Pediatric Research and Child Health

RESEARCH ARTICLE

Flourishing in Children and Adolescents Facing Challenges: The Flourish and Fitness Scale

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Abstract

It is optimal to assess both positive and negative affect, ideation, and behavior in children, especially as we emerge from an event such as the pandemic which has impacted so many aspects of children's lives, education, and health. Seligman [1] identified five key components of flourishing: Positive emotion, Engagement, Relationship, Meaning, and Accomplishment (PERMA). The *Flourish and Fitness Scale (FF)* was developed to fill the need for a simple, portable, measure to assess child-reported flourishing in youth with and without special needs. Psychometric studies in 1142 elementary, middle, and high school students supported the theoretical PERMA factors in younger populations. Examples of *FF's* potential applications included documenting the impact of a school-based *SMART Strengths* group with African American youth living in poverty, affirming the success of interventions designed to support African American children close to the Emanuel AME church shooting, and providing evidence of the psychosocial impact of a fitness-based intervention for youth with Autistic Spectrum Disorder (ASD). The *FF* may be a useful tool to examine child-reported flourishing in diverse populations.

Keywords: Child-reported flourishing; PERMA; At-risk youth; Covid-19 pandemic; Smart Strengths

INTRODUCTION

As pediatric healthcare professionals across disciplines turn to the formidable challenges of helping children move on and thrive after the Covid-19 pandemic, it will be important for practitioners to have tools to assess both clinically significant problems and the more positive evidence of resilience and well-being. In spite of the importance of measuring positive behaviors and emotions [2], there are few cost-effective tools to screen for and/or monitor child-reported flourishing or subjective well-being in clinical child populations, especially in youth who are at-risk due to some combination of medical, developmental, and environmental challenges. The *Flourish and Fitness Scale (FF)* was developed to fill the need for a brief, portable measure of child-reported flourishing that could complement parent-report and professional observations in the assessment and intervention processes with diverse populations.

Kandasamy, Hirai, Ghandour, and Kogan [3] reported on the relationship between parent-reported flourishing and socioeconomic disparities. Their findings were particularly thought-provoking in light of the shared national priority articulated by the AAP Council on Community Pediatrics [4] to address the multi-level needs of children living in poverty. Their findings were consistent with earlier findings tying child well-being to challenging life circumstances including adverse childhood experiences [5]. Based on emerging estimates of Covid-19 epidemiology, children living in poverty and already at risk may be exposed to disproportionately more traumatic life events including family financial hardships, illness, and even death of loved ones. It will be important to have accessible tools to screen not only for psychopathology and adjustment problems, but also for evidence that children may be resilient, successfully coping, and even flourishing. This is an uncharted era in which both negative and positive psychological outcomes need to be documented.

In their commentary about the study by Kandansamy et al. Carey and McDevitt pointedly raised the question, "When are children flourishing? How do we find out?" They rightly point out that parent-report on these three items (parent perceptions of the child's being curious, staying calm when challenged, and completing tasks) may yield an incomplete definition of a complex, multi-dimensional, and vitally important aspect of children's positive development. As one alternative, they

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Accepted: June 1, 2020

Reviewed by: Stefan B, Germany

suggest their widely-used BASICS Behavioral Adjustment Scale [6] which assesses both strengths and symptoms in multiple domains: social relationships, achievement, self-relations, internal state, coping, and basic functions (such as eating, sleeping, and elimination).

Several of the same domains have emerged with different labels in the recent research about flourishing emerging from positive psychology. Seligman [1] proposed an expanded model to incorporate five elements of well-being or flourishing in adults: Positive emotion, Engagement, Relationship, Meaning, and Accomplishment (PERMA). International initiatives to validate the PERMA theoretical model in adolescents have progressed concurrently with the development of the *FF* since 2011. Kern and her colleagues validated the PERMA multidimensional theories in 516 Australian male boarding school students aged 13-18 [7]. Butler and Kern [8] extended that work to the recently published 23-item PERMA-Profiler, developed and validated in more than 31,966 online respondents. However, people under 18 years of age accounted for only 6% of the PERMA-Profiler normative sample. Meanwhile, in Hong Kong, Lai and his colleagues employed factor analysis to explore a PERMA-H model applicable to educational settings [9].

The present series of studies reports on the development of a brief self-report measure of flourishing that is accessible to children who may not be able to easily access more elaborate forms of measurement due to reading levels, limited computer access, health and developmental problems, stress and adverse childhood experiences, and other hardships. Unfortunately, many of the children and youth in our region's pediatric health, mental health, and special education populations may not be comparable to the students who have participated to date in the most successful studies of the PERMA dimensions. The present study reports on the development of a brief, simply worded measure of flourishing normed and piloted in racially, developmentally, medically, and socioeconomically diverse populations. Examples are provided of how the resulting *Flourish and Fitness* scale might be a resource in assessing and tracking flourishing in youth at high risk due to some combination of disabilities, poor educational environments, illness, extreme poverty, and/or traumatic life events. These studies also provide an opportunity to extend the growing literature on PERMA into younger and demographically underrepresented populations.

Methods

The Flourish and Fitness Scale (FF) Instrument Development: After reading Seligman's 2011 reformulation of happiness and wellbeing, the authors generated simply-worded items to potentially capture each of the PERMA constructs in terms and contexts familiar to children. Based on feedback from colleagues in educational and psychological fields, three items were selected and refined for each of the five PERMA constructs. In addition, three items were added to address health, body image, and fitness as these were related targets for many programs seeking to enhance wellbeing in pediatric populations. The resulting 18 items ultimately comprised the *Flourish and Fitness* (*FF)* scale.

Each item was rated on a scale designed to reflect the child's subjective perceived frequency in the last two weeks, using a five-point continuum from *almost never* to *almost always*. The scaling was identical to that of the Bullying and Ostracism Screening Scales (BOSS) [10]; which had been successfully utilized with students aged 8-18, including youth with disabilities and youth living in poverty. The majority of the normative data in the present study were collected in protocols that included both a BOSS scale and the *FF*. The sequence of the measures was counterbalanced, and data revealed no differences when the *FF* was given before or after the BOSS scales. Using two separate tests of grade level and ease of reading—The Gunning-Fog Calculation and the Flesch Formula [11] the authors determined the scale's reading level to be in the "Easy" range for 4th-5th grade readers. The decision was made to norm the measure with 8- to 18-year-olds, but to require assisted administration for groups below 6th grade or individuals of any age believed to have reading issues.

Samples and Procedures

The normative data were collected from early spring 2011 to late fall 2012 using procedures approved by the Institutional Review Boards (IRB) of both the investigators' institution and the collaborating schools or summer programs. All participants were consenting 8- to 18-year-olds whose parents had received written notification of the school-wide assessment or program-wide evaluation research and had not elected to "opt out" of the assessment process. Students aged 8 -12 completed the items as a group while a proctor read each item. Students who appeared to struggle with following the group pace were gently and discreetly assisted by research and teaching assistants trained to assist with wording but not influence responses. Students aged 13-18 were allowed to read and complete items for themselves in a group setting with a trained proctor ensuring standardized administration and answering questions.

The normative sample of 1142 students consisted of 395 elementary school (ES) students (grades 3-5), 412 middle school (MS) students (grades 6-8), and 335 high school (HS) students (grades 9-12) who attended suburban schools serving students from diverse ethnic and socioeconomic backgrounds. The MS was a "feeder school" for the HS, and both were similar in terms of demographics. The two schools were selected because of their socioeconomic and racial diversity. Three elementary schools in the same district were sampled to again ensure diversity within the samples. "(Table 1)

Table 1: Summary of sample Characteristics for original Flourish and Fitness (FF) Normative Sample

	Full Sample	Elementary	Middle	High
N	1142	395	412	335
Age Range	8-18	8-12	10-15	13-18
Mean age (SD)	12.4 (2.5)	9.81 (.90)	12.29 (.97)	15.64 (1.20)
Grade Level	3-12	3-5	6-8	9-12
Gender% /M/F	50/50	49/51	46/54	54/46
Race% White	44	42	47	44
Black	44	52	40	40
Hispanic	3	2	3	5
Other	6	4	10	11

summarizes the demographic characteristics of the primary normative sample".

One explicit goal of the *FF* development process was to create a simple measure of flourishing that could be used in diverse and academically challenged populations who are heavily represented in our region's pediatric primary care, mental health, and specialty care populations. The Title I Academic Remediation sample, which served as subjects for several of the reliability and validity studies, included 235 students from Title I schools (more than 90% living in poverty) in grades 3-8 who completed the *FF* and other measures before and after a five-week summer program that was designed to prevent learning loss in students who were already significantly behind compared to others in their grade. School testing with this sample had previously revealed that Reading Achievement scores were in the 22nd-25th percentiles and Math Achievement scores were in the 24th-26th percentile. With few exceptions, these summer program participants, in addition to having documented learning difficulties, were also at risk due to family economic hardship and/or psychosocial difficulties. "(Table 2) summarizes the demographic characteristics of participants in the Title I Academic Remediation Sample, as well as four samples from three subsequent studies illustrating potential applications of the *FF"*.

Forty-two students with socioeconomic and academic challenges participated in the *SMART Strengths* eight-week pilot study. The *SMART Strengths* model program teaches students to Spot, Manage, Advocate, Relate, and Train character strengths through a variety of exercises and activities. The Title I High School where the first pilot *SMART Strengths* group was conducted in fall of 2012 was ranked as one of the most challenged schools in the state according to academic test scores and graduation rates. The second pair of *SMART Strengths* groups was conducted in a Title I Charter school whose 7th and 8th grade participants completed the *FF* at the beginning and end of the eight-week program.

To examine the impact of programs serving youth exposed to the Emanuel AME shooting, two samples were selected from participants in two consecutive years (2014 and 2015) of a Title I summer enrichment program for elementary and middle schools with both academic and socioeconomic challenges. The samples included 22 campers from 2014 and 23 campers from 2015 who voluntarily consented to complete both pre- and post- surveys and were within the 8-12 age range (selected to match the 2015 sample). As had been typical for previous years, this group represented approximately 40% of the camper population.

The final sample included 38 teens and young adults aged 14-21 with Autism Spectrum Disorder (ASD) and mild Neurodevelopmental Disorders (NDD) who completed the *FF,* with assistance if needed, at the beginning and end of a group health and fitness program, Piece it Together (PIT). "(Table 2) summarizes the specific demographic characteristics of the samples described above".

Measures

The *Flourish and Fitness Scale* was administered to all participants and is described in detail in the subsequent sections. Other measures employed in validity and application studies are described below.

Bullying and Ostracism Screening Scale (BOSS) [10]; this 31-item self-report screening scale asks students to rate the perceived frequency of bullying and ostracism experiences using a continuum from *almost never* to *almost always*. The BOSS scales' first 16 items screen for four types of bullying: (1) Verbal/Social, (2) Physical, (3) Online or Cyberbullying, (4) Ostracism. The next 15 items ask about ostracism experiences and thoughts or feelings that might reflect threats to basic psychological needs. Preliminary psychometric studies indicated reliable factors for bullying, victimization, boys' school climate, girls' school climate, and ostracism. The four three-item psychological need-threat factors employed in this study include belonging, control, self-esteem, and meaningful existence.

Child Depression Inventory 2™: Self Report (Short) **(CDI 2: SR[S]:** [11] this 12-item self-report assessment scale is designed to measure the severity of depressive symptoms in school-aged children and adolescents. Students are asked to choose one of three statements that best describes their feelings, thoughts, or behaviors within the past two weeks.

Table 2: Summary of Sample Characteristics for High Risk Youth in Examples of FF Applications

	Title I Academic **Remedial**	**SMART Strengths Intervention**	**Title I Enrichment**	**Title I Enrichment w/shooting**	**Autism/YSHCN Health & Fitness Intervention**
Dates	Summer 2012	Fall 2012	Summer 2014	Summer 2015	Fall 2016
n	235	42	22	23	38
Ages	9-15	12-16	8-12	8-12	14-21
M (SD)	11.8 (1.7)	13.6 (1.00)	10.18(1.18)	9.78 (1.3)	19.2(3.8)
Grade	3-8	7- 9	3-7	3-6	9 - Post-college
Gender % % M/F	49/51	38/62	68/32	60/40	66/34
Race % White	3	2	0	0	76
Black	83	93	91	63	24
Hispanic	7	5	5	13	0
Other/mixed	7	0	5	25	0

The CDI-2 is written at a second-grade reading level and generally requires 5-10 minutes to complete. In comparison to the original CDI, the CDI-2 contains new items focusing on the core aspects of childhood depression, revised scales that are more reliable and valid and updated norms that are more representative of the U.S. population [12]. The CDI-2: SR(S) has shown sound psychometric properties similar to those of the full-length version.

Hope Scale for Children [13]: This six-item scale is designed to measure hopefulness in children based on the assumption that children are goal-oriented. The three-item pathway factor reflects one's belief that he/she is capable of creating manageable routes to goals, and the three-item agency factor reflects one's belief that he/she is capable of initiating and sustaining progress toward goals. Items are rated on a five-point Likert scale from *none of the time* to *all of the time*.

Results

Flourish and Fitness Factor Analyses

Confirmatory Factor Analysis: Observed scores from the PERMA survey were checked for normality, revealing a lack of multivariate normality. Given that traditional Maximum Likelihood estimation methods are hindered by deviations from multivariate normality [14], we utilized the robust Maximum Likelihood (MLM) method of estimation in the subsequent confirmatory factor analysis. MLM takes into account the degree of non-normality and adjusts parameter error estimates, chi square and fit indices accordingly [15]. "Confirmatory factor analysis using MLM was conducted on the observed covariance matrix of PERMA item scores, which is depicted in (Table 3)".

The purpose of this confirmatory factor analysis was to determine whether Seligman's five-factor PERMA model fit the present data. This analysis began with specification of a model consisting of five latent factors: Positive Emotion, Engagement, Relationship, Meaning, and Accomplishment. A unique set of three *Flourish and Fitness* survey items were specified to serve as observed variables for each latent factor. The specified model and associated standardized parameter estimates are depicted in (Figure 1). In order to gauge model fit, we examined a pair of fit indices: the standardized root mean square error of approximation (SRMR) and the comparative fit index (CFI). This is a recommended approach for assessment of model fit [16]. For the present model, the SRMR was 0.04, and the CFI was .94. Hu and Bentler suggest that for a good fitting model, the SRMR should be close to or less than .08, and the CFI should be close to or greater than .95. Given that SRMR for the current model was less than .08 and CFI was close to .95, it appears that the five-factor PERMA model was an acceptable fit for the present data.

***Principal Components Factor Analysis*:** A Principal Components Factor Analysis conducted in the Normative

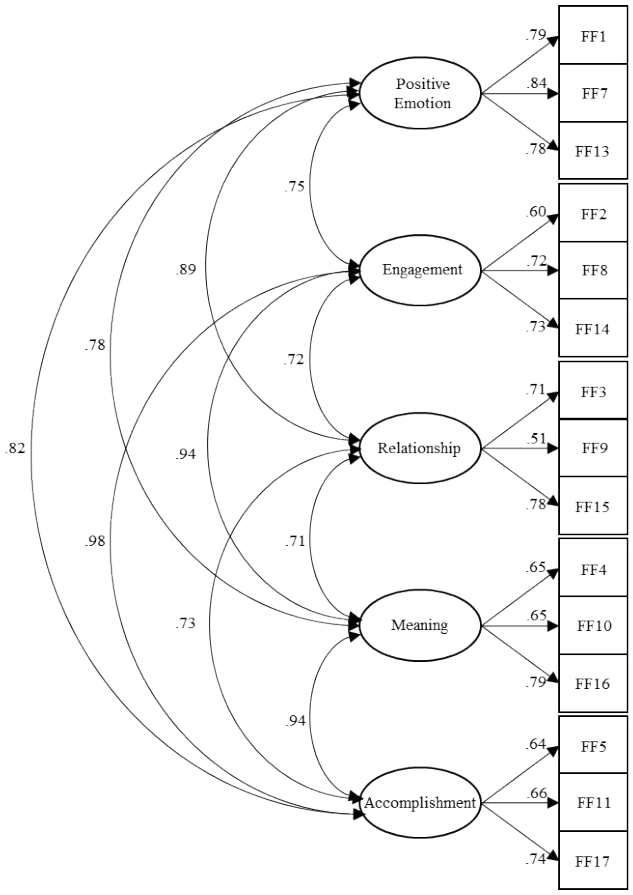

Figure 1: Maximum Likelihood (MLM) Confirmatory Factor Analysis for five-factor PERMA model with standardized parameter estimates

Table 3: Observed covariance matrix for PERMA survey item scores

	FF1	FF7	FF13	FF2	FF8	FF14	FF3	FF9	FF15	FF4	FF10	FF16	FF5	FF11	FF17
FF1	0.878														
FF7	0.651	1.082													
FF13	0.626	0.773	1.273												
FF2	0.296	0.335	0.305	0.881											
FF8	0.344	0.442	0.456	0.465	0.814										
FF14	0.424	0.494	0.615	0.394	0.481	1.192									
FF3	0.487	0.546	0.507	0.287	0.286	0.377	1.013								
FF9	0.255	0.345	0.338	0.180	0.270	0.340	0.252	0.618							
FF15	0.568	0.646	0.671	0.267	0.351	0.574	0.653	0.306	1.239						
FF4	0.406	0.415	0.505	0.403	0.375	0.507	0.324	0.158	0.404	1.103					
FF10	0.431	0.485	0.546	0.425	0.438	0.606	0.380	0.272	0.449	0.547	1.289				
FF16	0.469	0.564	0.639	0.363	0.505	0.730	0.382	0.299	0.563	0.598	0.608	1.199			
FF5	0.328	0.369	0.420	0.384	0.417	0.411	0.295	0.199	0.329	0.419	0.364	0.493	0.854		
FF11	0.354	0.412	0.448	0.359	0.448	0.511	0.276	0.240	0.333	0.423	0.465	0.531	0.438	0.997	
FF17	0.489	0.545	0.586	0.348	0.440	0.542	0.329	0.319	0.512	0.418	0.457	0.607	0.400	0.454	0.923

Note: D. represents an abbreviation of "Demand".

Table 4: Summary of Principal Component Factor Analysis* for all 18 items of FF Scale for Normative sample (n=1142) yielding two empirical "Grand Factors", Positive and Productive

Item	(PERMA factor)	Positive	Productive
Item 7	I feel happy (P)	.814	.555
Item 1	I feel good (P)	.797	.534
Item 13	I feel full of joy (P)	.785	.580
Item 15	I feel close to my buddies teammates, or classmates (R)	.783	.446
Item 12	I like the way I look (F)	.718	.546
Item 17	I am proud of what I have accomplished (A)	.699	.686
Item 3	I have good friends (R)	.696	.380
Item 18	I feel healthy & energetic (F)	.670	.517
Item 6	I feel strong & fit (F)	.607	.598
Item 9	My family cares about me (R)	.552	.430
Item 8	I care enough to do my best (E)	.519	.767
Item 16	What I do is important (M)	.636	.748
Item 11	When I set a goal I achieve it (A)	.474	.721
Item 5	I am a good worker (A)	.462	.719
Item 14	My participation matters (E)	.600	.713
Item 2	I try my hardest whenever I set out to do something (E)	.357	.697
Item 4	What I do makes a difference (M)	.471	.692
Item 10	What I do is meaningful (M)	.509	.663

NOTES: * Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization; ** Item 17 essentially double-loaded

*** P = Positive Emotion, E=Engagement, R=Relationship, M=Meaning, A=Accomplishment.

sample (n = 1142) with a Promax rotation yielded a two-factor solution summarized in (Table 4). Items were assigned to the factors in which they demonstrated the highest loading, yielding a ten-item factor named "Positive affect, health, and relationships" (Positive) and an eight-item factor named "Productive and engaged" (Productive). For efficiency in communication, the "Positive" and "Productive" factors will be referred to as the two "grand factors."

For the most part, the Positive and Productive scales were combinations of the PERMA and intended factors. The Positive Emotion, Relationship, and Fitness items were all included in the Positive factor, while the majority of the Engagement, Accomplishment, and Meaning items factored into the Productivity factor. The exception was "I am proud of what I have accomplished," which was included as one of the three Accomplishment items but may involve an affect and relationship context that tipped it toward loading on the Positive factor. To simplify administration and interpretation, the decision was made to include each item in only one factor, the one on which it loaded highest. "(Table 5) summarizes the FF items along with their PERMA factor and grand factor assignments".

Table 5: Concurrent Validity of FF Factors and Total Score for Summer/ High Risk Sample (n=323): Correlations with Kovacs' Child Depression Inventory short form (REF #), Snyder's Hope Scale (REF#), and the Boss Ostracism Sub-scales (REF#)

	FF Productive	FF Positive	FF PERMAtot	FF Total
Child Depression Inventory	-.34**	-.39**	- .38**	-.39**
Hope Agency	51**	.54**	.56 **	.57**
Hope Pathways	- .46**	.44**	.46 **	.48**
Hope Total	.54**	.55**	.57**	.58**
Threat to Belonging	-.06	-.26**	-.16**	-.19**
Threat to Self-Esteem	-.35**	-.39**	-.38**	-.40**
Threat to Control	-.25**	-.24**	-.24 **	-.27**
Threat to Meaningful Existence	-.12**	-.31**	-.26 **	-.27**

NOTE: ** Indicates significance at the .01 level .

Reliability Analyses

Test-retest reliability: In the Title I Academic Remediation sample, students completed the *FF* in the first and last weeks of the program (4-6 week test-retest reliability). Even in these 235 participants known to have academic and/or psychosocial difficulties, Pearson correlation analyses indicated that the Positive factor, the Productivity factor, and the *FF* pre-post scores were all positively correlated ($p < .001$). In addition, the pre- and post-scores of each of the five PERMA factors (Positive emotion, Engagement, Relationship, Meaning, Accomplishment) as well as the Fitness factor were significantly correlated ($p < .001$). Test-retest correlations ranged from .32 to .42.

Internal Consistency: The internal consistency of the *FF* factors and totals was examined in the normative sample (n = 1142), in each of the age groups (ES, MS, and HS), and in two samples of high-risk students with known learning difficulties: the Academic Remediation sample and the *Smart Strengths* intervention sample. The Alpha coefficients for Total scores (18-item FF Total which includes Fitness items and 15 item PERMA Total) were all above .90 in the Normative sample and held at the same high levels across age groups and within high-risk samples. Alpha Coefficients for the Grand factors, Positive (10 item), and Productive (8 item) were similarly strong (85-.91) across samples and age groups. Internal Consistency was lower for the five three-item PERMA Factors, as expected with only three items, but still ranged from .69 to .84 in all of the samples except the Academic Remediation group.

Validity Analyses

Construct validity: Correlations with Measures of Hope, Depression, and Threat to Psychological Well-being: As summarized in "(Table 5), the *FF* factors were significantly correlated in predicted directions with other self-report measures of child adjustment and well-being". Specifically, the Positive factor, Productive factor, PERMA total, and *FF* total score were positively correlated with the *Hope Scale for Children* hope agency, pathways, and total scores. On the flip side, the FF factors negatively correlated with self-reported depression on the *Children's Depression Inventory CDI 2: SR(S)* and higher threat to psychological needs of belonging, self-esteem, control, and meaningful existence on the ostracism portion of the BOSS Scales [10]. Productive scores were not correlated with threat to belonging but did correlate with the other three need threats in expected directions.

***Lower FF scores in Children who report being bullied*:** As envisioned in *FF* development, the *FF* was scaled to

Table 6: Summary of Paired t-tests comparing Pre and Post PERMA scores in SMART Strengths Intervention participants

Item	Pairs	n	M	SD	t	df	p
PERMA Total	Pre post	42 42	64.36 63.51	10.06 7.84	.51	41	.61
GRAND Factors							
Positive	Pre post	41 41	40.56 42.79	7.09 5.08	-2.04	40	.05*
Productive	Pre post	42 42	32.17 33.89	5.19 4.71	-1.93	41	.06
PERMA Factors							
Positive Emotion	Pre post	42 42	11.50 12.38	2.70 2.46	-1.89	41	.07
Engagement	Pre post	42 42	12.52 13.26	2.28 1.87	-2.04	41	.05*
Relationship	Pre post	42 42	12.09 12.71	2.26 2.03	-1.99	41	.05*
Meaning	Pre post	42 42	11.55 12.13	2.16 2.08	-1.42	41	.16
Accomplishment	Pre post	42 42	12.59 13.02	2.20 2.11	-1.04	41	.30

NOTE: * Indicates significance at the .05 level; ** Indicates significance at the .01 level

be easily administered with the BOSS scales and to allow examination of well-being in children exposed to bullying. In the Normative sample, 1134 students completed both measures in counterbalanced order. The *FF* PERMA Total was significantly correlated in a negative direction with self-report of Verbal/social bullying [r (1134) = -.25, p < .001], Physical bullying [r (1134) = -.22, p < .001], Cyber-bullying [r (1132) = -.21, p < .001], and Ostracism [r(1130) = -.29, p < .001]. The same pattern of *FF* indicating lower well-being in children who experienced bullying was replicated across *FF* factors and across subgroups including ES, MS, and HS groups.

Examples of Potential Applications: Intervention Impact

***Impact of a strengths-based school intervention*:** In collaboration with the *SMART Strengths* authors [17], *SMART Strengths* interventions were tested in two high-risk populations: high school freshmen at a Title I High School rated as a "failing school" and seventh and eighth graders at a Title I Charter school documenting academic progress in spite of socioeconomic hardships. Using paired *t*-tests, the *FF* was tested as a means of capturing students' self-reported well-being before and after the eight-week school-based group intervention rooted in positive psychology. As summarized in "(Table 6), paired *t*-tests revealed several of the *FF* factors improved in the course of intervention". As one would predict with a strengths-based intervention, the Positive factor was most significantly impacted, t (41) = -2.04, p < .05. Accomplishment and Meaning, which were not directly targeted by the intervention, did not change significantly from pre- to post- assessments.

***Measuring well-being in Title I enrichment summer program participants exposed to the Emanuel AME church shooting*:** As part of a long-standing partnership with a Title I summer enrichment program for children aged 5-12, the author's service learning and community engagement programs annually sent multiple college volunteers to help deliver programming to the "campers." In addition, the volunteer team supported the program by administering IRB-approved pre-post surveys to document psychosocial impact of the program. In June of 2015, the campers' and staff members' communities were affected by a hate crime, the mass murder of nine churchgoers at Emanuel AME church three blocks from the school where the summer program was ongoing. Virtually every family and staff member in the camp personally knew someone directly impacted by the shooting. The camp's primary goal became to offer an oasis of "normalcy" for the children by continuing regular enrichment programming. The *FF* had been used for Pre-Post evaluation in the summer of 2014, and pre-testing with *FF* had already been routinely administered when this catastrophe occurred. In the midst of an all-consuming community tragedy, these collaborators were in a rare position to measure flourishing in the two contrasting summers from the identical program, with and without the disruption of a catastrophic life event, using data from the *FF* responses of the consenting 8- to 12-year-olds.

In the summer of 2014, the *FF* documented the camp's positive impact on the children's flourishing with a significant improvement in the Positive factor from pre- to post-assessments, t (22) = -2.27, p < .03. In the summer of 2015, following the shootings, there was a slight decline in most FF scores, but there was not enough pre-post change for there to be a significant difference. The data supported the fact that flourishing held stable in a summer where tremendous upheaval was present.

***Impact of a Health and Fitness Intervention for teens and young adults with special needs*:** The Piece it Together (PIT) program was developed for transitional-age teens and young adults with high functioning Autism Spectrum Disorder (ASD) and mild Neurodevelopmental Disorders (NDD). PIT aims to adapt and individualize strategies that promote behavior changes that embrace a healthier, active lifestyle and to support these individuals as they build self-efficacy, socialization, stress reduction, and lifestyle behaviors and skills. PIT was an innovative collaboration of fitness-based experts at a regional medical center's Wellness Center, a Child Psychiatrist, and ASD/NDD experts in their Division of Developmental Pediatrics. PIT classes were held as seasonal sessions during fall and Spring (1x/week for 12 weeks) and Summer (2x/week for 6 weeks). Research data were collected during the summer programs, including physical and performance data, healthy habits questionnaires, and mood and behavior questionnaires including the *FF*. Pre- and post- *FF* scores were collected each summer in 2016 and 2017.

Mean total *FF* scores significantly increased from the first pre-*FF* to the last post-*FF* (pre 65.9+/-13.4, post 70.3+/-15.1; p < .003). Mean *FF* scores increased significantly more for those that attended more than one summer program (Δ 6.8+/-6.1, p < 005). Participation in this fitness, socialization, and stress reduction program led to an increase in flourishing and an increase in fitness for transitional-age youth with mild neurodevelopmental disabilities.

Discussion

The time is right for pediatricians, pediatric/clinical child psychologists, school psychologists and counselors, pediatric nurses, and social workers to join other disciplines which have begun to integrate positive psychology theory and research findings into their work with children and adolescents in school, community, and healthcare settings. One of the key concepts to emerge in Seligman's seminal work on flourishing and well-being is the PERMA model. The *FF* data presented here affirm, along with recent major studies that the PERMA dimensions can be observed and measured in children, as they have been in adolescents and adults. The present studies extend our capacity to examine PERMA in the populations child health professionals are most likely to be working with: Children and Youth with Special Healthcare Needs (CYSHN), children living with the chronic challenges of poverty and/or less than optimal educational environments, children and families with mental health issues, and/or children facing extreme challenges such as man-made or natural disasters (and now a pandemic). Many of the present samples include demographic groups underrepresented in the larger studies of PERMA. Like Butler and Kern, these authors consider the *FF* factors to be descriptive at this stage, and not a tool for categorizing respondents by means and standard deviations or cut-off scores. Likewise, at this early stage of exploring flourishing in children and youth, it is recommended that the empirical factors (Positive and Productive) and multiple dimensions of PERMA might be the most informative and relevant scores in the clinical setting, rather than the *FF* or PERMA Total. While this research does show correlations between *FF* total scores and multiple predicted constructs, the meat of analysis of an individual's scores on the *FF* should involve examination of the dimensions relative to one another and relative to the challenges the child may be facing. This is a screening tool to help practitioners and researchers intentionally attend to areas of strength and well-being with a brief, accessible measure.

The grand scores, Positive and Productive, may have utility in helping to separate changes in affect and outlook versus experiences of mastery. In concept they are compatible with previous theory and research in subjective well-being literature (e.g. Keyes) [18] that distinguish between feelings of happiness ("hedonic well-being") and positive life functioning ("eudaimonic well-being"), with Positive tapping into the hedonic and Productive tapping into the eudaimonic. In practice, a child experiencing chemotherapy, illness, or head injury may or may not show changes on the Productive items while receiving enhanced family, counselor, educator, and/or peer support. However, he or she might show clinically important changes in the Positive dimension that is central to flourishing. Likewise, academic remediation interventions might be related to changes in perceived accomplishment, meaning, or productivity. However, if Positive dimensions are not favorably impacted, the approach to intervention may need additional components. More research is needed into the roles that PERMA dimensions play in the lives and wellbeing of children and youth in the context of challenging health-related, academic, and/or traumatic life event circumstances.

Although the "Fitness" dimension is not one of the PERMA factors, it has intentionally been maintained as part of the *FF* scale to allow further study of the part that physical health and self-image may play in flourishing and emotional well-being. Others cited here similarly have included items about health in their development of tools to assess flourishing and well-being. As mental health practitioners continue to move forward with prevention and intervention initiatives, the PERMA scales cited here may be important dimensions to consider as both contexts and outcomes.

The *FF* can be a useful component of a brief set of surveys that precede a child mental health intake, well-child guidance, school screenings, or clinical interviews for individual patients. If surveys and interviews need to inquire about difficult topics such as bullying, illness, clinical symptoms, financial hardship, or adjustment issues, the *FF* can balance the set of questions out to focus on strengths and/or assets that could be reinforced by families and interventionists. The design of the *FF* to flow seamlessly after the BOSS scales makes it a particularly good tool to incorporate into individual or group inquiry about bullying and ostracism.

At a group level, the *FF* may be sensitive to changes in well-being that may occur over the course of a few weeks or months of intervention before (or in lieu of) more dramatic changes detectable by clinical inventories. The three examples provided in this article illustrate the *FF*'s potential utility to evaluate the effectiveness of programs explicitly delivering positive-psychology intervention (e.g. *SMART Strengths*) or to evaluate wellbeing in participants in interventions with broader goals (e.g. academic and enrichment programs for Title I school students, and health and fitness for youth with ASD and NDD).

The development of the *Flourish and Fitness (FF)* scale and more widely-normed PERMA-Profile open up opportunities for much-needed studies with child populations in basic research areas (e.g. the nature of flourishing across the lifespan, cultural and socioeconomic variations in flourishing, and the relationship between early flourishing and other indicators of child adjustment). The *FF* is also a potential tool to identify candidates for positive intervention in one or more areas, to track the impact of individual or system-wide positive interventions, or to monitor the course of flourishing across situations and life events. Especially for interventions such as Child mental health group or individual work, community interventions after disasters or pandemics, Child Life, or other supportive inpatient or outpatient pediatric services, the assessment of PERMA factors may prove a fruitful component for program evaluation and research.

Additional flourishing research with younger and more diverse populations will continue to enrich the literature and identify populations who might most benefit from PERMA-based components to their service delivery environments, group

intervention targets, and individual treatment plans. As is so often the case, optimal assessment of the flourishing construct should include parent report, child report, and professional observation. The *FF* is a promising tool for evaluating the child's subjective experiences.

Summary

In the wake of the current pandemic, there will be a need for screening tools that can cost-effectively identify both positive and negative psychological impacts on children. Children already at risk due to previously existing heath or mental health issues and children living in poverty are at particular risk but are under-represented in the normative samples of many copyrighted screening measures. The *Flourish and Fitness* scale is presented as a free, quick, screening tool for practitioners to identify areas of strengths and resources as reported by the children themselves. Psychometric studies from almost a decade of research suggest that this could be a useful tool for practitioners working with some of our most vulnerable populations. At a basic level, the Flourish and Fitness Scale studies extend the Positive Psychology literature validating Seligman's PERMA theory to younger and more vulnerable populations.

Acknowledgement

The authors wish to thank these colleagues and students who contributed to instrument development, data collection, analyses, interventions, and/or editing: Mary Rochelle Bennett, James Robert Daniels, Brad Lefort, Caleb Fair, Jessica Loya, Michelle Macias, Katherine Houghton, Erica Washburn, Shelia Grier, Michelle Mitchell, Dongning Ren, Vanessa Camacho, Andrew Williams, Alison Largent, Katie Kelly, Martina Mueller, Aubrie Frye, Kathleen West, Sara Saylor, and Zach Brown

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Citation: Saylor C, Dunn MM, Dragnett RW, Weller P, Greenlee E, et al (2020) Flourishing in Children and Adolescents Facing Challenges: The Flourish and Fitness Scale. Pediatr Res Child Health 3: 001-008.