance. Future research would benefit from systematically comparing the SABS to other emerging measures of Stoicism, particularly as these are further developed and validated.

Another limitation relates to sample characteristics and potential ceiling effects. The initial validation sample (Study 1) included many participants with a prior interest in Stoicism, which may have introduced self-selection bias. This likely contributed to ceiling effects and skewed distributions in key subscales, particularly Beliefs about Control and Ethical Development. Reduced variability in these domains may have limited the strength of associations with other variables and affect generalisability. Whilst this population is highly relevant for initial validation of a Stoic beliefs scale, further work is needed to examine the SABS in more diverse, less Stoicism-aware populations.

Although the current study included a large sample with a strong interest in Stoicism, future research should assess the validity of the SABS in more diverse and general populations. Testing the scale across varied cultural, educational, and clinical contexts will help determine the generalisability of its factor structure and item content.

The development and initial validation of the Stoic Attitudes and Behaviours Scale (SABS) opens several avenues for further research. These include psychometric refinement, clinical application, theoretical investigation, and broader integration of Stoic philosophy into psychological science.

Additionally, future studies are encouraged to examine the relationships between the seven SABS dimensions and other psychological constructs, such as well-being, resilience, emotion regulation, and anger. These analyses would contribute to the scale's construct validity and clarify which aspects of Stoicism are most strongly linked to beneficial psychological outcomes.

Another important avenue for investigation involves using the SABS to assess changes in Stoic attitudes and behaviours following training or therapeutic interventions. Future research should investigate which dimensions are most responsive to Stoic practice and whether changes mediate improvements in clinical or well-being outcomes. The scale enables randomised controlled trials (RCTs) to isolate the effects of specific Stoic components and could also be used to examine dose–response effects and individual differences in responsiveness to Stoic-based or Stoic-informed interventions.

Furthermore, Stoicism may be conceptualised as a transdiagnostic framework, addressing psychological processes such as emotional reactivity, avoidance, and meaning-making. Several SABS dimensions—particularly Beliefs about Control, Virtue, and Stoic Mindfulness—overlap with core features of third-wave cognitive-behavioural therapies, including Acceptance and Commitment Therapy (ACT), Compassion-Focused Therapy (CFT), and Dialectical Behaviour Therapy (DBT). This conceptual alignment suggests that Stoicism may serve as a complementary values-based therapeutic approach, especially suited to resilience-building, prevention, and addressing problems in living not always targeted by disorder-specific treatments (e.g., chronic anger or long-term health challenges).

The SABS may also be especially relevant for applied settings such as healthcare, education, and criminal justice. For instance, future studies could explore the scale's utility in assessing the effects of Stoic training among health workers, students, or incarcerated individuals. These populations may particularly benefit from Stoic principles focused on resilience, emotional regulation, and ethical development.

Finally, the SABS offers a structured way to explore mechanisms of change in therapies informed by Stoic philosophy. By identifying which dimensions are most predictive of therapeutic outcomes, researchers and practitioners can refine interventions to target the most impactful elements. More broadly, the SABS contributes to the integration of philosophical concepts into contemporary psychological science, offering a practical framework for studying how ancient wisdom can inform modern well-being and therapeutic practice.

Conclusions

The Stoic Attitudes and Behaviours Scale (SABS) provides a novel, empirically grounded way to measure key elements of Stoicism as a life philosophy. By capturing both classical Stoic principles and distinguishing them from modern, colloquial "stoicism," the SABS enables systematic exploration of their psychological correlates. Integrating Stoic values—such as virtue, mindfulness, and emotional regulation—with principles from CBT and positive psychology offers a promising framework for enhancing well-being, building resilience, and informing therapeutic practice. The SABS lays the foundation for future research across clinical, preventative, and applied contexts, including healthcare and criminal justice. We hope this work encourages further investigation into the relevance of ancient philosophical wisdom for contemporary psychological science.

Appendix A: The SABS 5.0

Table 8 presents all 60 items from SABS 5.0, indicating the reverse scoring status of each item and its inclusion in the final 40-item SABS derived from our psychometric analyses. The final two columns show the dimensional assignment for retained items.

For example, Item 1 is reverse-scored and was retained in the final scale as part of Dimension 6 (Ethical Development). Items not included in the final 40-item scale have blank entries in the dimension columns (e.g., Item 2).

The dimensions and abbreviations are as follows:

1. **BAH** = Beliefs about happiness
2. **SM** = Stoic mindfulness
3. **V** = Virtue
4. **B&C** = Benevolence and compassion
5. **BAC** = Beliefs about control
6. **ED** = Ethical development
7. **SW** = Stoic worldview

Donald Robertson developed the first version of the SABS scale in 2013, which consisted of 19 items measuring 12 attitudes and seven behaviours. A dialogue between Robertson, Christopher Gill, and Tim LeBon led to SABS 2.0 in 2015. This iteration comprised 31 items and included some additional Stoic, non-Stoic, and neutral items. In late 2015 and early 2016, Stoic experts amongst the Modern Stoicism team (see https://modernstoicism.com/the-team/) were recruited to validate the content of the items and suggest others. This work resulted in the SABS 3.0, which comprised 37 items and was administered to attendees at the Stoic Week 2016 and 2017. Based on this analysis, SABS 4.0, the most extended version, was developed, consisting of 77 items. This version was distributed to volunteers from the Stoic community who were asked to comment on whether the items were clear, comprehensible, and measured just one concept (i.e., were not "double-barrelled"). Items were also assessed according to whether they were too leading. Vincent Ng collaborated on the statistical analysis of version SABS 4.0; some items were removed, and others were changed to increase face validity. These revised items resulted in iteration SABS 5.0 in 2019, which was validated by Chris Gill and Ray DiGiuseppe.

Appendix B: Other Scales Used in This Study

Satisfaction with Life Scale (SWL)

The SWL (Diener et al., 1985) is a short 5-item instrument designed to measure global cognitive judgments about satisfaction with one's life. Participants answer on a 7-point Likert scale from 7—Strongly Agree to 1—Strongly Disagree. The scale usually requires about one minute for participants to complete. The SWLS has demonstrated excellent psychometric properties with Cronbach's $\alpha = .87$ in the original validation study (Diener et al., 1985) and consistently high reliability across cultures, with meta-analytic evidence showing a mean alpha of.78 across 60 studies. The scale has a single factor structure, high internal consistency, and is highly reliable with strong test–retest reliability ($r = .82$ over 2 months). This scale has been used globally, translated into many languages, and demonstrates excellent reliability and validity (Pavot & Diener, 2008).

The Flourishing Scale

The Flourishing Scale (Diener et al., 2009) is a self-report measure that assesses success in life regarding relationships, self-esteem, purpose, and optimism. "Flourishing" is intended to measure something broader than psychological well-being. Participants answer eight items using a seven-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). A total score is produced by adding the responses, with scores ranging from eight to 56. The scale demonstrated strong internal consistency in the original validation study ($\alpha = .87$, $N = 689$) and has shown consistently high reliability across international samples ($\alpha = .86$–$.91$). Cross-cultural validations demonstrate robust psychometric properties, including New Zealand ($\alpha = .89$, $N = 10{,}009$) and South African samples ($\alpha = .91$). This scale has good psychometric properties, is related to other psychological well-being measures, and has demonstrated theoretical validity (Rule et al., 2024).

Table 8 SABS 5.0 items: content, scoring direction, and inclusion in final 40-item scale

Item #	Item wording	Reverse scored?	Dimension number	Dimension abbreviation
1	I think about my life as an ongoing project to become a better person	No	6	ED
2	It can sometimes be a good thing to become angry at people	Yes		
3	If bad things happen to you, you are bound to feel distressed	Yes		
4	Having good understanding and good character is all that is required in order to be happy	No		
5	Viewing other people as fellow-members of the brother/sisterhood of humankind helps me to avoid feeling angry and resentful	No		
6	The universe is benevolent in its overall plan	No	7	SW
7	I regularly spend time reflecting on what is most important to enable me to live a good and happy life	No	2	SM
8	Bad luck could stop me being happy	Yes		
9	I do the right thing even when I feel afraid	No	3	V
10	It is my duty to help others	No	4	B&C
11	Sometimes a controlled experience of anger can be helpful in resolving conflicts with others	Yes		
12	I usually do the right thing	No	3	V
13	I do not act on urges when it would be unwise to act on them	No	3	V
14	I am committed to helping humanity in general	No	4	B&C
15	I treat everyone fairly	No	3	V
16	To flourish as a human being all you need is good character and understanding of what really matters in life	No		
17	If things don't go well for my friends, I can't lead a good life	Yes		
18	I take active steps to reduce the suffering of others	No	4	B&C
19	I spend quite a lot of time dwelling on what has gone wrong in the past	Yes		
20	It is possible to lead a happy life even after the death of someone we love	No	1	BAH
21	The universe embodies wisdom	No	7	SW
22	When making an important decision I ask myself "What really matters here?"	No	2	SM
23	I cannot really be harmed by what other people say	No	1	BAH
24	The universe is a living thing	No		
25	I need quite a lot of money in order to be happy	Yes		
26	When I have a problem, I am good at taking constructive action in a timely manner	No	3	V
27	We can't really control other people	No	5	BAC
28	There is a rational and orderly plan in the universe and in the causes of events	No		
29	When making a significant decision I reflect on what a good role model would do	No		
30	Nothing except our judgements and voluntary actions are truly under our control in life	No	5	BAC
31	I pay attention to my judgements about good or bad things or people as I am making them	No	2	SM
32	I need to be well thought of by others in order to be happy	Yes	1	BAH
33	I spend quite a lot of time worrying about the future	Yes		
34	It is good to think about life as an ongoing journey towards becoming a better person	No	6	ED
35	I am committed to helping my friends	No	4	B&C
36	I pay attention to my thoughts about what I intend to do before I act on them	No	2	SM
37	I want to become a better person ethically	No	6	ED
38	When a negative thought enters my mind, I remind myself that it is just an interpretation of the situation	No	2	SM
39	It is right to feel intense and overwhelming grief after a significant loss	No		
40	I view other people as fellow-members of the brother/sisterhood of humankind	No	4	B&C
41	If things don't go well for me, I can't lead a good life	Yes	1	BAH
42	I can't control how I feel	Yes		
43	I need to be in good health in order to be happy	Yes	1	BAH
44	I am committed to helping my family	No		
45	Every day I spend some time thinking about how I can best face challenges in the day ahead	No	2	SM
46	Our voluntary actions are among the only things truly under our control in life	No	5	BAC
47	As long as you have the right attitude, you can lead a good life even in the most difficult circumstances	No	1	BAH
48	Even when I can't do anything more about a problem, I still worry about it a lot	Yes		
49	I care about the suffering of others	No	4	B&C

Table 8 (continued)

Item #	Item wording	Reverse scored?	Dimension number	Dimension abbreviation
50	I often do what I feel like doing rather than doing what I believe to be the right thing	Yes	3	V
51	Our judgements are amongst the only things truly under our control in life	No	5	BAC
52	I see my happiness as fully compatible with caring for other people	No	4	B&C
53	The best idea is to give up trying to control people and instead focus on our own actions and our judgments and character	No	5	BAC
54	There is no overall plan to the universe	Yes	7	SW
55	I think about what the ideal wise and good person would do when faced with misfortunes in life	No	2	SM
56	If things don't go well for my family, I can't lead a good life	Yes	1	BAH
57	I am committed to helping in my local community	No	4	B&C
58	It does not help me to get angry	No		
59	It is possible to lead a happy life even when we have lost success or wealth	No	1	BAH
60	We can sometimes influence how others behave, but we can't completely control other people	No		

Scale of Positive and Negative Experience (SPANE)

The SPANE (Diener et al., 2009) is a 12-item questionnaire with six items to assess positive emotions and six to assess negative emotions. Participants report how much they felt specific emotions during the past four weeks using a 5-point Likert Scale (1 = Very Rarely or Never to 5 = Very Often or Always). The Positive Feelings Score (SPANE-P) includes positive, good, pleasant, happy, joyful, and contented (scores: 6–30). The Negative Feelings Score (SPANE-N) includes negative, bad, unpleasant, sad, afraid, and angry (scores: 6–30). The original validation demonstrated strong internal consistency: SPANE-P α = .87, SPANE-N α = .81, and SPANE-B (Balance) α = .89 (N = 689). International validations consistently show alpha coefficients ranging from.81 to.90, confirming excellent psychometric properties across cultures.

World Health Organization Wellbeing Index (WHO-5)

The WHO-5 is a brief measure of psychological well-being consisting of five items rated on a 6-point Likert scale. A systematic review by Topp et al. (2015) examining 213 articles demonstrated consistently high reliability and validity across diverse populations and contexts. The measure shows Cronbach's alpha values of.93–.94 and has been validated across 35 countries with excellent psychometric properties. The WHO-5 has confirmed unidimensional structure and serves effectively as both a depression screening tool and outcome measure in clinical trials, with strong construct validity across age groups from 9 years to elderly populations.

Anger Disorder Scale–Short Form (ADS-SF)

The ADS-SF (DiGiuseppe & Tafrate, 2004) contains 18 items that assess dysfunctional anger in individuals. The ADS-SF has a normative sample of more than 1400 people between 18 and 76 years. The measure demonstrates good internal consistency (Cronbach's α = .86) and adequate test–retest reliability (r = .89) over two weeks (N = 65 college students). The items' content represents provocations, affect arousal, cognitions, motives, and anger behaviours. The ADS-SF yields a factor structure supporting three subscales: Anger-In, Vengeance, and Reactivity/Expression with respective alpha coefficients of.66,.79 and.76.

Brief Resilience Scale

The Brief Resilience Scale (BRS: Smith et al., 2008) is a self-report instrument designed to assess an individual's ability to recover from stress and adversity, conceptualized as resilience. The scale provides a unidimensional measure of resilience, focusing specifically on the capacity to "bounce back" rather than broader conceptualizations that may include traits or resources associated with resilience. The original validation across four samples (N = 354) demonstrated Cronbach's alpha coefficients consistently between.70 and.95, confirming reliability as a unitary construct. International validations across diverse populations consistently report alpha coefficients between.71 and.85, and the scale has been translated into over a dozen languages and validated across more than two dozen countries.

The Liverpool Stoicism Scale

The Liverpool Stoicism Scale (LSS: Murray et al., 2008; Wagstaff & Rowledge, 1995) is a self-reported questionnaire consisting of 20 items whose content refers to lack

of emotional involvement, dislike for openly expressing emotion, and the ability to withstand emotion. Responses are recorded on a 5-point Likert scale ranging from strongly disagree to strongly agree. The original validation reported split-half reliability of r=.90 (Wagstaff & Rowledge, 1995), while Murray et al. (2008) provided comprehensive psychometric data with Cronbach's α=.83 and test–retest reliability of r=.82 across large samples. It was designed to measure stoicism—it was a hypothesis of this study that it, like the Pathak-Wieten Stoicism Ideology Scale, measures colloquial stoicism rather than the life philosophy of Stoicism.

Pathak-Wieten Stoicism Ideology Scale (PW-SIS)

The PW-SIS (Pathak et al., 2017) is a 12-item scale that measures stoic beliefs and sense of self. It includes four subscales: stoic taciturnity, stoic endurance, stoic serenity, and stoic death indifference. Each item uses a 5-point Likert scale ranging from disagree to agree, scored -2 (disagree) to+2 (agree). The original validation study (N=390) demonstrated overall Cronbach's α=.78, with subscale reliabilities ranging from α=.64–.71. The measure showed excellent structural validity (RMSEA=.05, GFI=.96, TLI=.93). This scale defines the stoic trait as imperviousness to strong emotions, indifference to death, and taciturnity—the trait of volunteering only what is minimally necessary.

Appendix C: Psychometric Properties and Descriptive Statistics for Convergent Validity Measures

This appendix provides psychometric analyses of the Three Disciplines Questionnaire and Stoic Elevator Scale to establish their reliability in our samples before using them for convergent validity analyses with the SABS.

Three Disciplines Questionnaire

The Three Disciplines Questionnaire demonstrated excellent internal consistency in our sample (ω=.84), confirming its reliability for measuring Stoic principles across the Disciplines of Desire, Action, and Assent.

Stoic Elevator Scale

The Stoic Elevator Scale also demonstrated excellent internal consistency in our sample (ω=.84), indicating high reliability for assessing Stoic attitudes and behaviours (Table 9).

Appendix D

Instructions for Using the Stoic Attitudes and Behaviours Scale (SABS)

The 40-item Stoic Attitudes and Behaviours Scale (SABS) was developed through a rigorous, multi-stage process involving clinical practitioners, philosophers, pilot testing, and psychometric validation. The final version reflects seven key dimensions grounded in foundational Stoic philosophy. These are:

- Beliefs about control (BAC)
- Beliefs about happiness (BAH)
- Stoic mindfulness (SM)
- Virtue (V)
- Benevolence and compassion (B&C)
- Ethical development (ED)
- Stoic worldview (SW)

Instructions to Give to Users of the Scale

Below are 40 statements which describe certain attitudes and behaviours.

Using the scale below, indicate your agreement with each statement. Please be as honest as possible; it is not meant to be a test on Stoicism, and the items may include Stoic, non-Stoic and neutral items.

Please answer according to what you actually do and what you actually think rather than what you think you ought to do or ought to think.

Table 10 below presents the final 40-item SABS with complete item content, reverse-scoring indicators, and dimensional assignments.

Table 9 Psychometric properties and descriptive statistics for convergent validity measures

Scale	N	Items	M (SD)	Range	Skewness	Internal consistency	Factor structure
Three disciplines questionnaire	1608	9	62.17 (13.11)	0–90	−0.47	α=0.84 [0.83, 0.85] ω=0.84 [0.83, 0.86]	3 Factors
Stoic elevator scale	1326	10	45.54 (9.59)	0–80	−0.30	α=0.84 [0.83, 0.85] ω=0.84 [0.83, 0.86]	4 Factors

α=Cronbach's alpha; ω=McDonald's omega; confidence intervals in brackets. Factor structures determined via parallel analysis. Both scales demonstrated roughly normal

Table 10 The stoic attitudes and behaviours scale (SABS): complete 40-item instrument

Item #	Original item number	Item text	Dimension
1	1	I think about my life as an ongoing project to become a better person	ED
2	6	The universe is benevolent in its overall plan	SW
3	7	I regularly spend time reflecting on what is most important to enable me to live a good and happy life	SM
4	9	I do the right thing even when I feel afraid	V
5	10	It is my duty to help others	B&C
6	12	I usually do the right thing	V
7	13	I do not act on urges when it would be unwise to act on them	V
8	14	I am committed to helping humanity in general	B&C
9	15	I treat everyone fairly	V
10	18	I take active steps to reduce the suffering of others	B&C
11	20	It is possible to lead a happy life even after the death of someone we love	BAH
12	21	The universe embodies wisdom	SW
13	22	When making an important decision I ask myself "What really matters here?"	SM
14	23	I cannot really be harmed by what other people say	BAH
15	26	When I have a problem, I am good at taking constructive action in a timely manner	V
16	27	We can't really control other people	BAC
17	30	Nothing except our judgements and voluntary actions are truly under our control in life	BAC
18	31	I pay attention to my judgements about good or bad things or people as I am making them	SM
19*	32*	I need to be well thought of by others in order to be happy	BAH
20	34	It is good to think about life as an ongoing journey towards becoming a better person	ED
21	35	I am committed to helping my friends	B&C
22	36	I pay attention to my thoughts about what I intend to do before I act on them	SM
23	37	I want to become a better person ethically	ED
24	38	When a negative thought enters my mind, I remind myself that it is just an interpretation of the situation	SM
25	40	I view other people as fellow-members of the brother/sisterhood of humankind	B&C
26*	41*	If things don't go well for me, I can't lead a good life	BAH
27*	43*	I need to be in good health in order to be happy	BAH
28	45	Every day I spend some time thinking about how I can best face challenges in the day ahead	SM
29	46	Our voluntary actions are among the only things truly under our control in life	BAC
30	47	As long as you have the right attitude, you can lead a good life even in the most difficult circumstances	BAH
31	49	I care about the suffering of others	B&C
32*	50*	I often do what I feel like doing rather than doing what I believe to be the right thing	V
33	51	Our judgements are amongst the only things truly under our control in life	BAC
34	52	I see my happiness as fully compatible with caring for other people	B&C
35	53	The best idea is to give up trying to control people and instead focus on our own actions and our judgments and character	BAC
36*	54*	There is no overall plan to the universe	SW
37	55	I think about what the ideal wise and good person would do when faced with misfortunes in life	SM
38*	56*	If things don't go well for my family, I can't lead a good life	BAH
39	57	I am committed to helping in my local community	B&C
40	59	It is possible to lead a happy life even when we have lost success or wealth	BAH

"Item #" refers to the numbering used in the final 40-item SABS. "Original item #" corresponds to the item's position in the 60-item SABS 5.0 (see Appendix A). Items marked with an asterisk (*) should be reverse scored before subscale or total scores are calculated. BAH = Beliefs about happiness, SM = stoic mindfulness, V = virtue, B&C = benevolence and compassion, BAC = beliefs about control, ED = ethical development, SW = stoic worldview

Scoring Instructions

Participants respond using a 7-point Likert scale:

1. Strongly disagree
2. Disagree
3. Somewhat disagree
4. Neither agree nor disagree
5. Somewhat agree
6. Agree
7. Strongly agree

To calculate the averages for the total SABS score and each dimension follow these steps.

Step 1: Reverse Score Items

Reverse-score the 6 items marked with an asterisk in Table 10 using the formula: "8—original score".

- Items 19, 26, 27, 32, 36 and 38

Step 2: Calculate Average Total SABS Score

- Add all 40 items (after reverse-scoring the above 6 items) and divide by 40 to get the overall mean SABS score

Step 3: Calculate Average Score for Each Dimension

Add up items within each dimension (after reverse-scoring the asterisked items) and divide by number of items to get the mean:

- *Beliefs about Happiness (BAH):* Items 11, 14, 19*, 26*, 27*, 30, 38*, 40 *(divide by 8)*
- *Stoic Mindfulness (SM):* Items 3, 13, 18, 22, 24, 28, 37 *(divide by 7)*
- *Virtue (V):* Items 4, 6, 7, 9, 15, 32* *(divide by 6)*
- *Benevolence and Compassion (B&C):* Items 5, 8, 10, 21, 25, 31, 34, 39 *(divide by 8)*
- *Beliefs about Control (BAC):* Items 16, 17, 29, 33, 35 *(divide by 5)*
- *Ethical Development (ED):* Items 1, 20, 23 *(divide by 3)*
- *Stoic Worldview (SW):* Items 2, 12, 36* *(divide by 3)*

Score Interpretation (for total average score and for each dimension)

- *Scores above 4.0* = Agreement with Stoic principles
- *Scores below 4.0* = Disagreement with Stoic principles
- *Higher scores* = Stronger Stoic attitudes and behaviours

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Data Availability Data is provided in https://osf.io/8zjmu/-project "SABS" Data for development and validation of SABS scale (Stoic Attitudes and Beliefs) License: CC0 1.0 Universal.

Declarations

Ethical Approval The study received approval from the appropriate ethics committee or institutional review board (IRB). Ethics approval from the Royal Holloway University of London Ethics Committee for the Stoic Students studies on 16 February 2024, Application ID 293. For US students and Qualtrics samples, ethics approval was given by the St. John's University Research Ethics Committee (the Institutional Review Board) # IRB-FY2020-64 approved November 2019, and IRB-FY2020-63 approved November 2019. For the New Zealand data, ethics approval was granted by the Victoria University of Wellington, School of Psychology Ethics committee, VUW SOPHEC 0000027072, Approved March 2019.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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