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APPLIED PSYCHOLOGY | SHORT COMMUNICATION

Flourish Index and Secure Flourish Index – Validation in workplace settings

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Abstract: Psychometric properties of the Flourish Index (FI) and Secure Flourish Index (SFI) were examined in the workplace setting. Psychometric properties for two instruments were already assessed on a community sample of 4200 respondents and initial evidence on the validity, reliability, and applicability was provided. This current paper is thus focused on validation in workplace settings. Questionnaire responses from 5565 office and manufacturing employees of two US Fortune 500 manufacturing companies provided data for this study. Correlation analysis and factor analysis were used to investigate item groupings. Second-order factor model was applied to investigate the hierarchical structure of the indices. Our results confirmed groupings of items into domains of flourishing as well as hierarchical structure of both indices. Support for their internal consistency was found. Initial evidence of validity and reliability ($\alpha = 0.89$ for FI; $\alpha = 0.86$ for SFI) of both indices were provided. This study provided support that FI and SFI can be used in empirical research in workplace settings.

Subjects: Sociology of Work & Industry; Psychological Methods & Statistics; Test Development, Validity & Scaling Methods; Human ResourceManagement

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PUBLIC INTEREST STATEMENT

Employee well-being has been of interest in business and science. It has been shown that thriving employees benefit economic performance of an organization. Short enough for practical use, comprehensive and reliable measures of employee well-being are missing.

We proposed two short instruments to measure human flourishing—flourish index and secure flourish index. The former comprises 10 questions grouped into five domains—(i) happiness and life satisfaction; (ii) physical and mental health; (iii) meaning and purpose; (iv) character and virtue and (v) close social relationships. The latter is supplemented with two additional questions classified to (vi) financial and material stability domain, which may be significant in the continuance of flourishing.

In this paper, based on data from two US Fortune 500 companies, we showed that flourish index and secure flourish index are reliable measures of employee well-being and may be useful at workplace setting in the investigation of human performance and productivity.

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1. Introduction

Numerous composite measures of psychological well-being have been proposed and validated (Diener et al., 2010; Ryff & Keyes, 1995; Su, Tay, & Diener, 2014). There is a conviction that measurement of well-being is complex, indirect and usually conducted using multi-item scales (Diener, 1984; Diener et al., 2010; Fordyce, 1988; Prawitz et al., 2006; Ryff & Keyes, 1995). Specifically, well-being instruments consist of numerous questions to embrace the complexity of dimensions of well-being. Although in principal we agree with this approach, we also argue that long instruments—despite the advantages of conceptual richness—are sometimes not to be preferred over short instruments when used in the studies where well-being is just one of many concepts being measured, in particular in the workplace setting, where links between work and life are examined.

In order to facilitate company practices aimed to improve the flourishing of people at work and in life, well-being metrics—short enough for practical use in the workplace—are needed. To this end, the psychometric properties of the Flourish Index (10 questions) and the Secure Flourish Index (12 questions) (VanderWeele, 2017; VanderWeele, McNeely, & Koh, 2019) were examined in the working population of 5565 office and manufacturing employees of two US Fortune 500 manufacturing companies.

2. Background

VanderWeele (2017) and VanderWeele et al. (2019) argued that flourishing itself extends beyond psychological well-being and might be understood as a state in which all aspects of a person's life are good. In this regard, several domains of flourishing were proposed and were argued to be both nearly universally desired and end in and of themselves. These domains were (D1) happiness and life satisfaction; (D2) physical and mental health; (D3) meaning and purpose; (D4) character and virtue; and (D5) close social relationships. Moreover, it was suggested that (D6) financial and material stability, while perhaps not an end in itself, may be significant in the sustaining of flourishing.

While D1, D3, and D5 are usually included in measures of eudaimonic or hedonic happiness and social well-being (see, for example, Diener et al., 2010; Ryff & Keyes, 1995), the remaining two—health and character/virtue—are usually ignored. If the intention is to assess complete human well-being or human flourishing, qualities beyond the psychological should be taken into account (VanderWeele, 2017). Physical health, and, to a lesser extent, character and virtue, are almost completely ignored by the psychological literature, contrary to numerous philosophical traditions where their importance to human flourishing is considered central (Aristotle, 2009; Alexandrova, 2013; Baril, 2016).

Two composite measures were proposed. The first measure—Flourish Index (FI)—included 10 questions, two per each of the first five domains described above; the second measure—Secure Flourish Index (SFI)—in addition to these 10 questions, included also are 2 questions on having adequate stability as well as material and financial resources so that flourishing is likely to continue (VanderWeele, 2017). Selection of questions was based primarily on the frequency of their use in the literature and their empirical validation (Allin & Hand, 2017; Fordyce, 1988; NORC, 2017; WHO, 2017). Additionally, two new character and virtue questions were proposed because, although several scales for measuring specific virtues had been developed (Park, Peterson, & Seligman, 2004; Peterson & Seligman, 2004), single-item character and virtue questions are scarce in the literature.

The FI is perhaps conceptually more coherent and satisfactory as a measure of flourishing at a given time, as each of the domains arguably constitutes its own end. The SFI, however, by inclusion of financial and material resources may be better in practice—especially in the workplace setting—as it likely better captures and ensures flourishing over a longer period of time. We argue that both instruments—despite being short—cover much of the complexity of human flourishing.

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An exploratory analysis for two instruments was already conducted on a community sample of 4200 respondents (Weziak-Bialowolska, McNeely, & VanderWeele, 2017) and provided initial evidence on their validity, reliability and applicability. This current paper thus uses confirmatory factor analysis and is focused on validation in workplace settings.

3. Methods

3.1. Participants
Data collection took place in July and November 2018. Employees of two US Fortune 500 companies were invited to take the survey. A total of 5565 respondents participated in the study: 3262 from company 1 and 2303 from company 2 (Table 1). Responses were collected via an online survey conducted using the Qualtrics platform. The survey was a part of the project aimed to examine employee well-being. Along with major demographic information, data on flourishing, health, physical activity, physical and psychosocial working conditions, and work performance were collected. Participation was voluntary. Informed written consent was obtained from participants. All protocols for recruitment and participation were approved by the Institutional Review Board at the Harvard T.H. Chan School of Public Health. Data are available from the first author upon request.

3.2. Measures

3.2.1. Flourishing index (FI)
Ten questions and statements—two per domain—belong to the Flourish Index set (Table 2). Each item is measured on an 11-point scale (from 0 to 10) with extreme categories labeled and oriented towards higher scores indicating more favorable responses. Average scores for each pair of items in specific domains constitute domain-specific indices. FI scores are arithmetically averaged domain-specific indices with equal weighting. FI and domain-specific indices can range from 0.0 (the lowest response category chosen for all items) to 10.0 (the highest response category for all items). High scores imply that employees perceive themselves very positively in terms of human flourishing. Additionally, FI allows assessment of performance across domains, i.e., in terms of (D1) life satisfaction and happiness, (D2) physical and mental health and (D3) meaning and purpose, etc.

Table 1. Characteristics of participants		
	Company 1	**Company 2**
Sample size	3262	2303
Female (%)	44.5	30.4
Age—mean (SD)	41.7 (12.7)	43.8 (12.1)
Education—bachelor or graduate degree (%)	58.3	61.3
Marital status—being married (%)	64.3	70.3
Having children at home (%)	40.4	45.1
Job tenure (%)		
Up to 1 year	15.5	16.5
More than 1 year and less than 5 years	32.7	28.7
More than 5 years	51.7	54.8
Position (%)		
Office employee	85.2	63.8
Manufacturing employee	14.8	36.2

SD, standard deviation.

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Table 2. Flourish Index (FI) and Secure Flourish Index (SFI)—structure, questions, descriptive statistics (n = 5565, sample 1 and sample 2)

Measure	Domain	Statement/question	M (SD)	Pearson's correlation coefficients										
				D1.1	D1.2	D2.1	D2.2	D3.1	D3.2	D4.1	D4.2	D5.1	D5.2	D6.1
FI SFI	D1. Happiness and life satisfaction	D1.1 Overall, how satisfied are you with life as a whole these days? *0 = Not Satisfied at All, 10 = Completely Satisfied*	7.51 (1.63)											
FI SFI	D1. Happiness and life satisfaction	D1.2 In general, how happy or unhappy do you usually feel? *0 = Extreme Unhappy, 10 = Extremely Happy*	7.45 (1.65)	**0.78**										
FI SFI	D2. Mental and physical health	D2.1 In general, how would you rate your physical health? *0 = Poor, 10 = Excellent*	7.05 (1.74)	0.45	0.44									
FI SFI	D2. Mental and physical health	D2.2 How would you rate your overall mental health? *0 = Poor, 10 = Excellent*	7.78 (1.86)	0.64	0.70	**0.39**								
FI SFI	D3. Meaning and purpose	D3.1 Overall, to what extent do you feel the things you do in your life are worthwhile? *0 = Not at All Worthwhile, 10 = Completely Worthwhile*	7.77 (1.66)	0.68	0.68	0.38	0.59							
FI SFI	D3. Meaning and purpose	D3.4 I understand my purpose in life *0 = Strongly Disagree, 10 = Strongly Agree*	7.69 (2.06)	0.51	0.53	0.28	0.52	**0.61**						
FI SFI	D4. Character and virtue	D4.1 I always act to promote good in all circumstances, even in difficult and challenging situations *0 = Not True of Me, 10 = Completely True of Me*	8.16 (1.53)	0.35	0.40	0.31	0.39	0.40	0.40					
FI SFI	D4. Character and virtue	D4.2 I am always able to give up some happiness now for greater happiness later *0 = Not True of Me, 10 = Completely True of Me*	7.57 (1.77)	0.28	0.30	0.25	0.31	0.30	0.34	**0.45**				
FI SFI	D5. Close social relationships	D5.1 I am content with my friendships and relationships *0 = Strongly Disagree, 10 = Strongly Agree*	7.42 (2.04)	0.54	0.55	0.30	0.50	0.51	0.48	0.35	0.27			

(Continued)

Table 2. (Continued)

Measure	Domain	Statement/question	M (SD)	Pearson's correlation coefficients										
				D1.1	D1.2	D2.1	D2.2	D3.1	D3.2	D4.1	D4.2	D5.1	D5.2	D6.1
FI SFI	D5. Close social relationships	D5.2 My relationships are as satisfying as I would want them to be 0 = Strongly Disagree, 10 = Strongly Agree	7.28 (2.05)	0.56	0.56	0.31	0.50	0.52	0.49	0.36	0.30	**0.85**		
SFI	D6. Financial and material stability	D6.1 How often do you worry about being able to meet normal monthly living expenses? 0 = Worry All the Time, 10 = Do Not Ever Worry	6.70 (2.99)	0.27	0.25	0.23	0.25	0.22	0.20	0.14	0.14	0.19	0.19	
SFI	D6. Financial and material stability	D6.2 How often do you worry about safety, food, or housing? 0 = Worry All the Time, 10 = Do Not Ever Worry	7.56 (2.93)	0.24	0.23	0.21	0.21	0.23	0.18	0.14	0.12	0.17	0.17	**0.65**

M—mean, SD—standard deviation; all correlation coefficients are significant at $p < 0.001$ (two-tailed); Correlations between the items from specific domain depicted in bold; Cronbach's alpha for the FI = 0.89; Cronbach's alpha for the SFI = 0.86.

3.2.2. Secure flourish index (SFI)

Two additional items, material and financial stability, in an additional sixth domain were used to augment FI to assess sustainability of a flourishing state over time. Items referred to the availability of financial and material prerequisites to maintain the state. Both items are measured on an 11-point scale (from 0 to 10) with extreme categories labeled and oriented higher for more favorable responses. SFI scores are also calculated as the arithmetic average of all six domains with equal weighting. The D6 domain-specific score ranges from 0.0 (the lowest response category) to 10.0 (the highest response category).

3.3. Modeling strategy

The FI and the SFI are conceptualized, respectively, as comprised of five and six related domains. This implies that they are multi-faceted constructs and they were tested as such. The reliability analysis (Cronbach's alpha) and confirmatory factor analysis (CFA) were conducted. Careful inspection of the structure of the FI and the SFI, as proposed by VanderWeele (2017), revealed possible operationalization with the second-order factor model[1] (Figure 1). The goodness of fit was assessed with: the comparative-fit index (CFI), the Tucker–Lewis index (TLI), the root-mean-square error of approximation (RMSEA) and standardized root-mean-square residual (SRMR). With respect to the first two, values greater than 0.95 indicate satisfactory fit (Hu & Bentler, 1999). With respect to the last two—values less than 0.08 indicate a satisfactorily low level of noise in the model (Browne & Cudeck, 1992).

Evidence for validity was provided through an examination of the correlation between FI, SFI (calculated as the arithmetic average of all five and six domains, respectively, with equal weighting) and domain-specific indexes (calculated as the arithmetic average of two questions with equal weighting) with existing, commonly used and validated measures of similar concepts. Specifically, two questions of the population surveillance health-related quality of life proposed by the US Department of Health and Human Services' Centers for Disease Control and Prevention (Moriarty, Zack, & Kobau, 2003) were used. They were: "Would you say that in general your health is: 5 = Excellent, 4 = Very good, 3 = Good, 2 = Fair or 1 = Poor?" (general health) and "During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?" (limited ability days question). Given that both questions relate to the quality of life, which is a somewhat theoretically similar construct to human flourishing, we expected positive associations

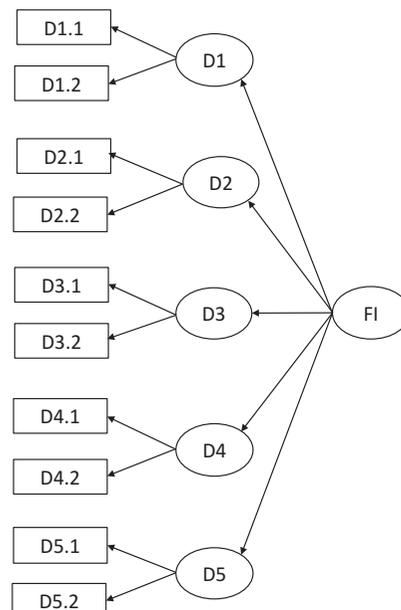**Figure 1. Second-order factor model of Flourish Index (FI).**

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Table 3. Descriptive statistics for the domains of Flourish Index and Secure Flourish Index (*n* = 5565)							
Domain	Range	*M* (SD)	Pearson's correlation coefficients				
			D1	D2	D3	D4	D5
D1. Happiness and life satisfaction	0–10	7.48 (1.55)					
D2. Mental and physical health	0–10	7.41 (1.50)	0.702				
D3. Meaning and purpose	0–10	7.72 (1.68)	0.412	0.467			
D4. Character and virtue	0–10	7.86 (1.41)	0.610	0.575	0.389		
D5. Close social relationships	0–10	7.35 (1.97)	0.711	0.589	0.441	0.506	
D6. Financial and material stability	0–10	7.13 (2.69)	0.292	0.255	0.179	0.207	0.296

M—mean, SD—standard deviation; all correlation coefficients are significant at *p* < 0.001 (two-tailed).

with general health question and negative associations with limited ability days question. However, since quality of life and human flourishing are independent constructs, we expected that the two are empirically distinct, i.e. at most moderate effect sizes were expected.

Additionally, to account for the workplace setting, an adapted version of the Positive and Negative Affect Scale (PANAS) (Watson, Clark, & Tellegen, 1988) referring to work domain, i.e. the Job-Related Affective Well-Being Scale (Katwyk, Van, Fox, Specter, & Kelloway, 2000) as well as the job satisfaction question ("How satisfied are you with your job?" 0 = Not at all satisfied, 10 = Extremely satisfied) and work engagement scale (Schaufeli, Bakker, & Salanova, 2006) were also used as external criteria. Since the link between work and life is well recognized (de Neve, Krekel, & Ward, 2018) and extrinsic motivation theories indicate the provision of an extrinsic reward such as money to influence engagement in a job (Kanfer, 2012), negative association with the Job-Related Negative Affective Well-Being Scale and positive associations regarding other criteria were expected with all domain-specific indexes, FI and SFI, in particular. With respect to the strength of associations, since affective well-being and human flourishing are similar but conceptually distinct constructs, we expected moderate to strong effect sizes.

4. Results

4.1. Internal structure of the FI and SFI

We examined whether questions belonging to a specific domain exhibited higher correlation than questions across domains (Table 2). This was positively confirmed for questions from the last three domains (Character and Virtue, Close Social Relationships and Financial and Material Stability). With respect to the remaining three domains, the dominant role of life satisfaction (D1.1) and happiness (D1.2) questions is visible. Positive correlation between all six domains was also confirmed (Table 3).

The second order factor models for the FI and the SFI were estimated (factor loadings are presented in Table 4). The fit indices (FI: χ^2 = 411.0, p < 0.000, CFI = 0.978, TLI = 0.968, RMSEA = 0.047, SRMR = 0.027; SFI: χ^2 = 499.7, p < 0.000, CFI = 0.978, TLI = 0.971, RMSEA = 0.041, SRMR = 0.026) indicated that both models were well fitted to explain the covariation matrix for both the FI and the SFI. This empirically confirmed that the FI and the SFI have a hierarchical structure, i.e. are composed of items grouped according to the domains they belong to.

Cronbach's alpha coefficients (Table 2) was α = 0.89 for FI and α = 0.86 for SFI, confirming satisfactory reliability of both indexes.

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Table 4. Standardized factor loadings for the second-order confirmatory factor analysis for Flourish Index and Secure Flourish Index		
Statement/question/domain	**Flourish Index**	**Secure Flourish Index**
D1.1 Overall, how satisfied are you with life as a whole these days?	0.866	0.867
D1.2 In general, how happy or unhappy do you usually feel?	0.899	0.898
D2.1 In general, how would you rate your physical health?	0.507	0.506
D2.2 How would you rate your overall mental health?	0.788	0.789
D3.1 Overall, to what extent do you feel the things you do in your life are worthwhile?	0.863	0.864
D3.4 I understand my purpose in life	0.714	0.713
D4.1 I always act to promote good in all circumstances, even in difficult and challenging situations	0.765	0.761
D4.2 I am always able to give up some happiness now for greater happiness later	0.589	0.591
D5.1 I am content with my friendships and relationships	0.912	0.911
D5.2 My relationships are as satisfying as I would want them to be	0.929	0.930
D6.1 How often do you worry about being able to meet normal monthly living expenses?	N/A	0.849
D6.2 How often do you worry about safety, food, or housing?	N/A	0.772
D1. Happiness and life satisfaction	0.957	0.958
D2. Mental and physical health	0.992	0.993
D3. Meaning and purpose	0.917	0.916
D4. Character and virtue	0.650	0.652
D5. Close social relationships	0.716	0.716
D6. Financial and material stability	N/A	0.367

4.2. Validity evidence

All external measures correlated with both FI and SFI as expected (Table 5) with effect sizes usually higher for job-related measures, i.e., job satisfaction, work engagement and positive and negative affect at work scales. The measure of limited ability days and particularly of general health were obviously correlated the most with physical and mental health domain (D2). All external measures were correlated only moderately with character and virtue domain (D4) and with financial stability domain (D6), which was as anticipated. Limited ability days measure was correlated negatively and moderately, at most.

5. Conclusions

This study provided initial evidence that the FI and the SFI are internally consistent and might be used in the workplace setting. Given that our goal was to develop employee flourishing measures that are short enough for practical use, FI and SFI may be useful in the investigation of the influence employee well-being has on human performance and productivity (Weziak-Bialowolska, Koosed, Leon, & McNeely, 2017) and in the end, on business performance. With the psychometric properties now established, the Flourish and Secure Flourish Indices might be used more broadly. However, future research should confirm their psychometric properties in non-Western, culturally different populations.

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Table 5. Pearson's correlation coefficients—all study variables (*n* = 5565)								
	D1	**D2**	**D3**	**D4**	**D5**	**D6**	**FI**	**SFI**
General health	0.432	0.643	0.316	0.291	0.284	0.221	0.472	0.483
Limited ability days	−0.393	−0.421	−0.326	−0.207	−0.266	−0.176	−0.397	−0.398
PAS at work	0.564	0.498	0.533	0.389	0.459	0.257	0.614	0.611
NAS at work	−0.569	−0.530	−0.491	−0.305	−0.441	−0.292	−0.588	−0.585
Job satisfaction	0.498	0.403	0.465	0.330	0.360	0.235	0.527	0.512
Work engagement	0.479	0.434	0.501	0.392	0.362	0.224	0.542	0.540

All correlation coefficients are significant at $p < 0.001$ (two-tailed); D1. Happiness and Life Satisfaction; D2. Mental and Physical Health; D3. Meaning and Purpose; D4. Character and Virtue; D5. Close Social Relationships; D6. Financial and Material Stability; FI—Flourish Index; SFI—Secure Flourish Index; PAS—positive affect scale; NAS—negative affect scale.

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Note
1. The second-order factor model has (1) one latent factor corresponding to each domain, (2) each item loaded only by a latent factor corresponding to the domain of an item and not by other latent factors and (3) domain-specific factors loaded by the second-order factor corresponding to human flourishing or secure human flourishing, for FI and SFI, respectively.

Correction
This article was originally published with errors, which have now been corrected in the online version. Please see Correction (https://doi.org/10.1080/23311908.2019.1613613)

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