Validation of a Measure to Assess the Social-Emotional Health of Secondary Students (R305A160157)

Project Covitality Final Report October 6, 2021

1. ACCOMPLISHMENTS

INTRODUCTION

This final report (a) addresses IES requested information and (b) documents findings associated with grant Objectives 1-6. Grant funding began in July 2016 and was to end in June 2020. A no-cost extension was approved through June 2021 to access student archival data during SARS-CoV-2 impacts on school districts. We provide a final statement about the activities completed, the results of the various analyses undertaken, and document Project Covitality's products (publications, presentations, and other digital materials). Some pre-grant peer-reviewed articles reported the psychometrics of the preliminary Social Emotional Health Survey-Secondary (SEHS-S) form. To avoid confusion about the preliminary SEHS-S, we referred to it now as the *SEHS-S-2015* and posted its manual in ERIC ([ED600144](#)) to distinguish it from the IES Goal 5 measure. We refer to the refined and the more comprehensively validated form evaluated by this IES grant as the *SEHS-S-2020.* The SEHS-S-2020 Technical Manual, a principal project product, is posted to ERIC ([ED600109](#)) and included as a final report document.

We acknowledge with deep appreciation the support provided by Corrine Alfeld, our IES grant officer. We also recognize and are grateful for the partnership provided by Hilva Chan, the California Department of Education, Tom Hanson, WestEd, and the staff and students at our partner schools without whom this project would not have been possible. We hope that these combined efforts have provided Californians (and others) with a resource that will contribute to the essential task of fostering all students' complete mental wellness.

FINAL REPORT

By way of a general overview, project Objectives 1-5 involved collecting data and various SEHS-S-2020 psychometric analyses (structural validity, criterion validity, and test-retest). We completed these tasks and documented them in the following report:

> Furlong, M. J., Nylund-Gibson, K., Dowdy, E., Wagle, R., Hinton, T., & Carter, D. (2020). *Modification and standardization of Social Emotional Health Survey-Secondary— 2020 edition.* Santa Barbara, CA, University of California Santa Barbara, International Center for School Based Youth Development. ED600109

We also published the following article in an open-access peer-reviewed journal. This paper draws on responses from the project's cross-sectional and longitudinal data sets to carefully document the SEHS-Secondary's psychometrics.

> Furlong, M. J., Dowdy, E., Nylund-Gibson, K., Wagle, R., Carter, D., & Hinton, T. (2021). Enhancement and standardization of a universal social-emotional health measure for students' psychological strengths. *Journal of Well-Being Assessment.* https://doi.org/10.1007/s41543-020-00032-2. ED612144

These above two documents memorialize completion of Objectives 1-5 and provide open-access SEHS-

Secondary validity evidence for researchers and practitioners assessing its potential applications.

1.1. What Were the Project's Major Goals?

This final report lists the project's objectives and describes the activities and products produced, documenting how we addressed them.

1.2. What Was Accomplished Under These Goals?

In Years 1-4, the annual reports described the activities we undertook addressing Objectives 1-5. These objectives focused primarily on cross-sectional data collection involving samples of California secondary school students. These efforts were carried out with the support of the California Department of Education (CDE) and in collaboration with WestEd, which manages and administers the California Healthy Kids Survey (CHKS). By way of context, a primary activity was designing and formatting an IES-UCSB survey module completed by students in a sample of California schools. The randomly selected schools agreed to add the IES-UCSB module to the core CHKS survey. The IES-UCSB module included the SEHS-S-2020 and other concurrent validity measures (e.g., Mental Health Continuum-Short Form). This cross-validation sample completed the more than 120-item CHKS Core module, which vastly expanded validation analyses options. It also allowed for new analyses that would not have otherwise been possible, such as examining the associations of the SEHS-S-2020 responses with student risk behaviors (e.g., substance use, bullying victimization associated with minoritized gender identity, e.g., O'Malley et al., 2021, see Project Publications). The original grant proposal focused on methods and analyses to evaluate the psychometrics of the SEHS-S-2020 for high school students. In some instances, districts chose to administer the project cross-sectional survey to middle school students, which provided an opportunity to examine psychometrics for this age group. The final report's publication list includes studies not explicitly identified in the original grant proposals, but which reflect our efforts to maximize the scientific and practical use of the grant funding for this SEHS-S-2020 measurement project.

The following sections describe the activities, findings, and products for Objectives 1-5. The statements in these sections include updates of information presented in previous annual reports. The Objective 6 statement is updated with analyses completed during the no-cost-extension year.

Instruments Use with Longitudinal Sample (Years 2, 3, 4)

Social Emotional Health Survey (SEHS-S)

Objective 1.1. Examine the SEHS-S item content and response scale to ensure that the measure has optimal construct coverage. Deciding between a 4-point and 6-point response option: Summary of analyses

We decided that the 6-point response format did not offer substantial psychometric benefits over the 4-point option based on early analyses. Furthermore, the 4-point option placed less cognitive demand on students; hence, we adopted the 4-point point option for all SEHS-S items. With this modification, all SEHS-S items now use the same response format, further simplifying the instrument. The technical report (listed below) has been registered with ERIC for interested researchers.

> Wolf, M., Nylund-Gibson, K., Dowdy, E., & Furlong, M. J. (2018). *An analytic approach for deciding between 4- and 6-point Likert-type response options.* ED591440

Objective 1.2. Pilot test the refined SEHS-S prior to full administration with a large cross-sectional sample and initiating longitudinal data collection

We originally planned to conduct an exploratory factor analysis (EFA) on half of the cross-sectional sample and follow up with a confirmatory factor analysis (CFA) using the refined SEHS-S to ensure that the factor structure remains the same after we have made the proposed changes. We ran CFAs in Mplus (Muthen & Muthen, 2006-2014) using Maximum Likelihood (ML) estimation. From October 2017 through June 2018, surveys (SEHS-S, SEDS, MHC-SF, MDLSS, and CHKS Module A; see instruments described below) were collected from a cross-sectional sample of approximately 14,000 students. These analyses provided preliminary guidance about SEHS-S scale refinement. Final CFAs and related analyses were completed and reported in the SEHS-S-2020 Technical Report and Furlong et al. (2021, *Journal of Well-Being Assessment*).

Status of Other Project Validation Measures

School Satisfaction Scale (SSS, proposed) School Connectedness Scale (substituted)

We did not use the SSS as originally planned. Because the schools completing the IES-UCSB module also completed the CHKS Core module, we had access to School Connectedness Scale items. Hence, we examined the association between School Connectedness and the SEHS-Secondary in the SEHS-Secondary Technical Guide and in the Furlong et al. (2021, *Journal of Well-Being Assessment*).

Student Learning Strategies (SLS)

We updated a literature review of this measure's psychometric properties. This conceptual information was included in the published psychometric articles. This measure was used as a concurrent validity measure as reported in the SEHS-S-2020 Technical Report.

Multidimensional School Anger Inventory (MSAI)

We completed a literature review of the MSAI's psychometric information and updated a summary for peer-reviewed manuscripts. During the NCE year, using responses from this validation measure, we proposed and evaluated the potential utility of the **School Boredom Mindset** based on incremental change beliefs (i.e., Dweck's cognitive growth mindset and Pekrun's academic emotions model)**.** We found that students reporting high levels of boredom at school (*school is really boring*) and negative school valence (*school is a waste of time*) are at high risk with substantially less favorable SEHS-S-2020 responses. This mindset was moderately stable over one year. An open-access journal article provides documentation:

> Furlong, M. J., Smith, D. C., Springer, T., & Dowdy, E. (2021). Bored with school! Bored with life? Well-being characteristics associated with a school boredom mindset. *Journal of Positive School Psychology, 5*(1), 42–64.
> https://www.journalppw.com/index.php/JPPW/article/view/261/95. ED612166

The 2021-2022 CHKS Core module included MSAI items based on this paper's analyses. Within the year, we will have vastly expanded information about the School Boredom Mindset, with responses from more than 500,000 secondary students.

Strengths and Difficulties Questionnaire (SDQ)
Changed to Social Emotional Distress Scale (SEDS)

We originally planned to use the SDQ as a global measure of students' recent emotional distress. Based on subsequent SDQ trials and reflecting our ongoing efforts to identify a brief, efficient, emotional

distress measure for school-based universal screening, we refined and validated a project-developed distress measure: The Social Emotional Distress Scale (SEDS). The SEDS validation study is published in a peer-reviewed journal and registered with ERIC. We have a second validation paper examining its structural validity for Latinx/Hispanic identifying youths (in review).

> Dowdy, E., Furlong, M. J., Nylund-Gibson, K., Moore, S., & Moffa, K. (2018). Initial validation of the Social Emotional Distress Survey-Secondary to support complete mental health screening. *Assessment for Effective Intervention, 43*, 241–248. https://doi.org/10.1177%2F1534508417749871 ED58510

> Hinton, T., Dowdy, E., Furlong, M. J., & Nylund-Gibson, K. (2021). Examination of the Social Emotional Distress Survey-Secondary for use across sociocultural groups. In review.

A positive grant impact was that the California CDE included the SEDS in the 2020-2021 CHKS survey, providing a sample of more than 400,000 responses. We will use these data to refine SEDS normative information and extend its validity evidence. Items from this measure are included in the 2021-2022 CHKS Core Module.

Brief Multidimensional Life Satisfaction Scale and Positive and Negative Affect Scale for Children (PANAS-C)

Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS)

The BMSLSS was included as a validity indicator with the cross-sectional and longitudinal samples, as reported in the SEHS-S-2020 Technical Report. We updated the literature review of this measure's psychometric information and crafted a summary for peer-reviewed manuscripts. In an expanded use of the project data sets, during the NCE year, we used the BMSLSS and the SEDS to address a significant gap in the Dual-Factor Model (DFM) literature. Previously there was no practical, empirically documented procedure for school mental health practitioners to assess students' DFM profiles. We carefully crafted a proposed solution documenting it in the following book chapter:

> Furlong, M. J., Dowdy, E., Moore, S., & Kim, E. (in press). Adapting the dual-factor model for universal school-based mental health screening: Bridging the research to practice divide. In K-A. Allen, M. J. Furlong, S. Suldo, & D. Vella-Brodrick (Eds.), *Handbook of positive psychology in schools: In support of positive educational processes* (3rd ed.). Routledge, Taylor and Francis. (Copy included as a project documents; pre-publication copy submitted to ERIC)

A related development is that we created a minicourse for school mental health educators to provide them with information and resources to responsibly employ the DFM in the context of universal mental wellness screening and individual students. This minicourse was presented at the 5th Annual California Student Mental Wellness Conference (September 8, 2021, *California Wellness Conference Bidimensional Wellness Models*) and distributed to numerous school mental health professionals via social digital networks (see https://rise.articulate.com/share/Ql9sC2Dv0pGHTZySEempM2G3MPK7z52p#/).

Based on the analysis of our IES-UCSB sample, we can now estimate that 2 out of 3 California high school students have complete mental health profiles (high life satisfaction and low distress). However, this is just a starting place. The DFM approach provides an efficient standard norm-based wellness index for future CHKS reporting. Before evaluating the DFM mental wellness indicator, there was no way to

estimate the proportion of California secondary students who presented with various positive, complete mental health levels. Moving forward, the availability of extensive, year-to-year DFM information will enrich understanding of students' mental health status and needs.

Positive and Negative Affect Scale for Children

We update this measure's psychometric information and crafted a detailed summary for peer-reviewed manuscripts. This measure was included as a validity indicator with the project's longitudinal sample.

Mental Health Continuum-Short Form (MHC_SF)

The MHC-SF offered a criterion-referenced indicator of student mental wellness, a viable alternative to the DFM norm-referenced approach. This validation measure was added after the grant proposal was submitted. We updated this measure's psychometric information and crafted a detailed summary for peer-reviewed manuscripts. This measure was included in the longitudinal (fall 2017, 2018, and 2019) and IES-UCSB cross-sectional (2017-2019) surveys.

Keyes proposed a non-sample-dependent categorization criteria based on the frequency with which youths report past month emotional, psychological, and social well-being. This 14-item measure places youths into three mental wellness categories—Flourishing, Moderate Mental Health, and Languishing. (*Note the in spring 2021, popular media literature widely referenced Keyes' Languishing category to describe the well-being effects of the SARS-CoV-2 pandemic.*) Using the CHKS IES-UCSB sample responses, we explored the viability of using the MHC-SF as a global student mental wellness indicator, focusing on understanding better the profiles of the Moderate Mental Health category.

> Chan, M., Furlong, M. J., Nylund-Gibson, K., & Dowdy, E. & (2021). Heterogeneity among moderate mental health students on the Mental Health Continuum-Short Form (MHC-SF). *School Mental Health.* http://dx.doi.org/10.1007/s12310-021-09476-0

Archival Educational Data

We obtained archival school record data in spring 2021 and merged it with the longitudinal data sets (collected in the fall of 2017, 2018 and, 2019). These data are examined in the Objective 6 analyses presented later in this report.

Validity Instruments Use with Cross-Sectional Sample (Years 2, 3)

California Healthy Kids Survey

This portion of the project involved students at randomly selected high schools completing the SEHS-S-2020 and the CHKS items related to violence, perceptions of safety, harassment and bullying, the use of alcohol and other drugs, and other risk behaviors. Convergent and divergent validity analyses used selected items (see: https://calschls.org/about/the-surveys/).

How were schools recruited? School principals were contacted via email in June 2018 with follow-up telephone calls until their school offices closed for the summer. Another email and telephone campaign occurred at the beginning of the 2018-19 school year. A survey link was sent to principals to read through the questions and a sample data report. Districts were offered the opportunity to participate during the fall 2018 CHKS registration process. These sampling procedures resulted in 17 schools and 10,880 students in Grades 9-12 completing the IES-UCSB module (SEHS-S-2020 and associated validity measures, e.g., BMSLSS). In the process of recruiting schools, WestEd staff found that many schools elected not to administer the IES-UCSB module, but they wanted to administer the SEHS-S-2020.

Allowing schools the latter option expanded the cross-sectional sample by 72,740 Grade 9-12 students and 32,499 Grade 7-8 students. Hence, the sample sizes had more than sufficient power to complete the CFAs called for in the original proposal. These larger samples enabled additional structural validity and invariance analyses with junior high students and for a sample of 1,400 students who completed a Spanish language SEHS-S-2020 version. The following two papers report these analyses:

> Furlong, M. J., Paz, J. L., Carter, D., Dowdy, E., Nylund-Gibson, K. (2021). Extending validation of a covitality social emotional health measure to middle and junior high school students. *International Journal Environmental Research and Public Health.*

> Hinton, T., Dowdy, E., Nylund-Gibson, K., Furlong, M. J., & Carter, D. (2021). Examining the Social Emotional Health Survey-Secondary for use with Latinx youth. *Journal of Psychoeducational Assessment, 39,* 242–246. EJ12990904 https://doi.org/10.1177/0734282920953236

How was the statewide cross-sectional survey administered? For those schools accepting the opportunity to administer the IES-UCSB module, a survey link and administration instructions that included a consent form were sent directly to the schools. The survey link was tested, and a survey date was scheduled. Once survey administration was complete, a report was compiled and sent to the school within a week. For schools in the districts using CalSCHLS surveys that accepted the opportunity, the IES-UCSB module was added to the CHKS Core survey, and administration followed the standard CHKS process (see: https://calschls.org/survey-administration/).

Academic Convergent Validity (School Connectedness Scale, SCS)

This widely used five-item measure was included in the CHKS Core Module. Students in the cross-sectional sample completed these items. Although we did not carry out CFAs to verify the structure validity of this measure, we previously did this using a large sample of California high school students (Furlong, M. J., O'Brennan, L. M., & You, S. (2011). Psychometric properties of the Add Health School Connectedness Scale for 18 sociocultural groups. *Psychology in the Schools, 48*, 986–997. doi:10.1002/pits.20609). Hence, there was solid evidence supporting this measure for its intended use. Responses to this measure provided a validity indicator in the SEHS-S-2020 Technical Manual.

Behavioral Convergent Validity

CHKS responses provided a convergent validity indicator consisting of three items asking students to self-report their use of tobacco, marijuana, and binge drinking (i.e., five or more drinks within two hours) within the previous 30 days. Students in the cross-sectional sample completed these items. We dichotomized responses for the three items reflecting no use of any of the three substances versus one or more. The SEHS-S-2020 Technical report shows the relationship between this behavior index and the SEHS-S-2020 responses. The Furlong et al. (2021, *Journal of Well-Being Assessment*) article included this index in an SEM validity analysis.

Social-Emotional Convergent Validity

A discriminant validity measure used items from the U.S. Youth Risk Behavior Surveillance Survey (Eaton et al., 2012). Students reported on their depressive experiences: "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?" (response options: 1 = yes or 2 = no). A similar item asked students to comment on their past-year suicidal ideation. The Furlong et al. (2021, *Journal of Well-Being Assessment) article* included this index in an SEM validity analysis.

Items Assessing Believability of Student Self-Report Data

The objectives related to evaluating the quality of student responses include items that consider response consistency, response honesty, and mischievous responding. The longitudinal sample survey included items assessing these aspects of student response bias. Student responses on the statewide, cross-sectional survey collected during the 2017-2019 school years show the following patterns.

Students Reported Overall Response Honesty and Consistency by Grade Level

	Believability of Responses			
	Grade 9	Grade 10	Grade 11	Grade 12
Reported responding honestly to all or most items	96.1%	96.2%	96.5%	95.8%
Consistency (school safety question)	59.3%	60.7%	60.8%	60.1%

WestEd's CHKS data management included a response quality index using the above two items and other excessive substance use items. Unreliable responders were students reporting three or more poor response quality indicators. The analyses dropped these cases (only 0.8% of the IES-UCSB cross-sectional sample).

For the longitudinal sample, in addition to the effects of mischievous responding, we added several items. Using qualitative interviews with adolescents we piloted the following items with the longitudinal sample survey: (a) Did you feel comfortable responding honestly to these topics?, (b) I think my responses to this survey will (positively affect me/ not affect me/ negatively affect me/ not sure), (c) Are you comfortable with the intended uses of this survey? These items explored how different response styles might be related to students' responses to SEHS-S-2020 and other survey items. We shared these efforts at two American Education Research Association presentations in April 2018 and April 2019.

> Clairmont, A., Wolf, M. G., & Maul, A. (2018, April). *A taxonomy of invalid responders: Understanding a threat to validity.* Paper presented at the annual meeting of the American Educational Research Association, New York, NY.

> Clairmont, A., Wolf, M. G., & Maul, A. (2018, April). *Motivations of invalid responses: Consequences for validity.* Paper presented at the meeting of the International Objective Measurement Workshop, New York, NY.

> Wolf, M. G., Clairmont, A., Maul, A., & Furlong, M. J. (2019, April). *A method for detecting invalid responses.* Paper to be presented at the annual meeting of the American Educational Research Association, Toronto, Canada.

In summary, we carefully evaluated the quality of students' responses and found that a substantial majority provided acceptable response patterns. The effects of spoiled case responding and item-level missing responses were minimal.

Aim 2: Verify the Construct Validity of the SEHS-S-2020 for High Schools

A primary intended use of the SEHS-S is to obtain information about students' social, emotional health in high schools to determine who might benefit from additional services appropriately. As such, the instrument must assess the constructs of interest. Information on the construct validity of the SEHS-S was needed to evaluate which scores and constructs have sufficient structural validity evidence warranting their use in research and educational practice.

Objective 2.1. Investigate the construct validity of the SEHS by examining the fit between its derived factors and its higher order hypothesized construct

CFA analyses address this study objective as documented in the SEHS-S-2020 Technical Manual and the Furlong et al. (2021, J*ournal of Well-Being Assessment*) article. The CFA analyses found excellent model fit for the full hypothesized 36 (items) – 12 (subdomains) – 4 (domains) – 1 (covitality) higher-order model.

Objective 2.2. Investigate the construct validity of the SEHS hypothesized constructs for diverse subgroups of high school students by examining measurement invariance for gender, age, and sociocultural subgroups

CFA analyses documented in the SEHS-S-2020 Technical Manual and the Furlong et al. (2021, *Journal of Well-Being Assessment*) article present invariance analyses for gender (binary male-female), age (Grades 9, 10, 11, and 12), ethnicity identification (American Indian, Asian, African American, Pacific Islander, and European American), and Latinx identification (Latinx, Non-Latinx). The CFA analyses found full invariance for the hypothesized 36 (items) – 12 (subdomains) – 4 (domains) – 1 (covitality) higher-order model for all analyses.

Aim 3: Investigate Criterion Validity SEHS-S-2020 Scores

The SEHS-S-2020 scores must relate in expected ways to other constructs of interest because their primary use is for universal wellness screening. Of particular interest is the relation of the SEHS-S to other measures of student strengths and personal distress and their ability to predict educational outcomes. To examine external validity, we co-administered the SEHS-S with other measures it should theoretically be related to (e.g., higher course grades).

Objective 3.1. Examine the convergent and discriminant validity of SEHS-S subscale and total scores with other concurrently administered self-report measures of student strengths and distress (e.g., subjective well-being and personal distress)
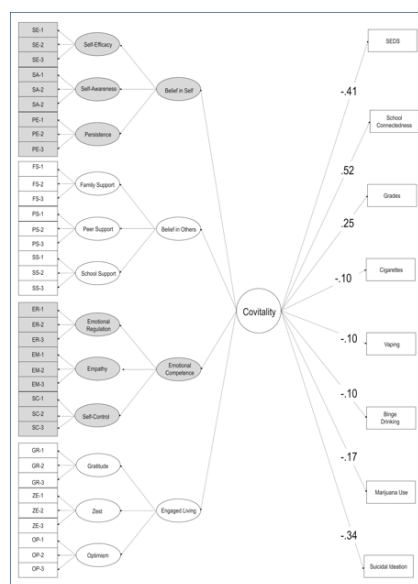
SEHS-S-2020 SEM Concurrent Validity

The SEHS-S-2020 Technical Manual and the Furlong et al. (2021, *Journal of Well-Being Assessment*) article present a SEM concurrent validity analysis (see figure at left). The SEHS-S-2020 scores were most positively related to school connectedness (.52) and self-reported course grades (.25) and in the expected negative direction with SEDS distress (-.41) and suicidal ideation (-.34).

Objective 3.2. Investigate predictive validity of the SEHS-S subscale and total scores by examining their associations with educational outcomes covariates (e.g., risk behaviors, grade point average, attendance, standardized achievement tests) at one-, two-, and three-year intervals

See analyses in Aim 6 section.

Aim 4: Investigate Consistency and Stability SEHS-S-2020 responses

Appropriate test use and interpretation need information about a measure's response stability across brief and extended periods. This aim examined the stability of SEHS responses across 2-3 months (a typical time frame for an eight-week psychoeducational intervention) and one year (a typical period for schools that would use the SEHS as part of an annual survey).

Objective 4.1. Examine the internal consistency of student responses across SEHS subscales and total score

The SEHS-S-2020 Technical Manual and the Furlong et al. (2021, *Journal of Well-Being Assessment*) article present internal consistency and stability coefficients. The SEHS-S-2020 scores had acceptable reliability coefficients, except for Self-Control, which was marginal.

Alpha and Omega Reliability Coefficients

Overall	α	Ω	Domains	α	Ω	Subdomains	α	Ω
SEHS-S Covitality	.95	.95	Belief in Self	.88	.88	Self-Efficacy	.82	.81
						Persistence	.76	.74
						Self-Awareness	.79	.78
			Belief in Others	.87	.87	School Support	.86	.85
						Family Support	.91	.91
						Peer Support	.92	.92
			Emotional Competence	.87	.87	Empathy	.86	.85
						Emotional Regulation	.78	.77
						Self-Control	.67	.64
			Engaged Living	.94	.94	Gratitude	.95	.94
						Zest	.92	.91
						Optimism	.87	.87

Note. α = Alpha. Ω = Omega.

Objective 4.2. Investigate the short-term (i.e., 2- to 3-month) stability of student SEHS responses

2018-2019 Test-Retest Procedure
A T2 random sample of 200 students was generated from the T1 dataset approximately three months following the annual survey administration in September 2018. This sample was divided equally among Grades 9-12 (50 from each grade level). Students were summoned to the computer lab during their first-period class and asked to retake the survey. The UCSB research team proctored survey administration and provided a brief explanation for retaking the survey. The online survey format offered students an opt-out option at the beginning of the survey. By observation, the students were cooperative and appropriately engaged.

2018-2019 Test-Retest Participants
We examined the short-term stability (approximately 2-3 months) of the SEHS-S instrument. Given this opportunity, we also examined the stability of the Social Emotional Distress Scale, which is useful when implementing a dual-factor wellness triage algorithm. At one longitudinal sample high school, a test-retest sample consisted of 159 students with 77 female students and 81 male students (one student selected "other" gender identification). There were 39 ninth-graders, 36 tenth-graders, 46 eleventh-graders, and 38 twelfth-graders. The ethnicity breakdown, as reported by students, was: White (42.8%),

Latinx or Hispanic (45.3%), American Indian or Alaskan Native (1.9%), Asian (5.7%), Black or African American (0.6%), Native Hawaiian or Pacific Islander (0%), Other (3.8%).

2018-2019 Test-Retest Results

Of the 200 students we sampled, 169 started the survey, with 159 giving assent to participate and providing usable IDs to link T1 and T2 responses. The table below presents the T1-T2 correlations for domains and subdomains. These data support trait-like (as opposed to state-like) social-emotional indicators, consistent with the SEHS-S conceptual model.

SEHS-S-2020 Two-month Stability Coefficients

Overall		Domains		Subdomains	
Covitality Total Score	.807	Belief in Self	.770	Self-Efficacy	.626
SEDS Total Distress	.761	Belief in Others	.762	Persistence	.721
		Emotional Competence	.678	Self-Awareness	.675
		Engaged Living	.745	School Support	.630
				Family Coherence	.775
				Peer Support	.650
				Empathy	.665
				Emotional Regulation	.491
				Self-Control	.566
				Gratitude	.697
				Zest	.622
				Optimism	.717

Objective 4.3. Investigate the long-term (i.e., 1-year) stability of student SEHS responses

The analyses examining the SEHS-S-2020 long-term stability used responses from the longitudinal sample. As part of the stability investigation, 707 students completed the SEHS-S-2020 in the fall of 2017 and approximately one year later in 2018.

SEHS-S-2020 One-Year Stability Coefficients

Overall	r	Domains	r	Subdomains	r
Covitality Total	.68	Belief in Self	.65	Self-Efficacy	.58
				Persistence	.61
				Self-Awareness	.53
		Belief in Others	.64	Social Support	.48
				Family Coherence	.68
				Peer Support	.52
		Emotional Competence	.59	Empathy	.59
				Emotional Regulation	.50
				Self-Control	.47
		Engaged Living	.61	Optimism	.57
				Zest	.56
				Gratitude	.53

Note. Students were in Grades 9 and 10 in 2017 and in Grades 10 and 11 in 2018 (*n* = 707).

Aim 5: Investigate strategies evaluating the credibility of SEHS-S self-reports to facilitate interpretation and appropriate use by high schools

The fifth aim built on the technical psychometric properties and addressed issues crucial to understanding the meaning, use, and value of the information from the SEHS-S. In addition, there is always a concern about how student self-reports are influenced by response honesty, not attending closely to the survey responses, and careless responding. Hence, we investigated data screening options that might allow schools to evaluate if a student provided usable and meaningful responses. Information about the believability of students' responses to the SEHS-S would increase the motivation of school personnel to respond to emerging needs and add credibility to efforts that advocate for the implementation of educational policies that support students social-emotional development.

Objective 5.1. Evaluate how student responses' trustworthiness (i.e., logical response consistency and expressed response honesty) is associated with SEHS subscale and total scores

As a first look at data quality, we provide descriptive information about the items used. The first item asks students to comment on how honestly they responded to the longitudinal and cross-sectional surveys items, presented near the end of the online survey format. This item has been used in the CHKS survey for more than 15 years and used in other similar statewide surveillance surveys. More than 90% of the students reported that they answered all or most items honestly. However, examining the SEHS-S mean total by response honesty, we found significant differences across response groups. As anticipated, we considered response honesty when conducting analyses.

Mean SEHS-S-2020 Covitality Total Score by Self-Reported Overall Response Honesty

	Number of questions answered honestly			
	All of them	Most of them	Some of them	Hardly any
Mean Covitality Score	105.50	97.86	90.47	85.69

Another response quality check we proposed was to examine possible response consistency. We used two commonly occurring CHKS items for this check that ask students to report on how safe they feel at school. These items are scored in opposite directions (safe to unsafe and unsafe to safe). Students who have safe-safe or unsafe-unsafe responses were considered to be responding consistently, with the remaining students showing inconsistent responses. We found no differences when the mean SEHS total score and the average time to complete the survey examined in the statewide cross-sectional sample.

Mean SEHS-S-2020 Covitality Total and Time to Complete Survey by Response Consistency Check

	Consistency Check (Safety Items)	
	Inconsistent	Consistent
Mean Covitality Total Score	102.73	103.72
Minutes to Complete Survey	24.12	24.06

Objective 5.2. Examine factors associated with the authenticity of students' responses so as to better understand how to interpret response trustworthiness and believability

Using the IES-UCSB module responses of 11,217 students, we examined the demographic characteristics and responses to the chief project measures by students responses to the question about

how many of the survey items they answered honestly: all of them (A, 76.9%), most of them (M, 21.0%), and some of them (S, 2.1%). The percentages of students in each response option did not differ by grade level, binary gender, traditional racial identification, or sexual orientation. There was a slight difference in transgender identification, with 8.9% of transgender students indicating that they answered only some items honestly compared to 2.0% of other students.

Comparing the three item honesty groups we found significance differences on the mean total scale responses for emotional distress (SEDS, A > M, S, eta^2 = .007), covitality total (SEHS-S-2020, A > M >S, eta^2 = .039), life satisfaction (BMSLSS, A > M > S, eta^2 .019), and overall subjective well-being (MHC-SF, A > M > S, eta^2 = .022). Students reporting less than full response honesty had higher emotional distress and lower positive mental health indicators, however, these were all small effect size differences.

Aim 6: Investigate Students' SEHS-S responses for Presence of Empirically-Defined Interpretation Subtypes or Classes

Beyond presenting raw scores and some version of standard scores, traditional approaches to test interpretation typically provide report scores as falling into some defined ranges or categories. For example, it is common for tests to report scores based on logical groups defined by the distance from the mean expressed as standard scores. The Behavioral Emotional Screening System (Kamphaus & Reynolds, 2007), for example, reports *T*-scores as "normal" (< 60), "elevated" (60-69), or "extremely elevated" (≥70). In applied educational settings, using such score "classes" for interpretation is standard practice and influences decisions about service delivery to students. We recognize that when school personnel use the SEHS-S-2020, they often ask for the score-category-range type of information. To address this aspect of test interpretation, we investigated the utility of using an empirical approach to identifying meaningful SEHS-S-2020 response "classes."

To prepare for these final analyses, we used an existing database from previous school surveys **(none of these data were collected as part of the IES grant project)** to pilot and refine the data analyses procedures that we subsequently employed with the project longitudinal data. One paper demonstrated the use of LCA to examine the SEHS-S response profiles and a second paper examines the stability of these latent classes. These analyses provide models for the proposed project analyses.

Moore, S., Dowdy, E., Nylund-Gibson, K., & Furlong, M. J. (2019). An empirical approach to complete mental health classification in adolescents. *School Mental Health, 11*(3), 438–453. https://doi.org/10.1007/s12310-019-09311-7 EJ1229740

Abstract. Using latent profile analysis (LPA), this study empirically identified dual-factor mental health subtypes, with a goal of examining structural stability of emerging latent classes over three high school years. Profiles' relations with distal indicators of well-being, psychosocial distress, and self-reported grades were examined to explore the validity of emerging classes. A sample of 332 high school students reported on their social-emotional strengths and psychological distress during the fall term of their ninth-, tenth-, and eleventh-grade years. In Grade 12, students reported on measures assessing their grades and social-emotional experiences. Independent LPAs for each grade year yielded four mental health subtypes — *complete mental health*, *moderately mentally healthy*, *symptomatic but content*, and *troubled* — and provided evidence for the structural stability of the dual-factor mental health construct. Across high school years, most students were in the *complete* or *moderately mentally healthy* classes, with the *troubled* class consistently representing the smallest proportion of the sample. Students in classes with higher levels of strengths and lower levels of distress reported higher grades, prosocial

contribution to community, and higher life satisfaction, and fewer symptoms of anxiety and depression. Implications and future directions for research and school-based practice are discussed.

> Moore, S., Dowdy, E., Nylund-Gibson, K., & Furlong, M. J. (2019). A latent transition analysis of the longitudinal stability of dual-factor mental health in adolescence. *Journal of School Psychology, 73*, 56–73. https://doi.org/10.1016/j.jsp.2019.03.003

Abstract. Dual-factor models of mental health are increasingly supported but little is known about longitudinal trends in dual-factor mental health. The current study used latent profile analysis (LPA) to empirically identify dual-factor mental health classes at each of Grades 9 through 12 and latent transition analysis (LTA) to examine stability of classes over four academic years. A sample of 875 adolescents from two cohorts reported on their social-emotional strengths and psychological distress. Cross-sectional LPAs for each grade year resulted in four mental health classes: complete mental health, moderately mentally healthy, symptomatic but content, and troubled. An LTA model indicated that the complete mental health class exhibited the most stability, followed by moderately mentally healthy and symptomatic but content classes. The troubled class exhibited the least stability. Less than 24% of participants remained in the same mental health class across all years. Findings support regular monitoring of students' dual-factor mental health to accurately inform mental health promotion, prevention, and intervention effort.

With the above two papers providing analytic models, the following section reports analyses addressing Objective 6.1 and 6.2.

Objective 6.1. Identify the number of meaningful SEHS response profiles and examine how SEHS response classes are associated with demographic and educational outcomes covariates

> Moore, S., Carter, D., Kim, E.K., Dowdy, E., Nylund-Gibson, K., Furlong, M. J. (In prep). *Adolescents' Covitality Patterns: Relations with Student Demographic Covariates and Academic and Mental Health Outcomes.*

One analysis explored the number of meaningful SEHS-S-2020 response profiles. This analysis looked at the number of response classes across the 12 SEHS-S-2020 subdomains and used responses from the CHKS IES-UCSB cross-sectional sample. This sample included 11,217 secondary students from 15 randomly selected California high schools in nine counties. Enrollment of students was Grades 9 (*n* = 3790, 33.7%), 10 (*n* = 2354, 21.0%), 11 (*n* = 3237, 28.9%), and 12 (*n* = 1846, 16.5%). The ethnic breakdown of the sample is as follows: White (*n* = 4036, 36.0%), Mixed (*n* = 3885, 34.6%), Asian (*n* = 1203, 10.7%), American Indian/Alaskan Native (*n* = 622, 5.5%), Black/African American (*n* = 429, 3.8%), Native Hawaiian/Pacific Islander (*n* = 232, 2.1%), and no response (*n* = 810, 7.2%). Self-reported gender identity was male (*n* = 4237, 37.8%), female (*n* = 4518, 40.3%), and no response (*n* = 2462, 21.9%).

This analysis used LPA to explore patterns in adolescents' covitality. Specifically, we explored which covitality patterns, as measured by 12 continuous social-emotional strengths domains, emerged in a large, representative sample of adolescents. Given prior LPA research, including constructs of covitality, we anticipated identifying at least four ordered profiles. We further investigated whether student characteristics, including gender, ethnicity, and socioeconomic circumstances, were related to profile membership. Finally, we explored whether emerging profiles differed concerning students' self-reported academic achievement, positive social-emotional outcomes, and psychological distress.

A series of LPAs estimated the underlying heterogeneity of the 12 SEHS-S-2020 subdomains (i.e., Self-Efficacy, Self-Acceptance, Persistence, Social Support, Family Coherence, Peer Support, Emotional Regulation, Empathy, Self-Control, Optimism, Zest, and Gratitude). The means of the 12 subscales were analysis indicators. We started by estimating LPA models with 1-10 profiles, increasing the profiles by one until the 10-profile solution. LPAs use continuous indicators and explore within profile variance and covariances of the observed indicators. We considered four LPA model specifications (see Masyn, 2013) that varied in how they specify the variance/covariance of the indicators. These included: (a) the *diagonal profile invariant model* (where indicator variances are specified to be equal across the profiles, with correlations set to zero among the indicators); (b) the *diagonal profile varying model* (where indicator variances are freely estimate across profiles and correlations are set to zero among the indicators); (c) the *nondiagonal profile invariant model* (where indicator variances are set to be equal across the profiles and correlations are allowed to be estimated among the indicators); and (d) the nondiagonal profile varying model (where indicator variances are freely estimated for each profile and correlations are allowed to be estimated among the indicators). LPA models were estimated using full information maximum likelihood estimation (FIML; Rubin, 1987) in Mplus, Version 8.1 (Muthén & Muthén, 1998–2017) and missing data were assumed to be missing at random (MAR). Multiple random starts ensured that the solution converged on a global rather than a local solution.

The emerging profiles were ordered and labeled in reference to each other (see figure below). The four profiles were *High Covitality* ($n = 2354$, 21.1%), *Moderate High Covitality* ($n = 4608$, 41.4%), *Moderate Low Covitality* ($n = 3251$, 29.2%), and *Low Covitality* ($n = 929$, 8.3%). Mean values of the 12 subdomains ranged from $M = 3.1$ to $M = 3.7$ for the *High Covitality* profile, $M = 2.4$ to $M = 3.2$ for the *Moderate High Covitality* profile, $M = 2.0$ to $M = 2.9$ for the *Moderate Low Covitality* profile, and $M = 1.5$ to $M = 2.3$ for the *Low Covitality* profile. Patterns of the emergent profiles revealed that mean persistence scores were visually lower across the profiles, and mean empathy, emotional regulation, and self-control were higher among the lower profiles. Notably, there was also a decrease in mean values of optimism, zest, and gratitude among the lower profiles.

Latent Profile Classes for SEHS-S-2020 12 Subdomains
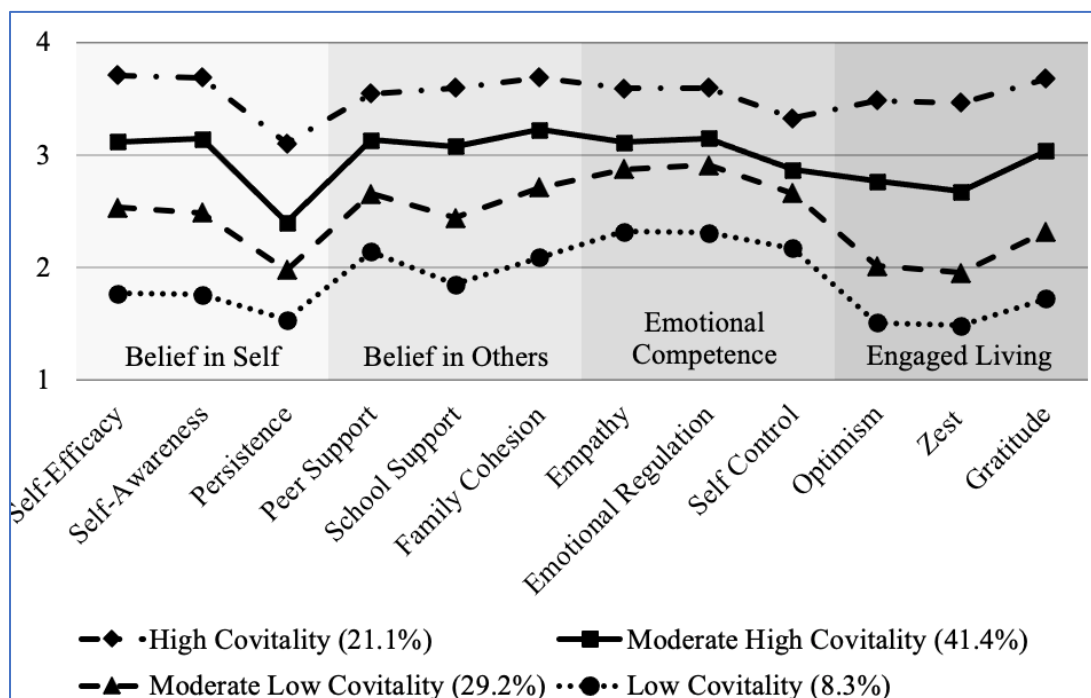
The relation between binary gender and the latent profile groups indicated that females were more likely than males to be in the *Moderate Low Covitality* profile (*logit* = .33, *p* < .001, *OR* = 1.40) and the *Low Covitality* profile (*logit* = .28, *p* = .011, *OR* = 1.32) compared to the *High Covitality* profile. Females were also more likely than males to be represented in the *Moderate Low Covitality* profile (*logit* = .22, *p* = .001, *OR* = 1.24) compared to the *Moderate High Covitality* profile. There were no significant differences for gender when comparing the other profiles. Overall, the pattern of results suggests that female students were generally more likely to be in the latent profiles with lower social emotional health. Results for higher parent education indicated that students who had parents with more educational attainment were less likely to be in the *Moderate High Covitality* profile (*logit* = -.21, *p* = .004, *OR* = .81), *Moderate Low Covitality* profile (*logit* = -.44, *p* < .001, *OR* = .64), and the *Low Covitality* profile (*logit* = -.73, *p* < .001, *OR* - .48) than the *High Covitality* profile compared to students who reported parents who had less educational attainment. Students who reported parents to have more educational attainment were less likely to be in the *Low Covitality* profile than the Moderate High Covitality (*logit* = -.52, *p* = .001, *OR* = .58) and the *Moderate Low Covitality* profile (*logit* = -.23, *p* = .001, *OR* = .79) compared to students who report their parent had less educational attainment. Further, students who reported parents to have more educational attainment were less likely to be in the *Low Covitality* profile than the *Moderate Low Covitality* profile (*logit* = -.29, *p* = .020, *OR* = .75) compared to students who report their parent had less educational attainment. The pattern for parent educational attainment indicated that students with parents who had higher educational attainment were more likely to be in the higher Covitality profiles. There were no significant differences for Latinx status across the profiles.

Results for distal mean differences and their associated Cohen's *d* range are presented for self-report grades, followed by school connectedness, distress, and life satisfaction. All pairwise comparisons were significant at *p* < .01. The *High Covitality* profile had the highest self-report grades (*M* = 6.24), and the *Low Covitality* profile had the lowest self-report grades (*M* = 4.70; *d*range = .17–.44). This finding indicates that socio-emotional health may contribute to academic performance among this population (see Figure below, Panel A). For school connectedness (see Figure below, Panel B), *High Covitality* profile students had the highest mean scores (*M* = 4.08), and the *Low Covitality* profile had the lowest mean scores (*M* = 2.76; *d*range = .17–.66). This finding indicates that socio-emotional health is positively associated with school connectedness. Results for distress (see Figure below, Panel C) indicated lower scores in the *High Covitality* profile (*M* = 1.48) versus the *Low Covitality* profile (*M* = 2.44; *d*range = .07–.63), suggesting those with higher socio-emotional health report lower distress. For life satisfaction (see Figure below, Panel D), the *High Covitality* profile students reported the highest mean scores (*M* = 5.40), and the lowest mean score in the *Low Covitality* profile (*M* = 2.89; *d*range = .74–.2.51) indicating that higher socio-emotional

Distal outcome means for the four SHS-S-2020 LPA profiles (Note: All pairwise comparisons of distal outcome means are significantly different from each other.

health is associated substantially with higher overall life satisfaction. Cohen's *d* estimates for the pairwise comparisons ranged from no effect to large effect sizes, and generally, the largest effect sizes were between the High Covitality profile and the Moderate Low Covitality profile.

A manuscript describing the above LPA analysis is in preparation for submission to a peer-reviewed journal.

Objective 6.2. Evaluate stability of empirically derived SEHS classes

Descriptive Statistics of Demographics for Cohort 1 and Cohort 2

	Cohort 1 (%)	Cohort 2 (%)
Gender		
Male	46.3%	45.4%
Female	53.7%	56.6%
Race/Ethnicity		
American Indian	.8%	.2%
Asian	4.2%	3.1%
Black/African American	1.7%	1.5%
Hispanic	38.7%	38.5%
Native Hawaiian	—	.2%
White	48.7%	45.7%
Two or more	5.9%	10.8%

To evaluate this objective, we used a sample of high school students from the two study schools. The sample consisted of a total of $N = 1,372$ participants across two cohorts of students.

The demographics presented in the table to the left indicate a slightly higher representation of females than males, primarily Hispanic and White participants. The longitudinal sample was over three years, 2017, 2018, and 2019. Cohort 1 consisted of students who had data for at least two years starting from ninth grade (i.e., ninth grade in 2017, tenth grade in 2018, and eleventh grade in 2019). Cohort 2 consisted of students who had data for at least two years starting from 10th grade (i.e., tenth grade in 2017, eleventh grade in 2018, and twelfth grade in 2019).

The indicators for the time-specific LPAs were mean values of the 12 SHES sub-domains of self-efficacy, self-acceptance, persistence, social support, family coherence, peer support, emotional regulation, empathy, self-control, optimism, zest, and gratitude. Means and standard deviations of the indicator scores were similar across the grade levels.

Latent profile analysis of the longitudinal sample resulted in a 3-class model as the optimal solution for each independent timepoint. Although the patterns were similar to the previous 4-class solution, the smaller sample size did not provide enough power to detect the fourth class. Participants were represented in each group as follows: Low Covitality (11.6% - 18.7%), Moderate Covitality (46.3% - 53.1%), and High Covitality (32.8% - 42.1%). Grade level measurement invariance of the models was tested using the nested model likelihood ratio test (LRT) followed by an examination of the fit statistics (i.e., Akaike's information criterion (AIC; Akaike, 1973, 1987), Bayesian information criteria (BIC; Schwarz, 1978), and sample size-adjusted BIC (aBIC; Sclove, 1987), with a non-significant LRT and/or lower information criterion values reflecting superior model fit (Olivera-Aguilar & Rikoon, 2018). Although LRT tests were significant, the BIC and aBIC values were smaller in the constrained model, indicating that the invariant model fit the data better than the unconstrained model. Thus, the latent transition analyses used the constrained model.
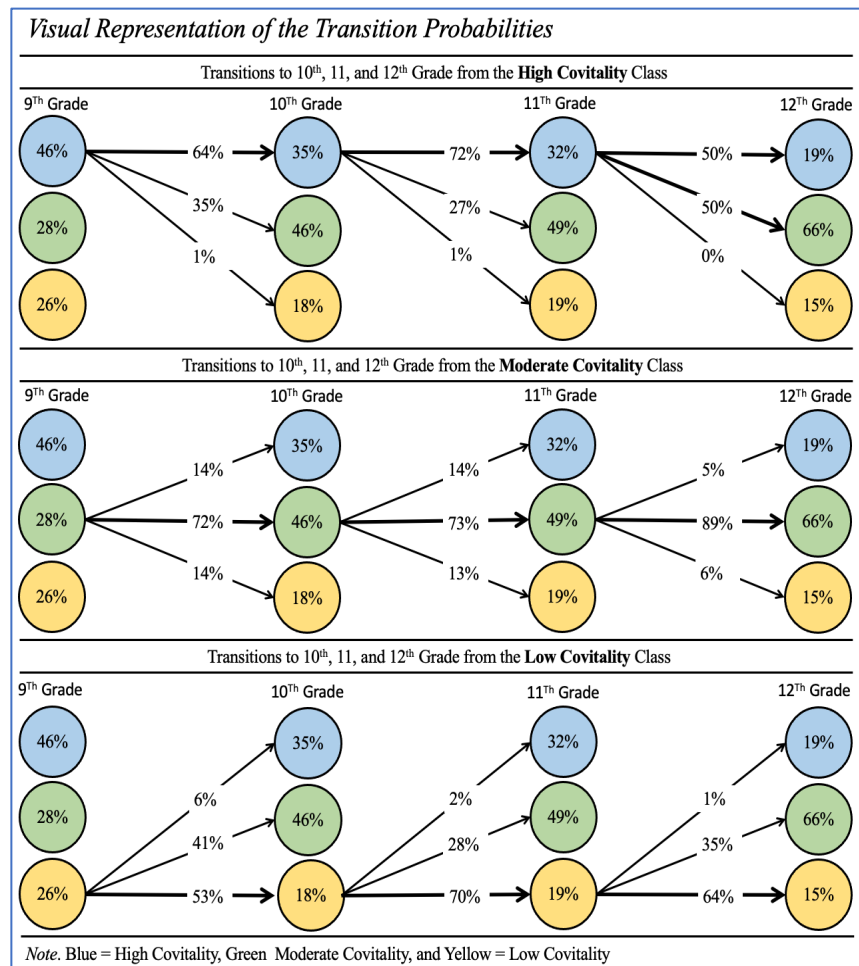
Most Common LTA Patterns					
9th Grade	10th Grade	11th Grade	12th Grade	#	%
2	2	2	2	257	19%
3	2	2	2	221	17%
3	3	3	2	206	15%
1	1	1	1	135	10%
3	3	3	3	123	9%
3	3	2	2	95	7%
1	1	2	2	45	3%
3	2	3	3	43	3%
2	3	3	2	41	3%
2	2	1	1	29	2%
3	2	1	1	29	2%
2	1	1	1	26	2%
1	2	2	2	19	1%
3	2	2	3	8	1%
1	3	3	2	7	1%
2	2	3	2	7	1%

Latent transition analysis modeled the probability of participants in a given class in grade t_i, transitioning, or moving into another class at a subsequent grade $t_i +1$. There were three classes and four timepoints 3^4 (i.e., 81) possible transition patterns in the final LTA model. Of the 81 possible patterns, 47 transitions were not represented in the data. Of the 34 represented patterns in the data, there were N = 1348 participants represented with n = 1195 participants in the top 10 most common patterns. The three most common patterns represented just over 50% of all participants:

1.   students staying in the Moderate Covitality class over the four grades (i.e., 2, 2, 2, and 2, n = 257);

2.   starting in the High Covitality class in the ninth grade and transitioning and staying in the Moderate Covitality class for Grades 10, 11, and 12 (i.e., 3, 2, 2, and 2, n = 221);

3.   and students starting and staying in the High Covitality class in Grades 9, 10, and 11 before transitioning to the Moderate Covitality class in the twelfth grade (i.e., 3, 3, 3, and 2, n = 206).

In the final, invariant LTA model, the latent class variables were regressed on the cohort to control for group effects. Results indicated a shift in class which is represented in the class size figure below. The resulting class sizes were as follows for each grade: the Low Covitality class, in yellow, ranged from 15% to 26%, the Moderate Covitality class, in green, ranged from 28% to 66%, and the High Covitality class, in blue, ranged from 18% to 46% across grades. Overall findings indicate a slight shift from the high and low classes into the moderate class.

An examination of the transition probabilities indicated that most students had the highest probability of transitioning into the same class across grades. Students had the lowest probability to transition from the high class to the low class, followed by students who moved from the low class to the high class.

Visual Representation of the Transition Probabilities

Transitions to 10th, 11, and 12th Grade from the **High Covitality** Class

Transitions to 10th, 11, and 12th Grade from the **Moderate Covitality** Class

Transitions to 10th, 11, and 12th Grade from the **Low Covitality** Class

Note. Blue = High Covitality, Green Moderate Covitality, and Yellow = Low Covitality

Outcomes of Transitions. The students were grouped into six distinctive mover/stayer groups to test outcome variables (i.e., life satisfaction, distress, and GPA). The groups were comprised of (a) **high-stayers**, n = 123 (i.e., those who stayed in the High Covitality class over the four grades), (b) **mid-stayers**, *n* = 257 (i.e., those who stayed in the Moderate Covitality class over the four grades), (c) **low-stayers** *n* = 135 (i.e., those who stayed in the Low Covitality class over the four grades), (d) **positive transitioning movers**, *n* = 73, **(e) negative transitioning** movers, *n* = 615, and (d) **flip-floppers** (i.e., participants who positively transitioned and negatively transitioned over the four grades), *n* = 135.

For this preliminary analysis, ANOVAs with post-hoc pairwise comparisons were conducted on the three outcome variables. Overall *F*-tests were significant for all three variables with life satisfaction (*F* = 55.88, *p* < .001, η² = .24), distress (*F* = 16.23, *p* <.001, η² = .08), and GPA (*F* = 6.16, *p* < .001, η² = .02) indicating that there were differences between groups. Follow-up pairwise comparison analyses revealed that **high-stayers had significantly higher life satisfaction scores than low-stayers** (*p* < .001), **mid-stayers** (*p* < .001), **positive transitioning** students (< .001), and **negative transitioning** students (*p* < .001). Further for life satisfaction, mid-stayers had significantly higher scores than low-stayers (*p* < .001), positive transitioning students had significantly higher scores than low-stayers (*p* < .001), negative transitioning students had higher scores than low-stayer (*p* < .001) and positive transitioning students (*p* < .05), and flip floppers had significantly higher scores than low-stayers (*p* < .001), mid-stayers (*p* < .001), positive transitioning students (*p* <.001), and negative transitioning students (*p* < .01). No other comparisons were significant for life satisfaction. For distress, low-stayers had significantly higher scores than high-stayers (*p* < .001), mid-stayers (*p* < .001), positive transitioning students (*p* < .001), negative transitioning students (*p* < .001), and flip floppers (*p* < .001), mid-stayers had significantly higher scores than high-stayers (*p* < .001) and flip floppers (*p* < .05), and negative transitioning students had significantly higher scores than positive transitioning students (*p* < .01). No other comparisons were significant for distress. Finally, high-stayers had a significantly higher mean GPA than low-stayers (*p* < .01) and positive transitioning students (*p* < .01), negative transitioning students had a significantly higher mean GPA than low-stayers (*p* < .01) and positive transitioning students (*p* < .01), and flip floppers had significantly a higher mean GPA than positive transitioning students (*p* < .05). No other comparisons were significant for GPA.
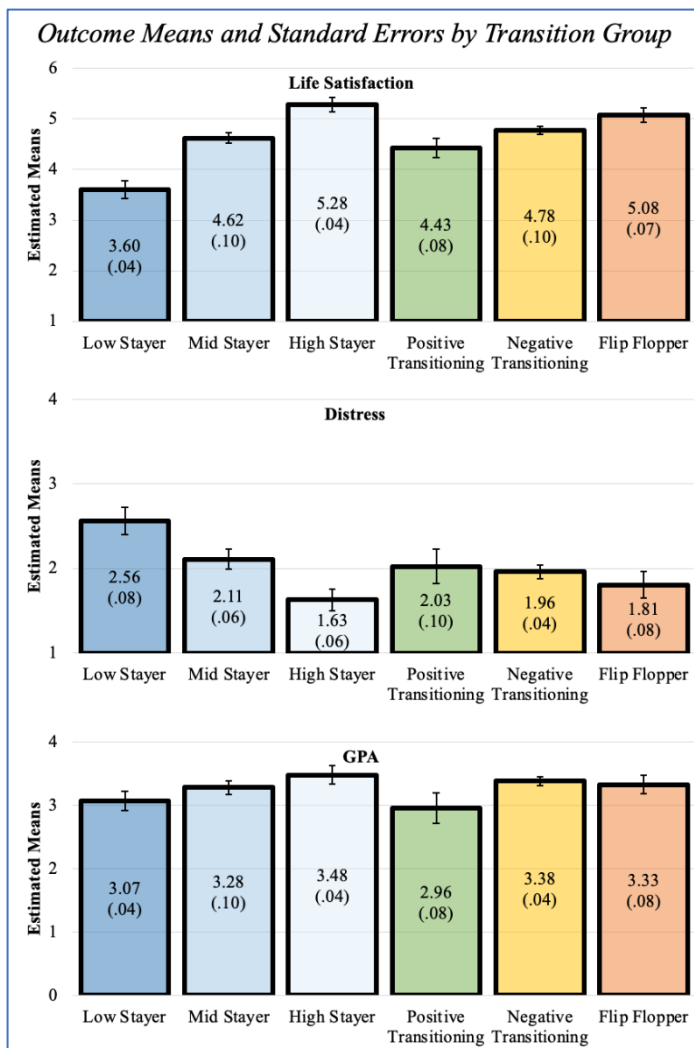
Outcome Means and Standard Errors by Transition Group

What opportunities for training and professional development did the project provided?

Workshops and Presentations

2017   Vision (checked), Hearing (checked), Well-being (checked?): Monitoring Students' Complete Mental Health. Implementing Universal Complete Mental Health Screening in High Schools. National Association of School Psychologists, San Antonio, TX, February.

2017   Exploring the Contribution of School Belonging to Mental Health Screening. National Association of School Psychologists, San Antonia, TX, February.

2017   Vision (checked), Hearing (checked), Well-being (checked?): Monitoring Students' Complete Mental Health. Inaugural California Student Mental Wellness Conference: Promoting Student Mental wellness & Improving School Climate. California Department of Education, Rocklin, California, April.

2017   School Based Complete Mental Health Screening and Monitoring. Orange County Office of Education, Irvine, California, May.

2017   Midwest Leadership Conference (Breckenridge, CO), 6.0-hour Workshop on School Mental Health, June

2017   A new instrument for covitality: The revised Social Emotional Health Survey–Primary in a Spanish sample of children. 14th European Conference on Psychological Assessment, Lisbon, Portugal, July.

2017   Covitality among adolescents: Psychometric properties of the Social Emotional Health Survey–Secondary for Spanish students. 14th European Conference on Psychological Assessment, Lisbon, Portugal, July.

2018   The effect of item order on participants' response choice. Paper presented at the Annual meeting of the American Education Research Association, New York, NY, April.

2018   *A taxonomy of invalid responders: Understanding a threat to validity.* Paper presented at the annual meeting of the American Educational Research Association, New York, NY, April.

2018   *Motivations of invalid responses: Consequences for Validity.* Paper presented at the meeting of the International Objective Measurement Workshop, New York, NY, April.

2018   *Round Table Title: Universal monitoring of students' positive mental wellness: International approaches.* International School Psychology Association. Tokyo, Japan, July.

2018   Navigating the Ever-Changing Landscape of Distals in Mixture Models: A Road Map of Current Approaches. Paper presented at the Annual meeting of the American Education Research Association, New York, NY, April.

2018   Modeling heterogeneity in transitions: A confirmatory higher order latent transition analysis. Paper presented at the Annual meeting of the American Education Research Association, New York, NY, April.

2018   Temperament Profiles Predict Community Violence Exposure and Adjustment Problems. Paper presented at the Annual meeting of the Society for Prevention Research, Washington, DC, May.

*Abstract of Distinction Award.

2019   Psychological Sense of School Membership Scale with cross-cultural preadolescent students. Paper to be presented at the annual meeting of the National Association of School Psychologists Annual Convention, Atlanta. GA, February.

2018   California Association of School Psychologists 3.0-hour Workshop on Vision (checked), Hearing (checked), Well-being (checked?): Monitoring Students' Complete Mental Health, (Monterey, CA), March.

2018   Vision checked, hearing checked, well-being checked? National School Mental Health Conference, Las Vegas, NV, October.

2018   Round Table Title: Universal monitoring of students' positive mental wellness: International approaches. International School Psychology Association. Tokyo, Japan, July.

2019   A Method for Detecting Invalid Responses. Paper presented at the annual meeting of the American Educational Research Association, Toronto, Canada, April.

2019   Psychological Sense of School Membership Scale with cross-cultural preadolescent students. Paper presented at the annual meeting of the National Association of School Psychologists Annual Convention, Atlanta. GA, February.

2019   Monitoring students' complete mental wellness: Tier 1 and Tier 2 best practices. Workshop, California Association of School Psychologists, Long Beach, CA, October.

2020   Furlong, M. J. (2020). Invited Address. Universal Monitoring of Adolescents' Flourishing Mental Wellness. 6th International Congress of Clinical and Health Psychology in Children and Adolescents from November 18th to 21st, 2020, organized by AITANA-UMH. Elche (Spain), 19th November.

2021   When all you have is a dingy: Using CoVi in your daily practice (2-hour workshop). Sacramento State University, January (video posted at :
        https://drive.google.com/file/d/1_f17TlilUZQOiglh2WKNA3Z9PAl40AAf/viewn

2021   Can you monitor all students' social emotional wellness? GASP & CGSA Gael Conference, Loyola Marymount University, April.

2021   Understanding patterns of social-emotional strengths across students with and without disabilities: Different, not worse. Paper presented at AERA Annual Meeting. (Virtual Conference).

2021   5th Annual California Student Mental Wellness Conference. Bidimensional Wellness Models. Virtual Conference, September. (mini-course presentation posted at:
        https://rise.articulate.com/share/Ql9sC2Dv0pGHTZySEempM2G3MPK7z52p#/

Were the results disseminated to communities of interest?

Throughout the project, we engaged in multiple efforts to disseminate information about our project, termed Project Covitality, to research and practitioner communities.

Participating Partner Districts

We disseminate to schools real-time survey summary reports by grade and gender using the Qualtrics ® report utility. We also provide one-page information handouts, posters, and meetings with teachers and other staff.

Research Community

We presented at professional conferences and created a list of extant studies and reports that have used the SEHS surveys. This list is formatted in APA 6th edition style and is updated regularly. There are now more than 125 studies that have examined the psychometric properties of the SEHS surveys or used them for substantive research purposes. We made our research available on the Project Covitality website and digital social networks to research colleagues in the USA and worldwide. See: https://www.covitalityucsb.info/research.html

Evidence of the impact of our efforts to disseminate SEHS-S-2020 throughout the grant period reached many research and education communities. Some examples are:

Spain: Proyecto Covitalidad

Dra. Tíscar Rodríguez Jiménez (Facultad de Ciencias de la Salud, Grado en Psicología, UCAM Universidad Católica San Antonio de Murcia) was a visiting scholar at UCSB from July-September 2018. She came to UCSB specifically to learn more about the IES funded project related to a concurrent initiative to implement a Project Covitality in Spain. The Spanish effort is an interdisciplinary program that involves the translation and validation of SEHS measures and developing associate prevention-intervention psychoeducation strategies. This effort is led by Dr. José A. Piqueras, Department of Health Psychology, University Miguel Hernandez de Elche. The UCSB and Spanish Covitality team are engaged in joint publications and grant development. See: http://covitalidad.edu.umh.es/

United Kingdom

A collaboration with Drs. Olympia Palikara and Susana Castro, University of Roehamptom, continued. SEHS data sets were collected with English school children using the same instruments used to collect surveys in California and in China (another partnership with Dr. Jia-shu Xie, PHD, Hunan Normal University, Changsha, China). These data sets have already produced articles in peer reviewed journals (see project publications).

Netherlands

A new collaboration has been established with Drs. Michaël von Bönninghausen Sand tefan Bogaerts at the Tilburg University. This includes Dutch translation and validation of the SEHS measures, school applications, and the evaluation of associated psychoeducation services. (see: https://covitaal.com/)

Other Research Collaborations

We collaborated on SEHS-related research papers with other colleagues from Australia, China, Korea, Japan, Mexico, Italy, Slovakia, Turkey, and Iran.

In addition to UC Santa Barbara students conducting dissertation studies using the SEHS surveys, to our

knowledge, there were at least three U.S. dissertation studies completed during this reporting period that employed SEHS measures. See section 4.1. What is the impact on the development of the principal discipline(s) of the project?

2. PRODUCTS

2.1. Publications, conference papers, and presentations

This section lists the major products developed throughout the project. In addition, we appended a file updating the list of extant research: peer-reviewed manuscripts, book chapters, proceedings, and thesis/dissertations) employing the Social Emotional Health Surveys. See http://www.project-covitality.info/research/

Publications Using the Social Emotional Health Survey Secondary-2020

Carnazzo, K., Dowdy, E., Furlong, M. J., & Quirk, M. (2019). An evaluation of the Social Emotional Health Survey-Secondary for use with students with learning disabilities. *Psychology in the Schools, 56,* 433–446. https://doi.org/10.1002/pits.22199 EJ1204832

Chan, M., Dowdy, E., Nylund-Gibson, K., Carter, D., & Furlong, M. J. (2021). Heterogeneity Among Moderate Mental Health Students on the Mental Health Continuum-Short Form (MHC-SF). *School Mental Health.* Published online, 04 October 2021. https://doi.org/10.1007/s12310-021-09476-0

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2.2. Website(s) and other Internet Site(s)

Information about Project Covitality and the SEHS surveys is updated regularly. The website URL is: https://www.covitalityucsb.info/

2.3. Technologies or Techniques

We engaged in numerous outreach efforts to disseminate information about Project Covitality. We recognized that we reached a saturation point in our capacity to support researchers and schools that have expressed an interest to use the SEHS-S-2020. Mosaic Network developed a SEHS-S-2020 application that administers the current version of the SEHS-S-2020 measure, scores the responses, and produces individual student and whole school reports. This resource has been adopted by school districts to carry our whole school screening and monitoring. Information about this resource is available at this website: (http://www.covitalityapp.com/). This app provides individual student and whole-school reports. The Mosaic SEHS Covitality online application has been used by 26 school districts and 11 agencies (in 8 states) with 102,132 students. With the Mosaic Network application, using an earlier version of the SEHS-S, the technology is already in place to support the rapid development of the revised SEHS-S that will be a major product of this grant project and a resource in support of schoolwide social emotional wellness screening/monitoring.

Another major development related to disseminating information about the SEHS surveys is that they were reviewed by CASEL and is included in its new SEL Assessment Toolkit. http://dev-measuringselcasel.pantheonsite.io/assessment-guide/measure/social-emotional-health-survey-secondary/

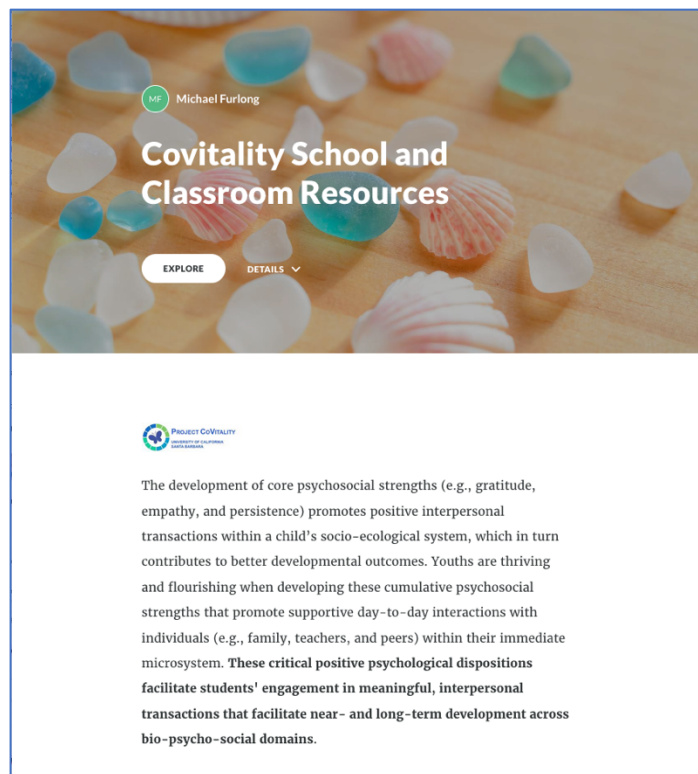## 2.4. Inventions, patent applications, and/or licenses

None.

2.5. Other Products

We developed and published an article documenting the core psychometric properties of the Social Emotional Distress Scale-Secondary (SEDS). In doing so, we will have the unique opportunity to co-validate measures of adolescent social emotional wellness and distress. This opportunity is begin realized art this time because the California CDE has included SEDS items in the CHKS Core module. This means that the SEDS will be used by more than 500,000 secondary students annually; hence helping to establish baseline student mental wellness information, trend lines.

Although not directly related to the grant activities, participating schools expressed an interest in monitoring primary school-age students. These school-university partnerships allowed us to access student samples and to efficiently gather data to look at parallel primary school age covitality measure and other related measures. This has resulted in the refinement and further validation of the following measures:

- Refinement and further validation of the Social Emotional Health Survey-Primary.
- Modification and validation of the Psychological Sense of School Membership Scale for primary school age children.
- Validation of the Me & My School scale (distress measure) for primary school age children.

We assembled data sets for these measures and published several psychometrically focused manuscripts for each of the above-mentioned measures. This effort has included parallel data collection in Japan, China and the United Kingdom (no grant funding was used for these data related data collection efforts). These data sets added substantially to the generalizability of these measures' validation evidence. These efforts have also reaped benefits. The California CDE now includes SEHS-Primary, M&Ms, and PSSM items in the CHKS Primary age survey. The credibility brought to Project Covitality by the IES provided opportunities for the UCSB research team to share related non-SEHS-S-2020 content with the CDE. This has created a positive working relationship resulting in the CDE inviting UCSB researchers to consult on

The development of core psychosocial strengths (e.g., gratitude, empathy, and persistence) promotes positive interpersonal transactions within a child's socio-ecological system, which in turn contributes to better developmental outcomes. Youths are thriving and flourishing when developing these cumulative psychosocial strengths that promote supportive day-to-day interactions with individuals (e.g., family, teachers, and peers) within their immediate microsystem. **These critical positive psychological dispositions facilitate students' engagement in meaningful, interpersonal transactions that facilitate near- and long-term development across bio-psycho-social domains.**

https://rise.articulate.com/share/eqqKwCM7hh_msH7B3vHIMTUQRoSoZeWP#/

school mental wellness assessment and analysis of data trends.

We also devoted substantial effort to locating resources associated with the 12 SEHS-S-2020 12 subdomains to support school mental health professionals and teachers. We found that whenever schools used the SEHS–S-2020, they always appropriately asked how they could boost students'SEHS-S-2020 related assets. Given the face validity and relevance of the 12 individual SEHS-S-2020 subdomains, they would often ask, How *do we foster student optimism?* To this end, we identified credible sources of information and resources that could be used in counseling and classroom contexts and created a one-stop online resource.

3. PARTICIPANTS AND OTHER COLLABORATING ORGANIZATIONS
3.1. What individuals have worked on the project?

Name:	Michael Furlong, PhD
Project Role: PI	
Nearest person month worked:	2016-2021
Contribution to Project:	Dr. Furlong directed all project activities, including conceptual design considerations, coordination with the Santa Cruz City School District, data collection, project reports, and coordination/planning with WestEd.
Funding Support:	IES Grant
Collaborated with individual in foreign country:	Yes
Country(ies) of foreign collaborator:	China, Japan, Mexico, Spain, United Kingdom, Slovakia, Netherlands
Travelled to foreign country:	Yes, Japan July 2018 paper/workshop. Zero grant funds were used for this conference presentation
If traveled to foreign country(ies), duration of stay:	NA

Name:	Erin Dowdy, PhD
Project Role: PI	Co-PI
Nearest person month worked:	2016-2021
Contribution to Project:	Dr. Dowdy was involved in all project activities, including conceptual design considerations, coordination with the San Marcos High School data collection, and project reports.

Collaborated with individual in foreign country: No
Country(ies) of foreign collaborator: NA
Travelled to foreign country: NA
If traveled to foreign country(ies), duration of stay: NA

Name:	Karen Nylund-Gibson, Phd
Project Role: PI	Co-PI
Nearest person month worked:	2016-2021
Contribution to Project:	Dr. Nylund-Gibson was involved in all project activities, including conceptual design considerations, and directed

project design and data analyses activities.
Funding Support: IES Grant
Collaborated with individual in foreign country: No
Country(ies) of foreign collaborator: NA
Travelled to foreign country: NA
If traveled to foreign country(ies), duration of stay: NA

Name:	Kathryn Moffa, PhD
Project Role:	Graduate Student Research
Nearest person month worked:	2016-
Contribution to Project:	Supported project activities, data collection, reporting, and data analyses activities.
Funding Support:	IES Grant
Collaborated with individual in foreign country:	No
Country(ies) of foreign collaborator:	NA
Travelled to foreign country:	NA
If traveled to foreign country(ies), duration of stay:	NA

During the 2018-2019 academic year, Kathryn completed her predoctoral internship at the University of Maryland, National School Mental Health Center.

Name:	Stephanie Moore, PhD
Project Role:	Graduate Student Research
Nearest person month worked:	2016-2018
Contribution to Project:	Supported project activities, data collection, reporting, and data analyses activities.
Funding Support:	IES Grant
Collaborated with individual in foreign country:	No
Country(ies) of foreign collaborator:	NA
Travelled to foreign country:	NA
If traveled to foreign country(ies), duration of stay:	NA

During the 2017-19 academic year, Dr. Moore is completed her predoctoral internship at the University of Maryland, National School Mental Health Center. She completed a postdoctoral internship at John Hopkins and is now an Assistant Professor of school Psychology at the University of California Santa Barbara. She used project data for her dissertation study and is contributing to continued analyses of project-generate data.

Name:	Eui Kyung Kim, PhD
Project Role:	Graduate Student Research
Nearest person month worked:	2016-2018
Contribution to Project:	Supported project activities, data collection, reporting, and data analyses activities.
Funding Support:	IES Grant

Collaborated with individual in foreign country: No
Country(ies) of foreign collaborator: NA
Travelled to foreign country: NA
If traveled to foreign country(ies), duration of stay: NA

Dr. Kim used project data for her dissertation study and is contributing to continued analyses of project-generate data. She initially received an assistant professor appoint at the University of North Carolina State University. She now is an assistant professor of school psychology and the University of California, Riverside.

Name:	Melissa Gordon (Wolf)
Project Role: PI	Graduate Student Research
Nearest person month worked:	2017-2019
Contribution to Project:	Supported project activities, data collection, reporting and data analyses activities
Funding Support:	IES Grant
Collaborated with individual in foreign country:	No
Country(ies) of foreign collaborator:	NA
Travelled to foreign country:	NA
If traveled to foreign country(ies), duration of stay:	NA

Melissa contributed substantially to project data management and advanced data analyses.

Name:	Rhea Wagle, PhD
Project Role: PI	Graduate Student Research
Nearest person month worked:	2018-2020
Contribution to Project:	Supported project activities, data collection, reporting and data analyses activities
Funding Support:	IES Grant
Collaborated with individual in foreign country:	No
Country(ies) of foreign collaborator:	NA
Travelled to foreign country:	NA
If traveled to foreign country(ies), duration of stay:	NA

Rhea contributed substantially to project data analyses and leadership on several project publications. She is now at Children' Hospital Los Angeles.

Name:	Delwin Carter
Project Role: PI	Graduate Student Research
Nearest person month worked:	2019-2021
Contribution to Project:	Supported project activities, data collection, reporting and data analyses activities
Funding Support:	IES Grant
Collaborated with individual in foreign country:	No
Country(ies) of foreign collaborator:	NA
Travelled to foreign country:	NA
If traveled to foreign country(ies), duration of stay:	NA

Delwin contributed substantially to project data management and advanced data analyses. Delwin is proposing his dissertation which will use grant-funded data.

Name:	Tameisha Hinton
Project Role: PI	Graduate Student Research
Nearest person month worked:	2019-2021
Contribution to Project:	Supported project activities, data collection, reporting and

	data analyses activities
Funding Support:	IES Grant
Collaborated with individual in foreign country:	No
Country(ies) of foreign collaborator:	NA
Travelled to foreign country:	NA
If traveled to foreign country(ies), duration of stay:	NA

Tameisha contributed substantially to project management and took leadership on several project publications.

Name:	**Ashley Mayworm, PhD**
Project Role: PI	Graduate Student Research
Nearest person month worked:	2016-2018
Contribution to Project:	Supported project activities, data collection, reporting and data analyses activities
Funding Support:	IES Grant
Collaborated with individual in foreign country:	No
Country(ies) of foreign collaborator:	NA
Travelled to foreign country:	NA
If traveled to foreign country(ies), duration of stay:	NA

Ashley contributed substantially to project data analyses and leadership on several project publications. Ashley is now at Loyola University of Chicago.

Name:	**Meiki Chan**
Project Role: PI	Graduate Student Research
Nearest person month worked:	2020-2021
Contribution to Project:	Supported project activities, data collection, reporting and data analyses activities
Funding Support:	IES Grant
Collaborated with individual in foreign country:	No
Country(ies) of foreign collaborator:	NA
Travelled to foreign country:	NA
If traveled to foreign country(ies), duration of stay:	NA

Meiki contributed substantially to project data analyses and leadership on several project publications.

3.2. What other organizations have been involved as partners?

Organization Name: WestEd

Location of Organization: Westminster, California office

Partner's contribution to the project (identify one or more)

- Collaborative research (e.g., partner's staff work with project staff on the project). As described in the project proposal.

Organization Name: Santa Cruz City Schools

- In-kind support (e.g., partner makes software, computers, equipment, etc., available to project staff). Schools make available computer labs and tablets for students to complete surveys.

- Facilities (e.g., project staff use the partner's facilities for project activities). Data collection takes place using school facilities.

Organization Name: Santa Barbara Unified School District

- In-kind support (e.g., partner makes software, computers, equipment, etc., available to project staff). Schools make available computer labs and tablet for students to complete surveys.

- Facilities (e.g., project staff use the partner's facilities for project activities). Data collection takes place using school facilities.

California Department of Education, School Health Division

- In-kind

3.3. Have other collaborators or contacts been involved?

We explored many ways to collaborate to seek funding in support of an effort to understand better the barriers and facilitators of schools' adoption of universal social-emotional wellness screening/monitoring — efforts that build on our current IES-funded project. We developed relationships with colleagues at the UC Berkeley (Center for Greater Good), UC San Diego (Child Psychiatry), and San Diego State University (School Psychology). These efforts were a logical step to support schools' effort to formulate comprehensive social, emotional wellness programs/strategies and have the technical resources needed to implement them. Most recently, we have formed collaborative efforts with researchers at the University of California Riverside, University of California Berkeley, the University of Wisconsin Madison, and the University of South Florida. Internationally we have new collaborations with researchers at Monash University (Australia), Miguel Hernández University (Spain), and Tsukuba University (Japan). As documented in the list of studies employing Social Emotional Health Surveys, we feel that we have some measures to foster research addressing the covitality principle.

IV. IMPACT

1. Increase the body of knowledge and techniques.

2. Enlarge the pool of people trained to develop that knowledge and techniques or put it to use.

3. Improve the physical, institutional, and information resources that enable those people to get their training and perform their functions.

4.1. What is the impact on the development of the principal discipline(s) of the project?

The project provided a meaningful context for exploring, refining, and employing sophisticated methodological and survey design training of UCSB graduate students. For example, project data illustrated and provided examples for use in Confirmatory factor analyses.

As an example of the impacts that the advanced data analytic approaches that Dr. Nylund-Gibson's expertise brought to the project, Dr. Moore used project data sets in a dissertation study. [Moore, S. A. (2018). A longitudinal investigation of dual-factor mental health in adolescence (Order No. 10608612). Available from ProQuest Dissertations & Theses A&I. (2132915629)]. Dr. Moore completed her predoctoral internship with the University of Maryland National School Mental Health Center and was a post-doctoral researcher at John Hopkins University. Moore's dissertation study produced two publications in high impact journals, one in School Mental Health, and one in the Journal of School Psychology (see project publication list). The latent profile and latent trait analyses used in various project manuscripts are influencing many junior school psychology researchers.

Another broader impact is the dissemination publications and information about the IES project has attracted national and international interest, spawning collaborative and independent research efforts. These efforts produced examinations of the covitality principle and its measurement.

We are aware of at least two other dissertation studies that are building upon the IES Covitality project. A University of Arkansas student has adapted the SEHS-S for use as a parent report instrument. A George Washington University (Special Education) student has developed a structured psychoeducation program modeled on the SEHS-Primary assessment, which is being evaluated in a controlled study. Both of these reports are expected by June 2019.

Dr. Naples (Georgetown University) published a report of her dissertation (Taking Students on a Strengths Safari: A Multidimensional Pilot Study of School-Based Wellbeing for Young Neurodiverse Children) in a special journal issue co-edited by Dr. Furlong (Special Issue *Psychoeducational Interventions to Promote Mental Health and Wellbeing Through Covitality and Socio-emotional Skills in Children & Adolescents*). Dr. Naples is now a postdoctoral scholar at the Yale Child Study.

Dr. Buscom (University of Central Arkansas) adapted and validated a parent rating form of the SEHS-Secondary.

We have received numerous requests form graduate students to use the SEHS-Secondary measures in their dissertation studies and form international colleagues who are adapting the SEHS-Secondary for use in at least the following countries: New Zealand, Australia, Indonesia, Vietnam, India, China, Korea, Japan, Chile, Columbia, Mexico, Spain, Greece, Turkey, Iran, Italy, Slovakia, Lithuania, Russia, Poland, Germany, Netherlands, and the UK.

4.2. What is the impact on other disciplines?

Although we built a meaningful sample of high school students, we recognize that more work is needed to expand understanding of the social emotional wellness needs of all students, which includes special needs and other vulnerable students. Among various subgroups of youths, the use of the SEHS-Secondary, we provided validation evidence for students eligible for special education services or enrolled in court and community schools. To this end, we published two articles that looked at these groups of students (Carnazzo, et al., 2018; Lenzi et al., 2018; see publication list).

The project helped to further ideas for needed methodological training to help researchers do analyses similar to the ones we used to address the project aims. Several impactful papers have demonstrated the methodological approach using grant-funded data (see, for example, Nylund-Gibson & Choi, 2019). Additionally, during the grant, Dr. Nylund-Gibson started a statistical methodological workshop housed at UCSB called Methods U, where applied scholars from all over the country convene at UCSB to learn statistical methods. Additionally, the interest in these workshops help to seed an IES Methods Training Grant (recently resubmitted to IES).

4.3. What is the impact on the development of human resources?

Our goal was to enlarge the pool of people trained in advanced statistics, methodology, measurement and approaches to assess social and emotional health. Our project emphasized advanced structural equation modeling, including confirmatory factor analysis, latent profile analysis, and latent transition analysis. Graduate student assistants received intensive training and supervision related to factor analysis and latent profile/class analysis from Dr. Nylund-Gibson. Dr. Nylund-Gibson teaches these courses in the

Gevirtz Graduate school of Education and conducts a year-long applied data analysis seminar. In these courses, numerous other students used deidentified project data to learn these advanced analytic approaches and expanded the project's research contributions.

4.4. What is the impact on physical, institutional, and information resources that form infrastructure?

We were involved in informing school systems about the impact of social-emotional health on students. We reached out to the CalWell project (California CDE School Mental Health initiative) and explored how our efforts could enhance California's statewide efforts to expand student wellness services.

Of course, we actively engaged with national organizations (e.g., the National Association of School Psychologists and the American Educational Research Association) to disseminate information about Project CoVitality. We also attended and participated in several University of Maryland National School Mental Health Conferences.

The project allowed for sophisticated methodological and survey design training of UCSB graduate students. For example, project data was used to illustrate and provide examples for use in factor analyses courses.

4.5. What is the impact on technology transfer?

We initiated discussions on how to accomplish surveying large groups of students and how to ensure that the survey methods can be scaled up. We developed prototypes to conduct schoolwide screening and provide school level and individual level reports to facilitate schools' use of the SEHS-Secondary-2020. Mosaic Network Inc. developed a data system resource to administer, score, and report the SEHS-Secondary.

4.6. What is the impact on society beyond science and technology?

Disseminating Project Information and Resources

Even as we endeavored to validate the SEHS-Secondary in peer-reviewed journals, these efforts might have minimal influences on general educational practice. They might not raise public awareness about youths' social-emotional wellness needs. To this end, throughout the project, we implemented various strategies to disseminate information about the quality of the SEHS-Secondary measure and in practical school-based applications. We created a @UCSBCovitality Twitter account, which served as a vehicle to regularly disseminate the findings and implications emanating from the IES-funded study—for example, disseminating infographics about students' social-emotional strengths. In March 2019, we completed a multistage awareness campaign about Project Covitality to attract followers to @UCSBCovitality: UCSB alums, research colleagues, school mental health professionals, school principals, school counselors, school social workers, school psychologists, school board members, legislators, and others. During May 2019, we disseminated Project Covitality information to these constituencies to increase awareness of this IES effort and hopefully stimulate discussion (and action) about supporting students' social-emotional wellness. We have developed nine project-related infographics. These infographics show patterns of student well-being as they relate to their feelings of overall school safety. We decided on this approach because we believe that showing links between student social-emotional wellness and student safety will have broad appeal (a hook) and attract more interest from the education and public policy communities.

During the NCE year, despite the restrictions associated with the pandemic, we sought opportunities to communicate Project Covitality information and resources whenever possible at virtual conference and other meeting venues. We made presentations at the 4th and 5th Annual California Student Mental Wellness Conference and at two California Association of School Psychologists conferences. Dr. Furlong provided an invited keynote address to the 6th International Congress of Clinical and Health Psychology in Children and Adolescents (based in Elche, Spain, no grant finds expended). Presentations were also provided for the school psychology programs at Sacramento State University and Loyola-Marymount University.

California Healthy Kid Survey Adopts IES-UCSB Survey Items

A significant non-science contribution was that just as long-overdue concerns about youths' mental health increased, the extensive validation of the IES-UCSB measures increased their utility for broader school mental wellness surveillance and universal screening. With funding, the California State Legislature called for expanded student mental health assessment and services. Based on this partnership fostered by this IES grant, many of its measures are now included in the CHKS, providing an enhanced understanding of students' mental health status and needs moving forward. Improving students' mental health has broad social and economic benefits.

We explored new collaborations with the California CDE and WestEd. In June 2021, using CHKS responses during the 2020-2021 school year, we prepared and disseminated the following infographic that used SEDS and SEHS-S-2020 items, with more planned.

Pandemic-Related Mental Wellness Impacts to Explore


CDE UCSB WESTED Infographic Report
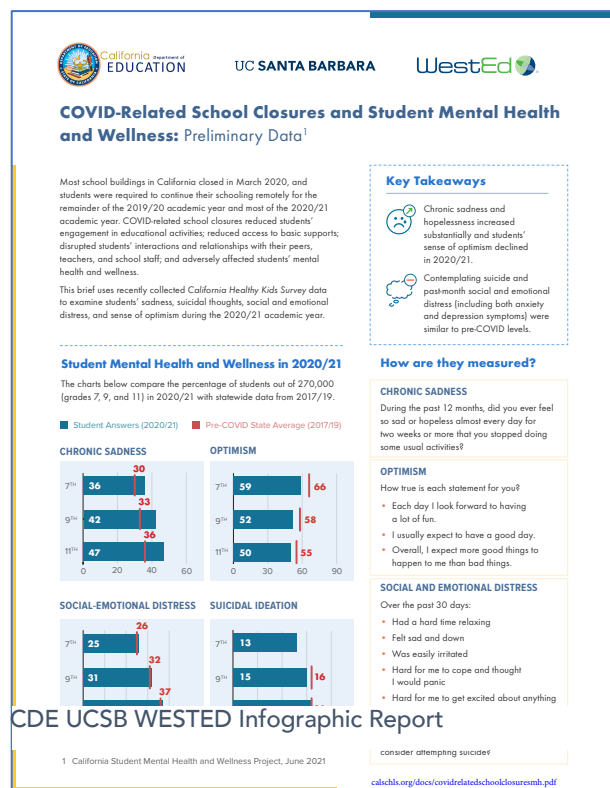
Another potential non-science impact emerged as we examined student responses from one of the longitudinal sample districts. The longitudinal sample survey was administered in 2017, 2018, 2019, all before the pandemic. One partner district asked if we would administer the survey again in the fall of 2020, after months of being in a distance-learning format. Although we used a briefer survey due to the burden of students completing the survey at home, we included the BMSLSS (life satisfaction), SEDS (distress), and the MHC-SF social well-being items. The students are back in school, and this school district is administering the survey again. We will have longitudinal responses twice before the pandemic, once in the distance learning format and once as students return to in-person instruction. We will use these data in attempt to help educators better understand the pandemic's impact on adolescents' mental health.

We will explore the possible impact of the pandemic and recent social strife on students' social well-being. What are the relative impacts on students

internalizing psychological well-being instead of their sense of positive social well-being? Considering how this district's students responded to the MHC-SF social well-being item, a substantial impact seems possible. For example, using the responses of more than 2,500 secondary school students during distance learning, we observed a substantial decrease in the percentages of students who have almost or more daily feelings that society is a good place or becoming a better place for all people. This observation, coupled with the CDE-UCSB-WESTED infographic showing optimism declines, raises concerns that one under-examined pandemic impact is increasing youth disillusionment.

Student Social Well-Being Pre-Pandemic vs. During Pandemic Distance Learning.
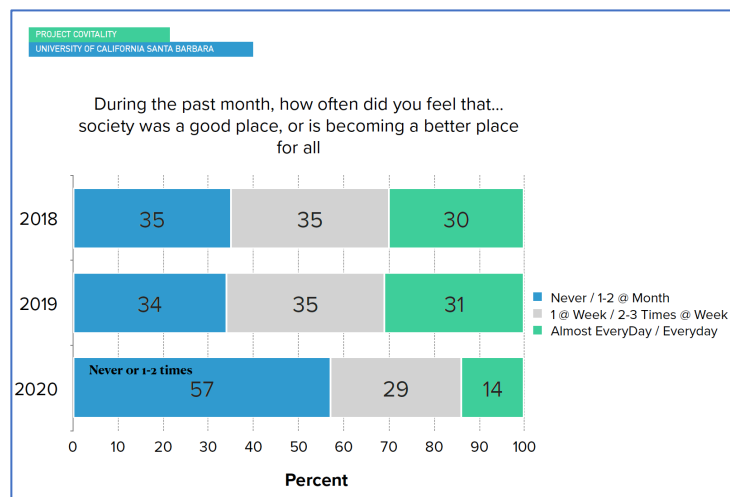
University of California Systemwide Mental Health Initiative

We note that a final impact is that the California State Legislature provided increased mental health funding to the University of California. The UC-wide mental health planning coordinator for the next five years has asked Project Covitality to support system-wide efforts to monitor students' mental health.

4.7. What dollar amount of the award's budget is being spent in foreign country(ies)?

Zero.

5. CHANGES/PROBLEMS

5.1. Changes in approach and reasons for change

None.

5.2. Actual or anticipated problems or delays and actions or plans to resolve them

None.

5.3. Changes that have a significant impact on expenditures

None.

5.4. Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards

None.

5.5. Change of primary performance site location from that originally proposed

None.

6. SPECIAL REPORTING REQUIREMENTS

None.

7. BUDGETARY INFORMATION

Investigators and Graduate Student Researcher Salaries/Tuition

- Most project expenditures during Years 4 and the NCE year were used for the investigator salaries and benefits and for Graduate Research Assistant salaries and for required students' fees and tuition.

- Dr. Furlong retired from his university faculty appointment in June 30, 2018. From September 2018 through June 2021, he held a part-time Research Professor appointment drawing on grant finding.

- The ending projected unallocated balance was $6,339.

Supplies (Including District Release Time)

1. Some funds were used during the NCE relating to the service agreements between UC Santa Barbara and Santa Cruz City Schools and Santa Barbara Unified School District related to their support of collecting the longitudinal sample surveys and matching the survey responses with student archival academic information.

Travel

- During Year 4, funds were used to support presentations at meetings of the National Association of School Psychologists and the American Education Research Association.
- In Year 4, Dr. Furlong used funds to present at and attend the IES grantee meeting in Washington, DC, January 2020.
- In year 4, funds supported travel to the Santa Cruz City Schools in January and March 2020.
- After March 2020, no funds were used to support travel.