**Supplemental Materials**

*for*

**Student Engagement and Its Association with Academic Achievement and Subjective Well-Being: A Systematic Review and Meta-Analysis**

Contents

[**Rationale for Focusing on the Tripartite Model of Student Engagement** 3](#_Toc137833868)

[**Table S1** *List of Admitted Studies for Systematic Review and Meta-Analysis* 5](#_Toc137833869)

[**Table S2** *Coding Manual for Study and Effect Size Characteristics* 11](#_Toc137833870)

[**Table S3** *List of Student Engagement Measures from the 137 Included Studies* 21](#_Toc137833871)

[**Table S4** *Univariate Moderation Analyses on the Relation between Student Engagement and Academic Achievement* 23](#_Toc137833872)

[**Table S5** *Multivariate Moderation Analysis on the Relation between Student Engagement and Academic Achievement (with behavioral engagement as reference variable)* 25](#_Toc137833873)

[**Table S6** *Multivariate Moderation Analysis on the Relation between Student Engagement and Academic Achievement (with cognitive engagement as reference variable)* 26](#_Toc137833874)

[**Table S7** *Syntheses of the Correlation between Affective Engagement and Academic Achievement* 27](#_Toc137833875)

[**Table S8** *Univariate Moderation Analyses on the Relation between Affective Engagement and Academic Achievement* 28](#_Toc137833876)

[**Table S9** *Syntheses of the Correlation between Behavioral Engagement and Academic Achievement* 30](#_Toc137833877)

[**Table S10** *Univariate Moderation Analyses on the Relation between Behavioral Engagement and Academic Achievement* 31](#_Toc137833878)

[**Table S11** *Multivariate Moderation Analysis on the Relation between Behavioral Engagement and Academic Achievement (without interaction terms)* 33](#_Toc137833879)

[**Table S12** *Comparison between Effortful Engagement and Effortful Disengagement* 34](#_Toc137833880)

[**Table S13** *Syntheses of the Correlation between Cognitive Engagement and Academic Achievement* 35](#_Toc137833881)

[**Table S14** *Univariate Moderation Analyses on the Relation between Cognitive Engagement and Academic Achievement* 36](#_Toc137833882)

[**Table S15** *Syntheses of the Correlation between Affective Engagement and Subjective Well-Being* 38](#_Toc137833883)

[**Table S16** *Univariate Moderation Analyses on the Relation between Affective Engagement and Subjective Well-Being* 39](#_Toc137833884)

[**Table S17** *Syntheses of the Correlation between Behavioral Engagement and Subjective Well-Being* 40](#_Toc137833885)

[**Table S18** *Univariate Moderation Analyses on the Relation between Behavioral Engagement and Subjective Well-Being* 41](#_Toc137833886)

[**Table S19** *Syntheses of the Correlation between Cognitive Engagement and Subjective Well-Being* 42](#_Toc137833887)

[**Table S20** *Univariate Moderation Analyses on the Relation between Cognitive Engagement and Subjective Well-Being* 43](#_Toc137833888)

[**Figure S1** *Interaction between Informant Source of Engagement and Type of Achievement Measure in the Association between Behavioral Engagement and Academic Achievement* 44](#_Toc137833889)

[**References** 45](#_Toc137833890)

**Rationale for Focusing on the Tripartite Model of Student Engagement**

There are three possible approaches that we could take in this systematic review and meta-analysis. The first approach is an all-inclusive approach, which seeks to include studies with all differing conceptualizations of student engagement. While this approach is appealing from a theoretical and conceptual standpoint, it is not a realistic approach in conducting a meta-analysis, especially on an overgeneralized construct like student engagement. When surveying the literature, one would observe that student engagement is often used as a catch-all term that encompasses any variable that affects student school success, ranging from teacher-student relationships to contextual or learning support provided by teachers, parents, and peers, and to students’ enactment of school or learning-related behavioral, cognitive, motivational, affective, metacognitive, and even social processes. Thus, there appears a lack of boundaries on what can be considered as student engagement indicators, and this has led some scholars like Azevedo (2015) to describe student engagement as “one of the most widely misused and overgeneralized constructs found in the educational, learning, instructional, and psychological sciences” (p. 85). Considering the very broad range of possible student engagement indicators, it can be a Sisyphean task for any individual researchers to perform a meta-analysis based on the ‘all-inclusive’ approach as the dataset would be too heterogeneous to be synthesized. With such a broad and unfocused range of student engagement indicators, the meta-analysis results would also be difficult to interpret.

The second possible approach is a restrictive approach. It involves abandoning the goal of exploring how student engagement has been conceptualized, operationalized, and measured, and instead pre-specifies a narrower and more manageable set of variables which we deem as valid indicators of engagement. For example, we could strictly specify engagement as emotional states, effort, and cognitive strategies use, and search for the relevant studies with the corresponding keywords. Using this approach, the identified studies would not differ in their operationalization of student engagement, and this would correspondingly reduce the heterogeneity of the dataset and enhance the interpretability of the meta-analysis findings. However, this approach would also alienate a huge chunk of student engagement literature (e.g., studies that used indicators like school identification to measure engagement; Finn & Zimmer, 2012) given the diversity of the field. Hence, we decided not to pursue this path.

The third possible approach that we adopted would be a middle ground between the first and second approaches. It entails using the Tripartite Model of Student Engagement (Fredricks et al., 2004) to classify and analyze the multitude of distinct student engagement indicators into the familiar affective, behavioral, and cognitive dimensions. Since its formulation in 2004, the Tripartite Model has been widely adopted by researchers from different theoretical backgrounds, such as motivation (Skinner et al., 2009) and school bonding (Furlong et al., 2003), and even so these researchers have covered a wide range of different indicators. Therefore, the third approach is not (a) as permissive as the first approach and provides us a means to reduce or control for the heterogeneity of the dataset by differentiating the different kinds of engagement indicators found in the literature and then comparing them (e.g., affective vs. behavioral vs. cognitive), and (b) not as restrictive as the second approach because it allows us to explore the different ways in which researchers have used the Tripartite Model to conceptualize and operationalize student engagement.

# **Table S1**

*List of Admitted Studies for Systematic Review and Meta-Analysis*

| **No.** | **Study** | **Publication Type** | **Country** | **Ethnicity** | **Socioeconomic Status** | **Sample Size** | **Studies on Academic Achievement** | | | | | **Studies on Subjective Well-Being** | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Count** | **AENG** | **BENG** | **CENG** | **AGENT** | **Count** | **AENG** | **BENG** | **CENG** |
| 1 | Al-Alwan (2014) | Journal Paper | Jordan | - | - | 671 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 2 | Alverson (2014) | Dissertation | United States | 100% African American | - | 490 | 0 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | Anagurthi (2017) | Dissertation | United States | 2% Caucasian; 68% African American; 30% others | 38% low to low-mid income | 299 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Archambault et al. (2012) | Journal Paper | Canada | - | Low SES School | 1364 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5 | Archambault et al. (2013) | Journal Paper | Canada | - | - | 1145 | 0 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | Awang-Hashim et al. (2015) | Journal Paper | Malaysia | - | - | 2381 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 7 | Bliss (2011) | Dissertation | United States | 63% Caucasian; 31% African American; 7% Others | 21% received free or reduced lunch | 752 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 8 | Bradley (2013) | Dissertation | United States | 55% Caucasian; 40% African American; 6% Others | 62% received free or reduced lunch | 111 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 9 | Bryce et al. (2018) | Journal Paper | United States | 8% Caucasian; 6% African American; 86% Others | - | 167 | 0 | R | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | Burrows (2010) | Dissertation | United States | 80% Caucasian; 2% African American; 18% Others | 45% received free or reduced lunch | 371 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 11 | Chase et al. (2014) | Journal Paper | United States | 83% Caucasian; 5% African American; 12% Others | - | 710 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12 | Chen et al. (2010) | Journal Paper | United States | 36% Caucasian; 23% African American; 41% Others | 59% received free or reduced lunch | 543 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | Cho et al. (2019) | Journal Paper | United States | 4% Caucasian; 7% African American; 90% Others | 92% received free or reduced lunch | 107 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 14 | Darensbourg & Blake (2014) | Journal Paper | United States | 100% African American | 89% received free or reduced lunch | 181 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | Datu et al. (2017) | Journal Paper | Philippines | - | - | 606 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 16 | Datu (2018) | Journal Paper | Philippines | - | - | 525 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| 17 | Dickenson (2009) | Dissertation | United States | 100% Latino | 97% received free or reduced lunch | 335 | 1 | 1 | 1 | R | 0 | 0 | 0 | 0 | 0 |
| 18 | Dogan (2015) | Journal Paper | Turkey | - | - | 578 | 1 | 1 | 1 | R | 0 | 0 | 0 | 0 | 0 |
| 19 | Dotterer & Lowe (2011) | Journal Paper | United States | 77% Caucasian; 23% Non-Caucasian | - | 151 | 0 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 863 |
| 20 | Dotterer & Wehrspann (2016) | Journal Paper | United States | 20% Caucasian; 52% African American; 28% Others | 72% received free or reduced lunch | 108 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 21 | Dunkle (2009) | Dissertation | United States | 63% Caucasian; 2% African American; 35% Others | 33% received free or reduced lunch | 860 | 1 | 1 | 1 | R | 0 | 0 | 0 | 0 | 0 |
| 22 | Engels et al. (2019) | Journal Paper | Finland | - | - | 354 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 23 | Fall & Roberts (2012) | Journal Paper | United States | 57% Caucasian; 13% African American; 30% Others | - | 14781 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | Fallon (2010) | Dissertation | United States | 100% Latino | 100% received free or reduced lunch | 150 | 1 | 1 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | Fernández et al. (2018) | Journal Paper | Spain | - | - | 737 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 26 | Finn & Zimmer (2012) | Book Chapter | United States | 55% White/Asian | 45% eligible for free lunch | 2191 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | Froiland & Worrell (2016) | Journal Paper | United States | 40% Caucasian; 22% African American; 38% Others | - | 1575 | 0 | R | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | Frontier (2007) | Dissertation | United States | 78% Caucasian; 11% African American; 11% Others | - | 485 | 1 | 1 | R | 1 | 0 | 0 | 0 | 0 | 0 |
| 29 | Furrer & Skinner (2003) | Journal Paper | United States | 95% Caucasian; 5% Others | - | 251 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | Galla et al. (2014) | Journal Paper | United States | 46% Caucasian; 4% African American; 50% Others | - | 135 | 0 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | González & Paoloni (2014) | Journal Paper | Spain | - | - | 545 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 32 | Green et al. (2012) | Journal Paper | Australia | - | - | 1866 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 33 | Greene et al. (2004) | Journal Paper | United States | 67% Caucasian; 5% African American; 28% Others | - | 220 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 34 | Griffin et al. (2017) | Journal Paper | United States | 100% African American | 74% eligible for free or reduced lunch | 139 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 35 | Guo et al. (2016) | Journal Paper | Germany | - | - | 1978 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 36 | Hakimzadeh et al. (2016) | Journal Paper | Iran | - | 45% classified as poor | 315 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 37 | Hanin & Nieuwenhoven (2016) | Journal Paper | Belgium | - | - | 115 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 38 | Hart (2011) | Dissertation | United States | - | - | 235 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 39 | Hayes et al. (2015) | Journal Paper | United States | 100% Latino | - | 267 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 | Hazel et al. (2014) | Journal Paper | United States | 12% Caucasian; 2% African American; 86% Others | 66% received free or reduced lunch | 370 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 41 | Heberlein Riley (2003) | Dissertation | United States | - | - | 257 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 42 | Heffner & Antaramian (2016) | Journal Paper | United States | 62% Caucasian; 31% African American; 7% Others | 22% received free or reduced lunch | 809 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 43 | Hoffman et al. (2020) | Journal Paper | United States | 30% Caucasian; 70% African American | - | 374 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 | Holland (2015) | Dissertation | United States | 36% Caucasian; 6% African American; 58% Others | 61% received free or reduced lunch | 6159 | 0 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 45 | Hornstra et al. (2018) | Journal Paper | Netherlands | - | - | 113 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 46 | Huebner et al. (2011) | Journal Paper | United States | 46% Caucasian; 42% African American; 13% Others | 47% received free or reduced lunch | 421 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 47 | Hughes & Coplan (2010) | Journal Paper | Canada | 86% Caucasian; 14% Others | - | 125 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 48 | Jelas et al. (2016) | Journal Paper | Malaysia | 74% Malay; 26% Others | - | 2359 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 49 | Kahraman (2014) | Journal Paper | Turkey | - | - | 7479 | 1 | 1 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 6928 |
| 50 | Kim & Suárez-Orozco (2015) | Journal Paper | United States | 100% immigrant youth | - | 354 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 51 | King & Datu (2018) | Journal Paper | Philippines | - | - | 404 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 52 | King (2016) | Journal Paper | Philippines | - | - | 848 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 53 | Kwon et al. (2017) | Journal Paper | United States | 26% Caucasian; 60% African American; 14% Others | - | 417 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 54 | Ladd & Dinella (2009) | Journal Paper | United States | 77% Caucasian; 17% African American; 5% Others | 37% from lower to middle income families | 383 | 0 | R | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 55 | Lam et al. (2014) | Journal Paper | Multiple Countries | - | - | 3420 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 56 | Lee (2014) | Journal Paper | United States | 63% Caucasian; 13% African American; 24% Others | - | 3268 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 57 | Leon et al. (2017) | Journal Paper | Spain | - | - | 1555 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 58 | Leonard (2008) | Dissertation | United States | - | 32% received free or reduced lunch | 656 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 59 | Loera et al. (2013) | Journal Paper | United States | Approximately 100% ethnic minority | - | 267 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 60 | Lombardi et al. (2019) | Journal Paper | Italy | - | - | 153 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 61 | Lovett (2009) | Dissertation | United States | 59% Caucasian; 15% African American; 26% Others | - | 138 | 1 | 0 | R | 1 | 0 | 0 | 0 | 0 | 0 |
| 62 | Lynch (2003) | Dissertation | United States | 66% Caucasian; 2% African American; 32% Others | - | 39 | 0 | 0 | R | R | 0 | 0 | 0 | 0 | 0 |
| 63 | Martin et al. (2013) | Journal Paper | Australia | - | - | 969 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 64 | Martin (2012) | Dissertation | Sweden | 1st and 2nd gen immigrants | - | 187 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 65 | Mih & Mih (2013) | Journal Paper | Romania | - | - | 162 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 66 | Mo & Singh (2008) | Journal Paper | United States | - | - | 1235 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 67 | Moore (2016) | Dissertation | United States | 53% Caucasian; 13% African American; 34% Others | - | 3007 | 0 | R | R | R | 0 | 0 | 0 | 0 | 0 |
| 68 | Moreira & Dias (2019) | Journal Paper | Portugal | - | - | 1229 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 69 | Motti-Stefanidi et al. (2015) | Journal Paper | Greece | 50% 1st and 2nd gen immigrants | - | 843 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70 | Newton-Curtis (2016) | Dissertation | United States | - | - | 343 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 71 | O’Neal et al. (2019) | Journal Paper | United States | 2% Caucasian; 14% African American; 84% Others | School serving primarily low-income families | 142 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72 | Olivier et al. (2019) | Journal Paper | Canada | - | - | 671 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 73 | Ozkal (2019) | Journal Paper | Turkey | - | - | 651 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 74 | Perry et al. (2010) | Journal Paper | United States | 11% Caucasian; 53% African American; 36% Others | - | 285 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75 | Phan et al. (2016) | Journal Paper | Australia | 50% Anglo-Saxon; 20% Asian; 30% Others | - | 284 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 76 | Pietarinen et al. (2014) | Journal Paper | Finland | - | - | 170 | 1 | 1 | 0 | 1 | 0 | 0 | R | 0 | R |
| 77 | Ponitz et al. (2009) | Journal Paper | United States | 84% Caucasian; 13% African American; 3% Others | - | 171 | 0 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 78 | Porcaro (2017) | Dissertation | United States | 35% Caucasian; 28% African American; 37% Others | - | 184 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 79 | Putwain et al. (2017) | Journal Paper | United Kingdom | 89% Caucasian; 11% Others | 8% eligible for free school meals | 579 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80 | Putwain et al. (2018) | Journal Paper | United Kingdom | 77% Caucasian; 23% Others | - | 1057 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 81 | Ramos-Díaz et al. (2016) | Journal Paper | Spain | - | - | 1250 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 82 | Raval et al. (2018) | Journal Paper | India | - | 75% middle-class status | 450 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 83 | Reeve & Tseng (2011) | Journal Paper | Taiwan | - | - | 365 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 84 | Reschly et al. (2008) | Journal Paper | United States | 48% Caucasian; 41% African American; 11% Others | 48% received free or reduced lunch | 293 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 85 | Rivas-Drake (2010) | Journal Paper | United States | 100% Latino | 100% received free or reduced lunch | 156 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 86 | Robinson & Mueller (2014) | Journal Paper | United States | 62% Caucasian; 12% African American; 26% Others | - | 12462 | 0 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 87 | Rodriguez-Fernandez et al. (2016) | Journal Paper | Spain | - | - | 1250 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 88 | Sakız (2015) | Journal Paper | Turkey | - | - | 138 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 89 | Sbrocco (2009) | Dissertation | United States | 66% Caucasian; 16% African American; 18% Others | 30% received free or reduced lunch | 649 | 1 | 1 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 90 | Schwartz et al. (2013) | Journal Paper | United States | 6% Caucasian; 3% African American; 91% Others | - | 193 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 222 |
| 91 | Shih (2005) | Journal Paper | Taiwan | - | - | 242 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 92 | Shim et al. (2016) | Journal Paper | United States | 46% Caucasian; 19% African American; 35% Others | - | 169 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 93 | Singh et al. (2010) | Journal Paper | United States | 57% Caucasian; 43% African American; | - | 215 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 163 |
| 94 | Skalsky (2009) | Dissertation | United States | 65% Caucasian; 35% Others | 35% received free or reduced lunch | 977 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 95 | Steinmayr et al. (2018) | Journal Paper | Germany | - | - | 225 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 586 |
| 96 | Strunk (2014) | Dissertation | United States | 91% Caucasian; 2% African American; 7% Others | 14% received free or reduced lunch | 221 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 230 |
| 282 |
| 97 | Suárez et al. (2019) | Journal Paper | Spain | - | - | 730 | 0 | 0 | R | 0 | 0 | 0 | 0 | 0 | 0 |
| 98 | Suldo et al. (2018) | Journal Paper | United States | 49% Caucasian; 12% African American; 39% Others | 28% received free or reduced lunch | 2379 | 1 | R | 1 | R | 0 | 1 | R | 1 | R |
| 99 | Sunawan et al. (2017) | Conference Paper | Indonesia | - | - | 234 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 134 |
| 100 | Tolinski (2015) | Dissertation | United States | 62% Caucasian; 26% African American; 12% Others | - | 339 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 101 | Vandenkerckhove et al. (2019) | Journal Paper | Belgium | - | - | 82 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 102 | Veiga (2012) | Conference Paper | Portugal | - | - | 217 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 103 | Veiga (2016) | Conference Paper | Portugal | - | - | 685 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 104 | Veronneau & Dishion (2011) | Journal Paper | United States | 78% Caucasian; 1% African American; 21% Others | - | 1278 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 105 | Videen (2009) | Dissertation | United States | 65% Caucasian; 17% African American; 18% Others | 32% received free or reduced lunch | 540 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 776 |
| 759 |
| 106 | Virtanen et al. (2018a) | Journal Paper | Finland | - | - | 2485 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 107 | Virtanen et al. (2020) | Journal Paper | Finland | - | - | 1838 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 108 | Wang & Eccles (2012) | Journal Paper | United States | 34% Caucasian; 56% African American; 10% Others | - | 1148 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 109 | Wang & Sheikh-Khalil (2014) | Journal Paper | United States | 53% Caucasian; 40% African American; 7% Others | - | 1056 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 110 | Wang et al. (2018a) | Journal Paper | China | - | - | 815 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 111 | Wang et al. (2018b) | Journal Paper | Finland | - | - | 1172 | 1 | 1 | R | R | 0 | 0 | 0 | 0 | 0 |
| 112 | Wang et al. (2019) | Journal Paper | China | - | - | 627 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 113 | Wei et al. (2020) | Journal Paper | China | - | - | 1525 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 114 | Wolters (2004) | Journal Paper | United States | 69% Caucasian; 4% African American; 27% Others | - | 525 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 115 | Xia et al. (2019) | Journal Paper | China | - | - | 585 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 116 | Yi et al. (2020) | Journal Paper | China | - | - | 974 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 117 | Yuen (2016) | Journal Paper | Hong Kong | - | - | 5809 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 118 | Zhang (2016) | Dissertation | China | - | - | 229 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 119 | Mameli & Passini (2019) | Journal Paper | Italy | - | - | 532 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 532 |
| 120 | Metallidou & Vlachou (2007) | Journal Paper | Greece | - | 24% low SES based on parents’ educational level and profession | 263 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 121 | Wang et al. (2016) | Journal Paper | United States | 66% Caucasian; 24% African American; 10% Others | 38% received free or reduced lunch | 300 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 122 | Appleton et al. (2006) | Journal Paper | United States | 35% Caucasian; 40% African American; 25% Others | 61% received free or reduced lunch | 1931 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 123 | Wang et al. (2014) | Journal Paper | United States | 82% Caucasian; 6% African American; 12% Others | 58% received free or reduced lunch | 3560 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 124 | Patrick et al. (2007) | Journal Paper | United States | Almost exclusively European American | - | 602 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 125 | Bircan & Sungur (2016) | Journal Paper | Turkey | - | - | 861 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 126 | Gutiérrez et al. (2018) | Journal Paper | Multiple Countries | - | - | 2302 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 2028 |
| 127 | Jang et al. (2012) | Journal Paper | Korea | - | - | 500 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 128 | Lemos et al. (2020) | Journal Paper | Portugal | - | - | 318 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 129 | Marchand & Furrer (2014) | Journal Paper | United States | 13% Caucasian; 26% African American; 61% Others | - | 514 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 130 | McElhone (2012) | Journal Paper | United States | - | - | 495 | 1 | R | R | 1 | 0 | 0 | 0 | 0 | 0 |
| 131 | Owen et al. (2018) | Journal Paper | Australia | - | - | 1306 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 132 | Reeve & Lee (2014) | Journal Paper | Korea | - | - | 313 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 133 | Stefansson et al. (2016) | Journal Paper | Iceland | - | - | 510 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 134 | Virtanen et al. (2018b) | Journal Paper | Portugal | - | - | 2405 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 135 | Martin et al. (2018) | Journal Paper | Jamaica | - | - | 585 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 136 | Burns et al. (2018) | Journal Paper | Australia | - | - | 1481 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 137 | Collie & Martin (2017) | Journal Paper | Australia | - | - | 371 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| **Total No. of Studies** | | | | | | | 110 | 71 | 87 | 56 | 7 | 18 | 14 | 16 | 13 |
| Note. AENG = Affective Engagement; BENG = Behavioral Engagement; CENG = Cognitive Engagement, AGENT = Agentic Engagement  Under the “Sample Size” Column, there are studies with more than one sample size number as these studies had conducted separate correlation analyses for more than 1 distinct samples.  Under the “Studies on Academic Achievement” and “Studies on Subjective Well-Being” columns: 1 = contains relevant effect size(s); 0 = does not contain relevant effect size(s); R = contains relevant effect size(s), but the effect sizes were REMOVED from meta-analysis due to the added exclusion criteria. | | | | | | | | | | | | | | | |

# **Table S2**

*Coding Manual for Study and Effect Size Characteristics*

| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| --- | --- | --- | --- | --- | --- |
| **Source characteristics** | Publication year | Categorical | N.A. | The year in which the article was published. | (1) Enter the year of publication.  (2) If a paper was an early access (e.g., in 2019), and was later published in a journal volume (e.g., in 2020), code the latter year. |
| Publication type | Categorical | Journal paper | The type of publication. | (1) Enter the type of publication. |
| Dissertation |
| Book chapter |
| Conference paper |
| Publication status\* | Categorical | 0 = Published | The categorization of whether the article was published (i.e., in journals) or was unpublished (i.e., grey literature). | (1) If a research article is a journal paper, code as published: 0  (2) If a research article is a student dissertation, book chapter, or conference paper, code as unpublished: 1 |
| 1 = Unpublished |
| Country | Categorical | N.A. | The country where the study was conducted. | (1) Enter the country where the study was conducted |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Source characteristics** | Geographical Region\* | Categorical | US/ Canada  (REF) | Geographical region or context where the study was conducted | (1) Code the study according to which geographical region it was conducted in.  (2) If study was conducted across multiple countries, or unable to be categorized, leave it blank. |
| Europe/ Australia1 |
| Asia |
| **Sample characteristics** | Sample size | Continuous | N.A. | The sample size associated with the effect size. | (1) Enter the final sample size reported in the "participant" section.  (2) If there were missing values, and missing values were not imputed (e.g., pairwise or listwise deletion was used during the analysis), enter the final sample size for the correlation analysis.  (3) If there were missing values, but missing values were imputed (e.g., via multiple imputation) or modelled via Full Information Maximum Likelihood (FIML; in structural equation modelling and factor correlation analysis), enter full sample size.  (4) If multiple imputation or FIML did not apply to the correlation analysis, or pairwise/listwise deletion was used but the N for correlation was unclear, enter the lower N of the two variables reported/ lowest possible N (e.g., based on *df* or descriptive statistics).  (5) If there was a lack of clarity on the matter of missing values, enter the sample size reported in the "participants" section. |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Sample characteristics** | Grade level | Categorical | N.A. | The grade level range of the participants. | (1) Enter the grade level of the participants.  (2) If grade level was not reported, estimate based on the type of school (e.g., middle school).  (3) For longitudinal studies, enter the full grade range across all time points (e.g., 1st - 2nd grade in T1, and 2nd - 3rd grade in T2, enter as 1st - 3rd grade) that contain the relevant data for this meta-analysis.  (4) If information on grade level was missing entirely and cannot be estimated in any way, leave it blank. |
| Student Age\* | Continuous | N.A. | The mean age of the participants. | (1) Enter the reported mean age.  (2) If mean age was not reported, but age range was reported, enter the midpoint of the age range.  (3) If mean age and age range were not reported, but grade level was reported, estimate the mean age of the participants based on the country's grade level system.  (4) For longitudinal studies, estimate the participants' mean age across time points that contain the relevant data for this meta-analysis, and use the same value for all effect sizes obtained in the same study.  (5) If information on mean age was missing entirely and cannot be estimated in any way, leave it blank. |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Sample characteristics** | Sex\* | Continuous | N.A. | The percentage of male participants in the sample. | (1) If the exact number of males and females were reported, calculate the proportion using the formula: (no. of males/ total N)\*100  (2) If there were missing values on sex (e.g., some participants did not provide information on sex), use the known values reported in the study.  (3) If the exact numbers were not reported, but percentages of males and/or females were reported, use the percentages that were given.  (4) In cases where exact value associated with an effect size is not entirely known (e.g., missing values, longitudinal studies), use the value reported in the "participants" section. For longitudinal studies, use the same value for all effect sizes obtained in the same study.  (5) If information on sex is missing entirely and cannot be estimated in any way, leave it blank. |
| Ethnicity\* | Continuous | N.A. | The percentage of racial & ethnic minorities in the sample. | (1) For studies that were conducted in the United States, enter the percentage of students that are non-White.  (2) If the racial & ethnic makeup of the sample was not reported, leave it blank.  (3) If studies were conducted outside of the United States, leave it blank. |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Sample characteristics** | Socioeconomic Status (SES)\* | Continuous | N.A. | The percentage of students in the sample that received free or reduced lunch or in low SES group. | (1) For studies that were conducted in the United States, enter the percentage of students who received free or reduced lunch.  (2) If the studies did not report the percentage of students who received free or reduced lunch, but noted the percentage of students from low SES background, use the number.  (3) If there were no reporting of percentage of students in low SES group, leave it blank.  (4) If studies were conducted outside of the United States, leave it blank. |
| **Academic achievement** | Subject of achievement measure\* | Categorical | General domain (REF) | The subject domain of the achievement test(s). | (1) If studies measured math or science achievement test scores, code accordingly.  (2) If studies measured language (e.g., reading, non-English languages) and humanities (e.g., History) achievement test scores, code accordingly.  (3) If studies measured general school grades or achievement test score with no subject specification, code as general domain.  (4) If studies measured school grades or achievement test score that included subjects from both "Mathematics & Science" and "Language & Humanities" domains, code as general domain. |
| Language & humanities |
| Math & science |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Academic achievement** | Type of achievement measure\* | Categorical | Standardized tests (REF) | The type of achievement test(s). | (1) If the achievement measure was a standardized achievement tests (e.g., SAT-10, WJ-III), state achievement tests (e.g., CALT), or test with a normative standard, code as standardized tests.  (2) If the achievement measure was school grades (e.g., GPA, course grades) obtained from teachers and school records, or teachers' ratings of students' achievement, code as “school grades (other)”.  (3) If the achievement measure was self-reported school grades (e.g., GPA, course grades), code as “school grades (self)”. |
| School grades -other |
| School grades - self |
| **Subjective Well-Being** | Component of SWB\* | Categorical | Life satisfaction (REF) | The components of subjective well-being construct. | (1) Enter the component (i.e., life satisfaction, positive affect, or negative affect) of subjective well-being  (2) If the measure combined multiple components, code as “overall”. |
| Positive affect |
| Negative affect |
| Life domains of SWB\* | Categorical | General domain (REF) | The life domains of the subjective well-being variable. | (1) If measure assessed students’ SWB in daily life, code as “general domain”.  (2) If measure was derived from the sum of SWB variables of various life domains, code as “general domain”.  (3) If measure assessed students’ SWB in school (e.g., school satisfaction, school affect), code as “school domain”.  (4) If measure assessed students’ SWB in other domains (e.g., family), code as “other domains”. |
| School domain |
| Other domains |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Subjective Well-Being** | Reliability of SWB measures | Continuous | N.A. | The reliability coefficient of subjective well-being measure (e.g., alpha, omega). | (1) Enter the reliability coefficient of the subscale.  (2) If only reliability of full scale was reported, substitute reliability of subscale with those of full scale.  (3) If reliability coefficient was not reported, but a range of reliability was reported (e.g., across subscales), estimate the reliability by using the midpoint of the range.  (4) If reliability coefficient was not reported entirely, estimate using the alpha reported in the original source.  (5) If a single item of a full scale was used (e.g., brief measures), estimate using the alpha reported in the original scale (e.g., full scale).  (6) If factor correlation was conducted, enter the reliability coefficient as 1.00. |
| **Student Engagement** | Engagement subtypes\* | Categorical | Refer to the engagement classification scheme | The engagement subtype within each type of engagement that is assessed by the engagement measure. | (1) Refer to the engagement classification scheme and determine which engagement subtype was being assessed by the engagement measure and code accordingly.  (2) If the engagement measure contained items or indicators for more than one subtype, examine the distribution of the items or indicators and determine the subtype that is predominantly represented in the scale.  (3) If full item set was unavailable, code based on sample items and scale description presented in the paper.  (4) If unable to categorize, leave the cell blank. |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Student Engagement** | Informant source of engagement\* | Categorical | 0 = self-reported | The informant source of the engagement measure. | (1) If engagement was measured through students’ self-reports, code as “self-reported”  (2) If engagement was measured through teachers’ ratings, code as “teacher-reported”  (3) If engagement was measured through other observers (e.g., researchers) or objective records (e.g., attendance), code as “others”. |
| 1 = teacher-reported |
| Subject specificity of engagement\* | Categorical | 0 = subject-specific | The subject domain of the engagement measure. | (1) If engagement items were phrased in a subject specific context (e.g., math lessons), code as “subject-specific”.  (2) If engagement items were about learning or school in general, code as “general”. |
| 1 = general |
| Reliability of engagement measure | Continuous | N.A. | The reliability coefficient of the engagement measure (e.g., alpha). | (1) Enter the reliability coefficient of the subscale.  (2) If only reliability of full scale was reported, substitute reliability of subscale with those of full scale.  (3) If reliability coefficient was not reported, but a range of reliability was reported (e.g., across subscales), estimate the reliability by using the midpoint of the range.  (4) If reliability coefficient was not reported entirely, estimate using the alpha reported in the original source.  (5) If factor correlation was conducted, or if engagement was measured from objective records, enter the reliability coefficient as 1.00.  (6) If there was no way to estimate the reliability, or a single item was used, leave it blank. |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Effect Sizes** | Correlation coefficient | Continuous | N.A. | Bivariate correlation coefficient between an engagement variable and an outcome variable (i.e., academic achievement or SWB). | (1) Enter the bivariate correlation coefficient *r* stated in the paper. |
| Fisher’s *z* | Continuous | N.A. | Fisher's *z*, which is transformed from sample correlation r that has been corrected for the effects of artifacts (i.e., measurement unreliability). | (1) Use the FISHER function in excel to transform the corrected correlation into Fisher’s *z* score. The corrected correlation is calculated as *r*/a, where r is the bivariate correlation coefficient, and a is the correction artifact |
| Variance | Continuous | N.A. | The variance of Fisher's *z*. | (1) Calculate the variance of Fisher's *z* with the formula: 1/(N-3) |

**Table S2 (continued)**

*Coding Manual for Study and Effect Size Characteristics*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Variable** | **Variable Type** | **Variable Level** | **Description** | **Coding Instructions** |
| **Effect Sizes** | Time lag in measurement\* | Categorical | Same-Year Associations | The difference in time points between the measurement of engagement and the correlates of interest. | (1) Code as “same-year associations” if both variables were measured concurrently (e.g., self-reported grades).  (2) Code as “same-year associations” if achievement data were retrieved from teachers or school records in the same academic year as the survey (e.g., teacher-reported grades, quarterly GPA, end of semester grades, end of year grades).  (3) For studies with longitudinal designs, code as “different-year associations” if the two time points crossed an academic year (e.g., 7th grade engagement and 8th grade achievement). If the two time points were within the same academic year (e.g., beginning and end of semester), code as “same-year associations”. |
| Different-Year Associations |
| *Note*. Variables with asterisk (\*) are used as moderators in the meta-analysis.  1Note that despite being in different geographical region, Australia and Europe was combined to form a category due to their close cultural distance (i.e., Western cultures outside of America), and also due to low study sample size for Australia (*j* = 6). | | | | | |

**Table S3**

*List of Student Engagement Measures from the 137 Included Studies*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Measure** | **Count** | **Affective** | **Behavioral** | **Cognitive** | **Others** |
| 1 | Engagement vs. Disaffection with Learning Survey1  (Skinner et al., 2009) | 26 | 🗸 | 🗸 | 🗴 | 🗴 |
| 2 | School Engagement Measure  (Fredricks et al., 2005) | 14 | 🗸 | 🗸 | 🗸 | 🗴 |
| 3 | Student Engagement Instrument  (Appleton et al., 2006) | 14 | 🗸 | 🗴 | 🗸 | 🗴 |
| 4 | Student Engagement Scale  (Reeve & Tseng, 2011) | 6 | 🗸 | 🗸 | 🗸 | 🗸2 |
| 5 | Student Engagement in Schools Questionnaire  (Lam & Jimmerson, 2008) | 5 | 🗸 | 🗸 | 🗸 | 🗴 |
| 6 | Motivation and Engagement Scale1  (Martin, 2007) | 5 | 🗸 | 🗸 | 🗸 | 🗴 |
| 7 | School Engagement Assessment  (Wang et al., 2011) | 4 | 🗸 | 🗸 | 🗸 | 🗴 |
| 8 | Research Assessment Package for Schools  (Institute for Research and Reform in Education, 1998) | 4 | 🗴 | 🗸 | 🗴 | 🗴 |
| 9 | NCSE School Engagement Survey  (Finlay, 2006) | 2 | 🗸 | 🗸 | 🗸 | 🗴 |
| 10 | Behavioral Academic Engagement Scale  (Hughes & Coplan, 2010) | 2 | 🗴 | 🗸 | 🗴 | 🗴 |
| 11 | Behavioral-Emotional-Cognitive School Engagement Scale  (Li, 2010) | 2 | 🗸 | 🗸 | 🗸 | 🗴 |
| 12 | Student Engagement in School-Four-Dimensional Scale  (Veiga & Robu, 2014) | 2 | 🗸 | 🗸 | 🗸 | 🗸2 |
| 13 | Classroom Engagement Inventory1  (Wang et al., 2014) | 2 | 🗸 | 🗸 | 🗸 | 🗴 |
| 14 | Rochester Assessment of Intellectual and Social Engagement  (Miserandino 1997) | 1 | 🗸 | 🗸 | 🗴 | 🗴 |
| 15 | Classroom Engagement Teacher Survey  (Pagani et al., 2010) | 1 | 🗴 | 🗸 | 🗴 | 🗴 |
| 16 | Multidimensional School Engagement Scale  (Awang-Hashim & Sani, 2008) | 1 | 🗸 | 🗸 | 🗸 | 🗴 |

**Table S3 (continued)**

*List of Student Engagement Measures from the 124 Included Studies*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Measure** | **Count** | **Affective** | **Behavioral** | **Cognitive** | **Others** |
| 17 | Student Engagement Scale  (Dogan, 2014) | 1 | 🗸 | 🗸 | 🗸 | 🗴 |
| 18 | Behavioral Engagement Measure  (Reschly & Christenson, 2006) | 1 | 🗴 | 🗸 | 🗴 | 🗴 |
| 19 | Middle School Engagement Survey  (Frontier, 2007) | 1 | 🗸 | 🗸 | 🗸 | 🗴 |
| 20 | Iranian Student Engagement in Academic Activities Scale  (Hakimzadeh et al., 2013) | 1 | 🗸 | 🗸 | 🗸 | 🗴 |
| 21 | Behavioral Observation of Students in Schools  (Shapiro & Kratochwill, 2000) | 1 | 🗴 | 🗸 | 🗴 | 🗴 |
| 22 | Dimensions of School Engagement Scale  (Archambault & Vandenbossche-Makombo, 2014) | 1 | 🗸 | 🗸 | 🗴 | 🗴 |
| 23 | Effective Participation Scale1  (Guvenc, 2015) | 1 | 🗸 | 🗸 | 🗴 | 🗴 |
| 24 | School Engagement Questionnaire  (Dornbusch & Steinberg, 1990) | 1 | 🗴 | 🗸 | 🗴 | 🗴 |
| 25 | Emotional and Cognitive Engagement and School-Related Well-Being (ECW) Questionnaire  (Pietarinen et al., 2014) | 1 | 🗸 | 🗴 | 🗸 | 🗴 |
| 26 | Engagement Measure  (Finn & Rock, 1997) | 1 | 🗴 | 🗸 | 🗴 | 🗴 |
| 27 | Academic Competence Evaluation Scales  (DiPerna & Elliott, 2000) | 1 | 🗴 | 🗸 | 🗴 | 🗴 |
| 28 | Cognitive Engagement Questionnaire  (Zhang, 2013) | 1 | 🗴 | 🗴 | 🗸 | 🗴 |
| 29 | Math and Science Engagement Scales1  (Wang et al., 2016) | 1 | 🗸 | 🗸 | 🗸 | 🗸3 |
| 30 | Effortful Engagement Scale  (Hughes et al., 2008) | 1 | 🗴 | 🗸 | 🗴 | 🗴 |
| 1Measure both engagement and disengagement dimensions  2Measure agentic engagement  3Measure social engagement | | | | | | |

**Table S4**

*Univariate Moderation Analyses on the Relation between Student Engagement and Academic Achievement*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance** | | | | | | | | |
| Variance (B) | 110 | 121 | 533 | 20.50\* | 7.68 | 2.67 | 36.40 | [4.93, 36.07] |
| Variance (W)a | -44.72 | 16.41 | -2.73 | 1.90 | [-119.00, 29.55] |
| **Publication Status (B)** | | | | | | | | |
| Unpublished vs. Published | 110 | 121 | 533 | -.06 | .04 | -1.37 | 46.30 | [-.14, .03] |
| **Type of Engagement Dimension** | | | | | | | | |
| Behavioral vs. Affective (B) | 110 | 121 | 533 | .22\*\*\* | .06 | 3.84 | 37.49 | [.10, .33] |
| Behavioral vs. Affective (W) | .09\*\*\* | .02 | 4.65 | 62.32 | [.05, .14] |
| Cognitive vs. Affective (B) | .02 | .06 | .27 | 25.12 | [-.11, .15] |
| Cognitive vs. Affective (W) | .07\*\* | .02 | 2.85 | 55.40 | [.02, .11] |
| Agentic vs. Affective (B) | -.01 | .19 | -.05 | 10.15 | [-.43, .41] |
| Agentic vs. Affective (W) | -.05 | .04 | -1.18 | 8.73 | [-.15, .05] |
| **Type of Engagement Dimension (Alternative Model)** | | | | | | | | |
| Affective vs. Behavioral (B) | 110 | 121 | 533 | -.22\*\*\* | .06 | -3.84 | 37.49 | [-.33, -.10] |
| Affective vs. Behavioral (W) | -.09\*\*\* | .02 | -4.65 | 62.32 | [-.13, -.05] |
| Cognitive vs. Behavioral (B) | -.20\*\* | .06 | -3.45 | 29.36 | [-.32, -.08] |
| Cognitive vs. Behavioral (W) | -.03 | .03 | -.93 | 57.10 | [-.09, .03] |
| Agentic vs. Behavioral (B) | -.23 | .19 | -1.22 | 9.42 | [-.65, .19] |
| Agentic vs. Behavioral (W) | -.15\* | .05 | -3.20 | 8.80 | [-.25, -.04] |
| **Geographical Region (B)** | | | | | | | | |
| Europe/Australia vs. US/Canada | 107 | 117 | 511 | .08 | .04 | 1.80 | 81.50 | [-.01, .16] |
| Asia vs. US/Canada | .08 | .05 | 1.73 | 25.80 | [-.02, .19] |
| **Age (B)** | 110 | 121 | 533 | .02 | .01 | 1.91 | 54.10 | [.00, .03] |
| **Sex (B)** | 104 | 112 | 495 | .01 | .19 | .04 | 4.54 | [-.49, .51] |
| **Race & Ethnicity (B)**b | 46 | 52 | 249 | .14 | .07 | 2.01 | 29.90 | [.00, .28] |
| **SES (B)**b | 23 | 27 | 129 | .34\*\* | .10 | 3.47 | 11.30 | [.12, .55] |
| **Informant Source of Engagement** | | | | | | | | |
| Teacher-Reported vs. Self-Reported (B) | 110 | 121 | 533 | .26\*\* | .07 | 3.48 | 19.08 | [.10, .41] |
| Teacher-Reported vs. Self-Reported (W) | .19\*\* | .04 | 4.46 | 8.86 | [.09, .29] |
| **Subject Specificity of Engagement** | | | | | | | | |
| General vs. Subject-Specific (B) | 110 | 121 | 533 | -.03 | .04 | -.82 | 54.53 | [-.12, .05] |
| General vs. Subject-Specific (W)a | -.23\*\* | .04 | -5.24 | 3.92 | [-.35, -.11] |
| **Subject of Achievement Measure** | | | | | | | | |
| Language & Humanities vs. General (B) | 110 | 121 | 533 | -.18\*\* | .05 | -3.54 | 27.80 | [-.28, -.07] |
| Language & Humanities vs. General (W) | -.14\*\* | .04 | -3.89 | 7.69 | [-.22, -.06] |
| Math & Science vs. General (B) | -.02 | .04 | -.48 | 62.20 | [-.11, .07] |
| Math & Science vs. General (W) | -.15\*\* | .03 | -4.40 | 7.25 | [-.23, -.07] |

**Table S4 (Continued)**

*Univariate Moderation Analyses on the Relation between Student Engagement and Academic Achievement*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Type of Achievement Measure** | | | | | | | | |
| School Grades (Other) vs. Standardized Test (B) | 110 | 121 | 533 | .17\*\*\* | .04 | 4.78 | 74.53 | [.10, .25] |
| School Grades (Other) vs. Standardized Test (W) | .13\* | .04 | 3.13 | 6.48 | [.03, .24] |
| School Grades (Self) vs. Standardized Test (B) | .12\*\* | .04 | 3.22 | 43.43 | [.05, .20] |
| School Grades (Self) vs. Standardized Test (W)a | .14 | .02 | 6.52 | 1.09 | [-.08, .35] |
| **Time Lag in Measurement** | | | | | | | | |
| Different vs. Same Year (B) | 110 | 121 | 533 | -.11 | .07 | -1.55 | 11.20 | [-.27, .05] |
| Different vs. Same Year (W) | -.04\* | .02 | -2.68 | 15.90 | [-.08, -.01] |
| *Note*. Moderation analysis was conducted separately for each moderator. For categorical moderators, the second variable in each comparison is the reference group (e.g., in unpublished vs. published, published is the reference group in the dummy coding).  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, (B) = Between-study effects, (W) = Within-study effects  aResults are not reliable as the Satterthwaite *df* is less than 4.  bOnly studies from the United States were included.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | | |

**Table S5**

*Multivariate Moderation Analysis on the Relation between Student Engagement and Academic Achievement (with behavioral engagement as reference variable)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Moderator** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance (B)** | 11.00 | 9.11 | 1.21 | 30.22 | [-7.60, 29.60] |
| **Publication Status (B)** | | | | | |
| Unpublished vs. Published | -.02 | .03 | -.44 | 32.91 | [-.09, .06] |
| **Type of Engagement Dimension** | | | | | |
| Affective vs. Behavioral (B) | -.09 | .05 | -1.78 | 31.60 | [-.18, .01] |
| Affective vs. Behavioral (W) | -.08\*\*\* | .02 | -3.79 | 53.89 | [-.13, -.04] |
| Cognitive vs. Behavioral (B) | -.16\*\* | .05 | -3.57 | 29.24 | [-.25, -.07] |
| Cognitive vs. Behavioral (W) | -.03 | .03 | -.90 | 48.16 | [-.10, .04] |
| Agentic vs. Behavioral (B) | -.34 | .21 | -1.65 | 9.43 | [-.81, .12] |
| Agentic vs. Behavioral (W) | -.17\* | .05 | -3.11 | 6.55 | [-.30, -.04] |
| **Geographical Region (B)** | | | | | |
| Europe/Australia vs. US/Canada | .07 | .04 | 1.81 | 50.14 | [-.01, .16] |
| Asia vs. US/Canada | .06 | .05 | 1.26 | 22.53 | [-.04, .17] |
| **Age (B)** | .01 | .01 | 1.45 | 40.87 | [-.01, .03] |
| **Sex (B)**a | .08 | .13 | .60 | 3.57 | [-.30, .45] |
| **Informant Source of Engagement** | | | | | |
| Teacher-Reported vs. Self-Reported (B) | .20\* | .07 | 2.63 | 24.05 | [.04, .35] |
| Teacher-Reported vs. Self-Reported (W) | .17\*\* | .04 | 4.21 | 8.93 | [.08, .27] |
| **Subject Specificity of Engagement (B)** | | | | | |
| General vs. Subject-Specific | -.02 | .04 | -.40 | 25.89 | [-.10, .07] |
| **Subject of Achievement Measure** | | | | | |
| Language & Humanities vs. General (B) | -.03 | .06 | -.51 | 19.65 | [-.15, .09] |
| Language & Humanities vs. General (W) | -.13\* | .04 | -3.46 | 6.63 | [-.23, -.04] |
| Math & Science vs. General (B) | .02 | .05 | .30 | 30.30 | [-.09, .12] |
| Math & Science vs. General (W) | -.14\*\* | .04 | -3.87 | 6.18 | [-.23, -.05] |
| **Type of Achievement Measure (B)** | | | | | |
| School Grades (Other) vs. Standardized Test | .18\*\*\* | .04 | 4.93 | 35.66 | [.11, .25] |
| School Grades (Self) vs. Standardized Test | .09 | .05 | 1.82 | 31.22 | [-.01, .20] |
| **Time Lag in Measurement** | | | | | |
| Different vs. Same Year (B) | .00 | .08 | .06 | 11.49 | [-.16, .17] |
| Different vs. Same Year (W) | -.05\* | .02 | -2.70 | 15.88 | [-.08, -.01] |
| *Note*. All moderators were entered simultaneously in each model. For categorical moderators, the second variable in each comparison is the reference group (e.g., in unpublished vs. published, published is the reference group in the dummy coding). Results were based on 101 studies involving 108 independent samples and 473 effect sizes.  (B) = Between-study effects, (W) = Within-study effects  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | |

**Table S6**

*Multivariate Moderation Analysis on the Relation between Student Engagement and Academic Achievement (with cognitive engagement as reference variable)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Moderator** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance (B)** | 11.00 | 9.11 | 1.21 | 30.22 | [-7.60, 29.60] |
| **Publication Status (B)** | | | | | |
| Unpublished vs. Published | -.02 | .03 | -.44 | 32.91 | [-.09, .06] |
| **Type of Engagement Dimension** | | | | | |
| Affective vs. Cognitive (B) | .08 | .06 | 1.32 | 26.54 | [-.04, .19] |
| Affective vs. Cognitive (W) | -.05\* | .03 | -2.02 | 46.07 | [-.11, .00] |
| Behavioral vs. Cognitive (B) | .16\*\* | .05 | 3.57 | 29.24 | [.07, .25] |
| Behavioral vs. Cognitive (W) | .03 | .03 | .90 | 48.16 | [-.04, .10] |
| Agentic vs. Cognitive (B) | -.18 | .21 | -.88 | 9.71 | [-.64, .28] |
| Agentic vs. Cognitive (W) | -.14\* | .05 | -2.67 | 6.66 | [-.26, -.01] |
| **Geographical Region (B)** | | | | | |
| Europe/Australia vs. US/Canada | .07 | .04 | 1.81 | 50.14 | [-.01, .16] |
| Asia vs. US/Canada | .06 | .05 | 1.26 | 22.53 | [-.04, .17] |
| **Age (B)** | .01 | .01 | 1.45 | 40.87 | [-.01, .03] |
| **Sex (B)**a | .08 | .13 | .60 | 3.57 | [-.30, .45] |
| **Informant Source of Engagement** | | | | | |
| Teacher-Reported vs. Self-Reported (B) | .20\* | .07 | 2.63 | 24.05 | [.04, .35] |
| Teacher-Reported vs. Self-Reported (W) | .17\*\* | .04 | 4.21 | 8.93 | [.08, .27] |
| **Subject Specificity of Engagement (B)** | | | | | |
| General vs. Subject-Specific | -.02 | .04 | -.40 | 25.89 | [-.10, .07] |
| **Subject of Achievement Measure** | | | | | |
| Language & Humanities vs. General (B) | -.03 | .06 | -.51 | 19.65 | [-.15, .09] |
| Language & Humanities vs. General (W) | -.13\* | .04 | -3.46 | 6.63 | [-.23, -.04] |
| Math & Science vs. General (B) | .02 | .05 | .30 | 30.30 | [-.09, .12] |
| Math & Science vs. General (W) | -.14\*\* | .04 | -3.87 | 6.18 | [-.23, -.05] |
| **Type of Achievement Measure (B)** | | | | | |
| School Grades (Other) vs. Standardized Test | .18\*\*\* | .04 | 4.93 | 35.66 | [.11, .25] |
| School Grades (Self) vs. Standardized Test | .09 | .05 | 1.82 | 31.22 | [-.01, .20] |
| **Time Lag in Measurement** | | | | | |
| Different vs. Same Year (B) | .00 | .08 | .06 | 11.49 | [-.16, .17] |
| Different vs. Same Year (W) | -.05\* | .02 | -2.70 | 15.88 | [-.08, -.01] |
| *Note*. All moderators were entered simultaneously in each model. For categorical moderators, the second variable in each comparison is the reference group (e.g., in unpublished vs. published, published is the reference group in the dummy coding). Results were based on 101 studies involving 108 independent samples and 473 effect sizes.  (B) = Between-study effects, (W) = Within-study effects  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | |

**Table S7**

*Syntheses of the Correlation between Affective Engagement and Academic Achievement*

| **Variable** | ***j*** | ***k*** | ***l*** | ***df*** | ***r*** | **95% CI of *r*** | ***τ*2** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Overall Correlation** | 71 | 77 | 174 | 75.60 | .26\*\*\* | [.22, .30] | .02 |
| **Publication Status** | | | | | | | |
| Published | 54 | 58 | 129 | 56.70 | .28\*\*\* | [.24, .33] | .03 |
| Unpublished | 17 | 19 | 45 | 17.80 | .19\*\*\* | [.12, .25] | .01 |
| **Affective Engagement Subtypes** | | | | | | | |
| Relational | 14 | 16 | 45 | 14.20 | .12\*\*\* | [.10, .15] | .00 |
| Affective-School | 24 | 28 | 52 | 26.80 | .22\*\*\* | [.16, .28] | .02 |
| Affective-Learning | 36 | 39 | 77 | 37.70 | .33\*\*\* | [.27, .38] | .02 |
| **Geographical Region** | | | | | | | |
| US/ Canada | 35 | 38 | 104 | 36.60 | .23\*\*\* | [.19, .28] | .02 |
| Europe/ Australia | 21 | 23 | 42 | 21.90 | .29\*\*\* | [.20, .38] | .03 |
| Asia | 12 | 12 | 22 | 11.00 | .32\*\*\* | [.21, .42] | .04 |
| **Informant Source of Engagement** | | | | | | | |
| Self-Reported | 69 | 75 | 159 | 73.50 | .24\*\*\* | [.21, .28] | .02 |
| Teacher-Reported | 7 | 7 | 15 | 5.99 | .50\*\*\* | [.37, .61] | .03 |
| **Subject Specificity of Engagement** | | | | | | | |
| General | 57 | 63 | 143 | 61.60 | .24\*\*\* | [.20, .28] | .02 |
| Subject-Specific | 15 | 16 | 31 | 14.80 | .34\*\*\* | [.25, .42] | .02 |
| **Subject of Achievement Measure** | | | | | | | |
| General | 46 | 48 | 84 | 46.70 | .29\*\*\* | [.25, .33] | .02 |
| Language & Humanities | 18 | 21 | 41 | 18.80 | .13\*\*\* | [.08, .18] | .01 |
| Math & Science | 24 | 26 | 49 | 24.90 | .22\*\*\* | [.14, .30] | .02 |
| **Type of Achievement Measure** | | | | | | | |
| Standardized Test | 23 | 26 | 67 | 24.60 | .16\*\*\* | [.11, .21] | .02 |
| School Grades (Other) | 44 | 45 | 87 | 43.80 | .29\*\*\* | [.23, .34] | .03 |
| School Grades (Self) | 12 | 14 | 20 | 12.90 | .30\*\*\* | [.23, .38] | .02 |
| **Time Lag in Measurement** | | | | | | | |
| Same-Year Associations | 68 | 72 | 144 | 70.60 | .27\*\*\* | [.23, .31] | .03 |
| Different-Year Associations | 12 | 14 | 30 | 12.90 | .18\*\*\* | [.10, .26] | .02 |
| *Note*. Analyses were performed using meta-regression with RVE (correlated effects) random-effects model. The correlation coefficients (*r*) presented in the table were corrected from measurement errors and converted from Fisher’s *z* to *r* after the meta-analysis. Note that only categorical moderators are displayed as this table reports the synthesized correlations at each level of the categorical moderator variables.  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | |

**Table S8**

*Univariate Moderation Analyses on the Relation between Affective Engagement and Academic Achievement*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance** | | | | | | | | |
| Variance (B) | 71 | 77 | 174 | 20.42\* | 8.77 | 2.33 | 17.09 | [1.92, 38.92] |
| Variance (W)a | 3.05 | 17.94 | .17 | 1.66 | [-91.39, 97.50] |
| **Publication Status (B)** | | | | | | | | |
| Unpublished vs. Published | 71 | 77 | 174 | -.10\* | .04 | -2.44 | 30.20 | [-.18, -.02] |
| **Affective Engagement Subtypes** | | | | | | | | |
| Affective-School vs. Relational (B) | 71 | 77 | 174 | .11\*\* | .04 | 2.95 | 26.42 | [.03, .19] |
| Affective-School vs. Relational (W)a | .01 | .01 | .99 | 2.00 | [-.05, .08] |
| Affective-Learning vs. Relational (B) | .21\*\*\* | .04 | 6.05 | 24.04 | [.14, .29] |
| Affective-Learning vs. Relational (W)a | .18\*\* | .02 | 7.78 | 3.98 | [.12, .25] |
| **Geographical Region (B)** | | | | | | | | |
| Europe/Australia vs. US/Canada | 68 | 73 | 168 | .07 | .05 | 1.27 | 47.10 | [-.04, .17] |
| Asia vs. US/Canada | .09 | .06 | 1.64 | 18.70 | [-.03, .21] |
| **Age (B)** | 71 | 77 | 174 | .02 | .01 | 1.71 | 31.00 | [.00, .04] |
| **Sex (B)** | 66 | 70 | 156 | .04 | .38 | .11 | 13.10 | [-.77, .85] |
| **Race & Ethnicity (B)**b | 30 | 33 | 92 | .12 | .09 | 1.27 | 15.70 | [-.08, .31] |
| **SES (B)**b | 18 | 20 | 53 | .36\*\* | .09 | 4.10 | 7.13 | [.15, .57] |
| **Informant Source of Engagement** | | | | | | | | |
| Teacher-Reported vs. Self-Reported (B)a | 71 | 77 | 174 | .41\*\* | .08 | 5.26 | 3.99 | [.19, .62] |
| Teacher-Reported vs. Self-Reported (W)a | .20\* | .07 | 2.96 | 3.98 | [.01, .39] |
| **Subject Specificity of Engagement (B)** | | | | | | | | |
| General vs. Subject-Specific | 71 | 77 | 174 | -.11 | .06 | -1.85 | 20.70 | [-.23, .01] |
| **Subject of Achievement Measure** | | | | | | | | |
| Language & Humanities vs. General (B) | 71 | 77 | 174 | -.20\*\*\* | .05 | -4.24 | 16.85 | [-.30, -.10] |
| Language & Humanities vs. General (W) | -.08 | .04 | -1.90 | 5.69 | [-.18, .02] |
| Math & Science vs. General (B) | -.03 | .06 | -.44 | 28.62 | [-.16, .10] |
| Math & Science vs. General (W) | -.07 | .04 | -1.80 | 5.17 | [-.17, .03] |

**Table S8 (continued)**

*Univariate Moderation Analyses on the Relation between Affective Engagement and Academic Achievement*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Type of Achievement Measure** | | | | | | | | |
| School Grades (Other) vs. Standardized Test (B) | 71 | 77 | 174 | .14\*\* | .04 | 3.33 | 43.75 | [.05, .22] |
| School Grades (Other) vs. Standardized Test (W) | .06 | .04 | 1.70 | 5.47 | [-.03, .16] |
| School Grades (Self) vs. Standardized Test (B) | .17\*\*\* | .04 | 3.82 | 24.56 | [.08, .26] |
| School Grades (Self) vs. Standardized Test (W)a | .10 | .03 | 3.74 | 1.11 | [-.18, .39] |
| **Time Lag in Measurement** | | | | | | | | |
| Different vs. Same Year (B) | 71 | 77 | 174 | -.16\*\* | .04 | -3.78 | 8.84 | [-.26, -.06] |
| Different vs. Same Year (W) | -.03 | .02 | -1.24 | 7.92 | [-.08, .02] |
| *Note*. Moderation analysis was conducted separately for each moderator. For categorical moderators, the second variable in each comparison is the reference group (e.g., in unpublished vs. published, published is the reference group in the dummy coding).  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, (B) = Between-study effects, (W) = Within-study effects  aResults are not reliable as the Satterthwaite *df* is less than 4.  bOnly studies from the United States were included.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | | |

**Table S9**

*Syntheses of the Correlation between Behavioral Engagement and Academic Achievement*

| **Variable** | ***j*** | ***k*** | ***l*** | ***df*** | ***r*** | **95% CI of *r*** | ***τ*2** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Overall Correlation** | 87 | 95 | 215 | 93.70 | .39\*\*\* | [.35, .42] | .03 |
| **Publication Status** | | | | | | | |
| Published | 72 | 77 | 177 | 75.70 | .39\*\*\* | [.35, .43] | .03 |
| Unpublished | 15 | 18 | 38 | 17.00 | .38\*\*\* | [.28, .46] | .03 |
| **Behavioral Engagement Subtypes** | | | | | | | |
| Participatory | 40 | 44 | 106 | 42.90 | .40\*\*\* | [.34, .45] | .04 |
| Effortful | 52 | 55 | 109 | 53.70 | .38\*\*\* | [.34, .42] | .03 |
| **Geographical Region** | | | | | | | |
| US/ Canada | 41 | 45 | 116 | 43.80 | .38\*\*\* | [.33, .43] | .03 |
| Europe/ Australia | 28 | 30 | 62 | 29.00 | .42\*\*\* | [.34, .49] | .05 |
| Asia | 15 | 16 | 31 | 14.90 | .39\*\*\* | [.32, .46] | .02 |
| **Informant Source of Engagement** | | | | | | | |
| Self-Reported | 74 | 82 | 174 | 80.60 | .36\*\*\* | [.33, .39] | .03 |
| Teacher-Reported | 20 | 20 | 41 | 18.90 | .50\*\*\* | [.41, .58] | .03 |
| **Subject Specificity of Engagement** | | | | | | | |
| General | 63 | 70 | 167 | 68.70 | .38\*\*\* | [.34, .42] | .03 |
| Subject-Specific | 25 | 26 | 48 | 24.80 | .40\*\*\* | [.35, .46] | .02 |
| **Subject of Achievement Measure** | | | | | | | |
| General | 54 | 57 | 105 | 55.80 | .43\*\*\* | [.38, .47] | .03 |
| Language & Humanities | 19 | 23 | 39 | 21.90 | .32\*\*\* | [.24, .39] | .03 |
| Math & Science | 34 | 40 | 71 | 38.80 | .35\*\*\* | [.29, .40] | .03 |
| **Type of Achievement Measure** | | | | | | | |
| Standardized Test | 27 | 29 | 69 | 27.90 | .28\*\*\* | [.22, .34] | .03 |
| School Grades (Other) | 49 | 52 | 109 | 50.80 | .45\*\*\* | [.40, .49] | .04 |
| School Grades (Self) | 18 | 21 | 37 | 19.90 | .39\*\*\* | [.31, .45] | .03 |
| **Time Lag in Measurement** | | | | | | | |
| Same-Year Associations | 85 | 93 | 178 | 91.70 | .39\*\*\* | [.35, .43] | .04 |
| Different-Year Associations | 16 | 17 | 37 | 16.00 | .38\*\*\* | [.30, .47] | .05 |
| *Note*. Analyses were performed using meta-regression with RVE (correlated effects) random-effects model. The correlation coefficients (*r*) presented in the table were corrected from measurement errors and converted from Fisher’s *z* to *r* after the meta-analysis. Note that only categorical moderators are displayed as this table reports the synthesized correlations at each level of the categorical moderator variables.  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | |

**Table S10**

*Univariate Moderation Analyses on the Relation between Behavioral Engagement and Academic Achievement*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance** | | | | | | | | |
| Variance (B) | 87 | 95 | 215 | 14.78 | 9.83 | 1.50 | 26.60 | [-5.40, 34.95] |
| Variance (W)a | -76.74 | 51.27 | -1.50 | 1.24 | [-491.86, 338.37] |
| **Publication Status (B)** | | | | | | | | |
| Unpublished vs. Published | 87 | 95 | 215 | -.02 | .05 | -.31 | 25.30 | [-.13, .09] |
| **Behavioral Engagement Subtypes** | | | | | | | | |
| Participatory vs. Effortful (B) | 87 | 95 | 215 | .04 | .04 | .81 | 84.47 | [-.05, .13] |
| Participatory vs. Effortful (W)a | -.17 | .08 | -2.05 | 2.99 | [-.42, .09] |
| **Geographical Region (B)** | | | | | | | | |
| Europe/Australia vs. US/Canada | 84 | 91 | 209 | .04 | .05 | .80 | 62.50 | [-.06, .14] |
| Asia vs. US/Canada | .02 | .05 | .33 | 26.60 | [-.08, .12] |
| **Age (B)** | 87 | 95 | 215 | .01 | .01 | .94 | 40.70 | [-.01, .03] |
| **Sex (B)** | 82 | 89 | 204 | .08 | .16 | .52 | 4.32 | [-.35, .52] |
| **Race & Ethnicity (B)**b | 35 | 39 | 101 | .06 | .09 | .69 | 23.00 | [-.13, .26] |
| **SES (B)**b | 16 | 18 | 42 | .27 | .15 | 1.77 | 8.77 | [-.08, .61] |
| **Informant Source of Engagement** | | | | | | | | |
| Teacher-Reported vs. Self-Reported (B) | 87 | 95 | 215 | .18\* | .08 | 2.30 | 20.79 | [.02, .34] |
| Teacher-Reported vs. Self-Reported (W) | .19\*\*\* | .03 | 6.68 | 5.98 | [.12, .26] |
| **Subject Specificity of Engagement (B)** | | | | | | | | |
| General vs. Subject-Specific | 87 | 95 | 215 | -.02 | .04 | -.57 | 43.20 | [-.11, .06] |
| **Subject of Achievement Measure** | | | | | | | | |
| Language & Humanities vs. General (B) | 87 | 95 | 215 | -.17\* | .07 | -2.37 | 14.08 | [-.32, -.02] |
| Language & Humanities vs. General (W) | -.21\* | .07 | -2.83 | 6.65 | [-.39, -.03] |
| Math & Science vs. General (B) | -.04 | .05 | -.77 | 46.48 | [-.13, .06] |
| Math & Science vs. General (W) | -.23\* | .07 | -3.35 | 6.18 | [-.39, -.06] |

**Table S10 (continued)**

*Univariate Moderation Analyses on the Relation between Behavioral Engagement and Academic Achievement*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Type of Achievement Measure** | | | | | | | | |
| School Grades (Other) vs. Standardized Test (B) | 87 | 95 | 215 | .18\*\*\* | .04 | 4.25 | 49.67 | [.09, .26] |
| School Grades (Other) vs. Standardized Test (W) | .23 | .09 | 2.63 | 4.57 | [.00, .47] |
| School Grades (Self) vs. Standardized Test (B) | .12\* | .05 | 2.24 | 39.95 | [.01, .23] |
| School Grades (Self) vs. Standardized Test (W)a | .19 | .04 | 4.72 | 1.12 | [-.20, .58] |
| **Time Lag in Measurement** | | | | | | | | |
| Different vs. Same Year (B) | 87 | 95 | 215 | -.02 | .11 | -.14 | 8.09 | [-.28, .25] |
| Different vs. Same Year (W) | -.03 | .02 | -1.66 | 13.92 | [-.08, .01] |
| *Note*. Moderation analysis was conducted separately for each moderator. For categorical moderators, the second variable in each comparison is the reference group (e.g., in unpublished vs. published, published is the reference group in the dummy coding).  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, (B) = Between-study effects, (W) = Within-study effects  aResults are not reliable as the Satterthwaite *df* is less than 4.  bOnly studies from the United States were included.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | | |

**Table S11**

*Multivariate Moderation Analysis on the Relation between Behavioral Engagement and Academic Achievement (without interaction terms)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Moderator** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance (B)** | 2.43 | 11.78 | .21 | 21.46 | [-22.04, 26.91] |
| **Publication Status (B)** | | | | | |
| Unpublished vs. Published | -.05 | .06 | -.78 | 19.88 | [-.17, .08] |
| **Behavioral Engagement Subtypes (B)** | | | | | |
| Participatory vs. Effortful | .10\* | .05 | 2.10 | 40.85 | [.00, .19] |
| **Geographical Region (B)** | | | | | |
| Europe/Australia vs. US/Canada | .03 | .06 | .47 | 37.80 | [-.09, .14] |
| Asia vs. US/Canada | -.01 | .05 | -.20 | 23.37 | [-.11, .09] |
| **Age (B)** | .01 | .01 | 1.00 | 26.00 | [-.01, .03] |
| **Sex (B)**a | .14 | .15 | .92 | 3.51 | [-.30, .57] |
| **Informant Source of Engagement (B)** | | | | | |
| Teacher-Reported vs. Self-Reported | .22\*\* | .07 | 3.09 | 20.58 | [.07, .38] |
| **Subject Specificity of Engagement (B)** | | | | | |
| General vs. Subject-Specific | .00 | .05 | -.02 | 14.61 | [-.11, .11] |
| **Subject of Achievement Measure** | | | | | |
| Language & Humanities vs. General (B) | -.07 | .07 | -.88 | 11.35 | [-.23, .10] |
| Language & Humanities vs. General (W) | -.20 | .09 | -2.36 | 5.60 | [-.41, .01] |
| Math & Science vs. General (B) | .03 | .06 | .52 | 17.12 | [-.09, .16] |
| Math & Science vs. General (W) | -.21\* | .08 | -2.72 | 5.12 | [-.41, -.01] |
| **Type of Achievement Measure (B)** | | | | | |
| School Grades (Other) vs. Standardized Test | .21\*\*\* | .05 | 4.51 | 27.33 | [.12, .31] |
| School Grades (Self) vs. Standardized Test | .13 | .07 | 1.80 | 25.55 | [-.02, .27] |
| **Time Lag in Measurement (B)** | | | | | |
| Different vs. Same Year | -.03 | .09 | -.37 | 10.67 | [-.23, .16] |
| *Note*. All moderators were entered simultaneously in each model. For categorical moderators, the second variable in each comparison is the reference group (e.g., in unpublished vs. published, published is the reference group in the dummy coding). Results were based on 79 studies involving 85 distinct samples and 198 effect sizes.  (B) = Between-study effects, (W) = Within-study effects.  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | |

**Table S12**

*Comparison between Effortful Engagement and Effortful Disengagement*

| **Variable** | ***j*** | ***k*** | ***l*** | ***df*** | ***r*** | **95% CI of *r*** | ***τ*2** | ***Moderation*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Effortful Engagement | 6 | 6 | 12 | 5.00 | .35\*\* | [.15, .59] | .04 | ns |
| Effortful Disengagement | 6 | 6 | 10 | 4.97 | -.35\*\*\* | [-.45, -.25] | .01 |
| *Note*. Analyses were based on six studies that measured and analyzed the correlations for effortful engagement and disengagement using Skinner et al.’s (2009) instrument. Meta-regression with RVE (correlated effects) was performed. The correlation coefficients (*r*) presented in the table were corrected from measurement errors and converted from Fisher’s *z* to *r* after the meta-analysis. Within-study comparison indicated that the effect sizes for effortful engagement and disengagement was not statistically different.  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity | | | | | | | | |

**Table S13**

*Syntheses of the Correlation between Cognitive Engagement and Academic Achievement*

| **Variable** | ***j*** | ***k*** | ***l*** | ***df*** | ***r*** | **95% CI of *r*** | ***τ*2** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Overall Correlation** | 58 | 61 | 132 | 59.70 | .31\*\*\* | [.26, .36] | .03 |
| **Publication Status** | | | | | | | |
| Published | 47 | 49 | 108 | 47.80 | .31\*\*\* | [.26, .37] | .03 |
| Unpublished | 11 | 12 | 24 | 10.90 | .28\*\*\* | [.15, .39] | .03 |
| **Cognitive Engagement Subtypes** | | | | | | | |
| Motivational | 25 | 25 | 66 | 23.90 | .32\*\*\* | [.22, .40] | .04 |
| Self-Regulatory | 31 | 34 | 64 | 32.80 | .30\*\*\* | [.24, .36] | .03 |
| Effortfula | 2 | 2 | 2 | 1.00 | .26 | [-.90, .97] | .04 |
| **Geographical Region** | | | | | | | |
| US/ Canada | 23 | 23 | 66 | 21.80 | .25\*\*\* | [.17, .32] | .03 |
| Europe/ Australia | 21 | 22 | 39 | 20.90 | .34\*\*\* | [.24, .42] | .03 |
| Asia | 11 | 12 | 21 | 11.00 | .39\*\*\* | [.27, .50] | .07 |
| **Informant Source of Engagement** | | | | | | | |
| Self-Reported | 57 | 60 | 126 | 58.70 | .31\*\*\* | [.26, .35] | .03 |
| Teacher-Reporteda | 3 | 3 | 6 | 1.99 | .48\* | [.00, .78] | .04 |
| **Subject Specificity of Engagement** | | | | | | | |
| General | 43 | 45 | 103 | 43.70 | .29\*\*\* | [.24, .34] | .03 |
| Subject-Specific | 15 | 16 | 29 | 15.00 | .36\*\*\* | [.24, .46] | .05 |
| **Subject of Achievement Measure** | | | | | | | |
| General | 38 | 39 | 68 | 37.80 | .32\*\*\* | [.27, .38] | .02 |
| Language & Humanities | 14 | 15 | 24 | 13.90 | .21\*\*\* | [.11, .31] | .03 |
| Math & Science | 21 | 23 | 40 | 21.90 | .28\*\*\* | [.18, .37] | .04 |
| **Type of Achievement Measure** | | | | | | | |
| Standardized Test | 16 | 16 | 40 | 14.90 | .17\*\* | [.07, .26] | .03 |
| School Grades (Other) | 36 | 38 | 70 | 36.80 | .35\*\*\* | [.28, .41] | .03 |
| School Grades (Self) | 13 | 14 | 22 | 13.00 | .31\*\*\* | [.21, .39] | .02 |
| **Time Lag in Measurement** | | | | | | | |
| Same-Year Associations | 58 | 61 | 116 | 59.70 | .31\*\*\* | [.26, .36] | .03 |
| Different-Year Associations | 8 | 8 | 16 | 6.98 | .20\* | [.07, .34] | .02 |
| *Note*. Analyses were performed using meta-regression with RVE (correlated effects) random-effects model. The correlation coefficients (*r*) presented in the table were corrected from measurement errors and converted from Fisher’s *z* to *r* after the meta-analysis. Note that only categorical moderators are displayed as this table reports the synthesized correlations at each level of the categorical moderator variables.  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | |

**Table S14**

*Univariate Moderation Analyses on the Relation between Cognitive Engagement and Academic Achievement*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance** | | | | | | | | |
| Variance (B) | 58 | 61 | 132 | 31.21\* | 14.01 | 2.23 | 12.81 | [.91, 61.51] |
| Variance (W)a | -334.93 | 161.22 | -2.08 | 2.75 | [-875.40, 205.54] |
| **Publication Status (B)** | | | | | | | | |
| Unpublished vs. Published | 58 | 61 | 132 | -.04 | .07 | -.63 | 16.30 | [-.18, .10] |
| **Cognitive Engagement Subtypes (B)** | | | | | | | | |
| Motivational vs. Self-Regulatory | 56 | 59 | 130 | .01 | .06 | .20 | 51.80 | [-.11, .13] |
| **Geographical Region (B)** | | | | | | | | |
| Europe/Australia vs. US/Canada | 55 | 57 | 126 | .10 | .06 | 1.59 | 42.80 | [-.03, .23] |
| Asia vs. US/Canada | .16\* | .07 | 2.13 | 22.50 | [.00, .31] |
| **Age (B)** | 58 | 61 | 132 | .03\* | .02 | 2.07 | 25.90 | [.00, .07] |
| **Sex (B)** | 54 | 56 | 123 | -.61 | .48 | -1.27 | 9.41 | [-1.70, .47] |
| **Race & Ethnicity (B)**b | 18 | 18 | 56 | .06 | .17 | .37 | 8.50 | [-.33, .46] |
| **SES (B)**b | 11 | 11 | 34 | .36 | .31 | 1.18 | 4.39 | [-.46, 1.19] |
| **Informant Source of Engagement** | | | | | | | | |
| Teacher-Reported vs. Self-Reported (B)a | 58 | 61 | 132 | .15 | .21 | .73 | 1.66 | [-.95, 1.25] |
| Teacher-Reported vs. Self-Reported (W)a | .18 | .07 | 2.49 | 1.00 | [-.72, 1.07] |
| **Subject Specificity of Engagement (B)** | | | | | | | | |
| General vs. Subject-Specific | 58 | 61 | 132 | -.07 | .07 | -1.08 | 26.20 | [-.21, .07] |
| **Subject of Achievement Measure** | | | | | | | | |
| Language & Humanities vs. General (B) | 58 | 61 | 132 | -.20\* | .09 | -2.40 | 9.48 | [-.40, -.01] |
| Language & Humanities vs. General (W) | -.10\* | .03 | -3.62 | 5.80 | [-.16, -.03] |
| Math & Science vs. General (B) | .01 | .08 | .17 | 25.87 | [-.14, .17] |
| Math & Science vs. General (W) | -.13\*\* | .02 | -5.66 | 5.21 | [-.19, -.07] |

**Table S14 (continued)**

*Univariate Moderation Analyses on the Relation between Cognitive Engagement and Academic Achievement*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Type of Achievement Measure** | | | | | | | | |
| School Grades (Other) vs. Standardized Test (B) | 58 | 61 | 132 | .19\*\* | .06 | 3.10 | 21.54 | [.06, .31] |
| School Grades (Other) vs. Standardized Test (W) | .12\*\* | .03 | 4.44 | 4.52 | [.05, .19] |
| School Grades (Self) vs. Standardized Test (B) | .15\* | .07 | 2.27 | 23.30 | [.01, .29] |
| School Grades (Self) vs. Standardized Test (W)a | .12 | .02 | 7.30 | 1.12 | [-.04, .28] |
| **Time Lag in Measurement** | | | | | | | | |
| Different vs. Same Year (B) | 58 | 61 | 132 | -.26 | .13 | -1.94 | 8.09 | [-.56, .05] |
| Different vs. Same Year (W) | -.03 | .02 | -1.71 | 6.97 | [-.08, .01] |
| *Note*. Moderation analysis was conducted separately for each moderator. For categorical moderators, the second variable in each comparison is the reference group (e.g., in unpublished vs. published, published is the reference group in the dummy coding).  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, (B) = Between-study effects, (W) = Within-study effects  aResults are not reliable as the Satterthwaite *df* is less than 4.  bOnly studies from the United States were included.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | | |

**Table S15**

*Syntheses of the Correlation between Affective Engagement and Subjective Well-Being*

| **Variable** | ***j*** | ***k*** | ***l*** | ***df*** | ***r*** | **95% CI of *r*** | ***τ*2** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Overall Correlation** | 14 | 14 | 57 | 13.00 | .40\*\*\* | [.34, .47] | .04 |
| **Publication Status** | | | | | | | |
| Published | 13 | 13 | 51 | 12.00 | .40\*\*\* | [.33, .47] | .04 |
| Unpublisheda | 1 | 1 | 6 | 1.00 | .40 | [.40, .40] | 0 |
| **Affective Engagement Subtypes** | | | | | | | |
| Relationala | 5 | 5 | 27 | 3.99 | .43\*\*\* | [.33, .51] | .02 |
| Affective-School | 6 | 6 | 23 | 4.99 | .47\*\*\* | [.36, .56] | .02 |
| Affective-Learninga | 4 | 4 | 7 | 3.00 | .28\*\* | [.16, .39] | .07 |
| **Geographical Region** | | | | | | | |
| US/ Canadaa | 5 | 5 | 28 | 3.99 | .43\*\*\* | [.33, .52] | .02 |
| Europe/ Australiaa | 3 | 3 | 5 | 1.99 | .45\* | [.07, .71] | .04 |
| Asia | 5 | 5 | 22 | 4.00 | .38\*\* | [.18, .54] | .04 |
| **Life Domain of SWB** | | | | | | | |
| General | 11 | 11 | 29 | 9.99 | .41\*\*\* | [.33, .49] | .05 |
| School Domain | 5 | 5 | 16 | 4.00 | .45\*\* | [.27, .59] | .06 |
| Other Domainsa | 3 | 3 | 12 | 1.99 | .42\* | [.04, .69] | .02 |
| **Component of SWB** | | | | | | | |
| Positive Affect | 8 | 8 | 12 | 6.95 | .42\*\*\* | [.34, .50] | .01 |
| Negative Affect | 7 | 7 | 11 | 5.98 | -.22\*\* | [-.33, -.10] | .02 |
| Life Satisfaction | 9 | 9 | 33 | 7.96 | .48\*\*\* | [.42, .54] | .01 |
| Overall | 1 | 1 | 1 | - | - | - | - |
| **Time Lag in Measurement** | | | | | | | |
| Same-Year Associations | 14 | 14 | 54 | 13.00 | .41\*\*\* | [.34, .47] | .04 |
| Different-Year Associations | 1 | 1 | 3 | - | - | - | - |
| *Note*. Analyses were performed using meta-regression with RVE (correlated effects) random-effects model. The correlation coefficients (*r*) presented in the table were corrected from measurement errors and converted from Fisher’s *z* to *r* after the meta-analysis. Note that only categorical moderators are displayed as this table reports the synthesized correlations at each level of the categorical moderator variables.  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | |

**Table S16**

*Univariate Moderation Analyses on the Relation between Affective Engagement and Subjective Well-Being*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance (B)**a | 14 | 14 | 57 | -13.05 | 15.18 | -.86 | 2.85 | [-62.85, 36.74] |
| **Affective Engagement Subtypes (B)** | | | | | | | | |
| Affective-School vs. Relational | 14 | 14 | 57 | .05 | .08 | .66 | 7.51 | [-.13, .23] |
| Affective-Learning vs. Relational | -.17\* | .06 | -2.83 | 6.56 | [-.31, -.03] |
| **Geographical Region (B)** | | | | | | | | |
| Europe/Australia vs. US/Canada | 13 | 13 | 55 | .02 | .10 | .20 | 4.31 | [-.26, .30] |
| Asia vs. US/Canada | -.06 | .09 | -.72 | 7.99 | [-.26, .14] |
| **Age (B)** | 14 | 14 | 57 | .04 | .03 | 1.19 | 5.18 | [-.04, .11] |
| **Sex (B)** | 13 | 13 | 53 | -.48 | .76 | -.63 | 4.02 | [-2.60, 1.63] |
| **Race & Ethnicity (B)**ab | 5 | 5 | 28 | .12 | .23 | .53 | 1.57 | [-1.18, 1.42] |
| **SES (B)**ab | 5 | 5 | 28 | .18 | .16 | 1.17 | 2.14 | [-.45, .82] |
| **Life Domain of SWB** | | | | | | | | |
| School Domain vs. General (B) a | 14 | 14 | 57 | -.01 | .06 | -.17 | 3.02 | [-.22, .19] |
| School Domain vs. General (W)a | -.02 | .11 | -.21 | 1.68 | [-.58, .54] |
| Other Domains vs. General (B)a | .11 | .11 | .99 | 2.36 | [-.30, .52] |
| Other Domains vs. General (W)a | -.18 | .09 | -1.88 | 1.20 | [-.99, .64] |
| **Component of SWB (W)** | | | | | | | | |
| Positive Affect vs. Life Satisfactiona | 13 | 13 | 56 | -.03 | .03 | -.94 | 3.56 | [-.11, .06] |
| Negative Affect vs. Life Satisfactiona | -.30\*\* | .04 | -8.20 | 3.56 | [-.41, -.20] |
| *Note*. Moderation analysis was conducted separately for each moderator. For categorical moderators, the second variable in each comparison is the reference group (e.g., in Positive Affect vs. Life Satisfaction, Life Satisfaction is the reference group in the dummy coding).  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  bOnly studies from the United States were included.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | | |

**Table S17**

*Syntheses of the Correlation between Behavioral Engagement and Subjective Well-Being*

| **Variable** | ***j*** | ***k*** | ***l*** | ***df*** | ***r*** | **95% CI of *r*** | ***τ*2** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Overall Correlation** | 16 | 16 | 51 | 14.90 | .31\*\*\* | [.25, .38] | .04 |
| **Publication Status** | | | | | | | |
| Published | 15 | 15 | 49 | 13.90 | .32\*\*\* | [.24, .39] | .04 |
| Unpublisheda | 1 | 1 | 2 | - | .27 | - | - |
| **Behavioral Engagement Subtypes** | | | | | | | |
| Participatory | 10 | 10 | 33 | 8.99 | .36\*\*\* | [.28, .45] | .04 |
| Effortful | 7 | 7 | 18 | 5.89 | .23\*\*\* | [.16, .30] | .02 |
| **Geographical Region** | | | | | | | |
| US/ Canadaa | 5 | 5 | 8 | 3.96 | .29\*\* | [.20, .38] | .01 |
| Europe/ Australiaa | 4 | 4 | 9 | 2.90 | .31\* | [.09, .50] | .02 |
| Asia | 6 | 6 | 32 | 5.00 | .35\*\* | [.17, .51] | .06 |
| **Life Domain SWB** | | | | | | | |
| General | 11 | 11 | 19 | 9.96 | .30\*\*\* | [.21, .38] | .02 |
| School Domain | 8 | 8 | 16 | 6.96 | .43\*\*\* | [.30, .54] | .04 |
| Other Domainsa | 3 | 3 | 16 | 2.00 | .31 | [-.04, .59] | .04 |
| **Component of SWB** | | | | | | | |
| Positive Affect | 8 | 8 | 9 | 6.87 | .25\*\*\* | [.15, .34] | .02 |
| Negative Affect | 7 | 7 | 8 | 5.81 | -.24\*\* | [-.34, -.12] | .01 |
| Life Satisfaction | 10 | 10 | 30 | 8.99 | .35\*\*\* | [.28, .42] | .03 |
| Overalla | 2 | 2 | 4 | 1.00 | .37 | [-1.00, 1.00] | .18 |
| **Time Lag in Measurement** | | | | | | | |
| Same-Year Associations | 16 | 16 | 50 | 14.90 | .32\*\*\* | [.24, .39] | .04 |
| Different-Year Associations | 1 | 1 | 1 | - | - | - | - |
| *Note*. Analyses were performed using meta-regression with RVE (correlated effects) random-effects model. The correlation coefficients (*r*) presented in the table were corrected from measurement errors and converted from Fisher’s *z* to *r* after the meta-analysis. Note that only categorical moderators are displayed as this table reports the synthesized correlations at each level of the categorical moderator variables.  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | |

**Table S18**

*Univariate Moderation Analyses on the Relation between Behavioral Engagement and Subjective Well-Being*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance (B)**a | 16 | 16 | 51 | -2.51 | 15.50 | -.16 | 1.79 | [-77.42, 72.39] |
| **Behavioral Engagement Subtypes (B)** | | | | | | | | |
| Participatory vs. Effortful | 16 | 16 | 51 | .14\* | .06 | 2.32 | 10.91 | [.01, .27] |
| **Geographical Region (B)** | | | | | | | | |
| Europe/Australia vs. US/Canada | 15 | 15 | 49 | .01 | .08 | .15 | 6.40 | [-.18, .20] |
| Asia vs. US/Canada | .06 | .08 | .73 | 8.62 | [-.13, .25] |
| **Age (B)** | 16 | 16 | 51 | -.04 | .03 | -1.60 | 4.14 | [-.11, .03] |
| **Sex (B)** | 15 | 15 | 46 | .86 | .59 | 1.47 | 3.10 | [-.97, 2.69] |
| **Race & Ethnicity (B)**ab | 5 | 5 | 8 | .01 | .12 | .12 | 2.17 | [-.45, .48] |
| **SES (B)**ab | 4 | 4 | 7 | .12 | .30 | .40 | 1.40 | [-1.90, 2.14] |
| **Life Domain of SWB** | | | | | | | | |
| School Domain vs. General (B) | 16 | 16 | 51 | .16 | .09 | 1.76 | 7.28 | [-.05, .38] |
| School Domain vs. General (W)a | -.04 | .16 | -.22 | 2.04 | [-.71, .64] |
| Other Domains vs. General (B)a | .18 | .12 | 1.53 | 2.58 | [-.23, .58] |
| Other Domains vs. General (W)a | -.21 | .14 | -1.48 | 1.92 | [-.84, .42] |
| **Component of SWB (W)** | | | | | | | | |
| Positive Affect vs. Life Satisfactiona | 14 | 14 | 47 | -.12 | .05 | -2.30 | 3.57 | [-.27, .03] |
| Negative Affect vs. Life Satisfactiona | -.18\*\* | .03 | -5.59 | 3.57 | [-.27, -.08] |
| *Note*. Moderation analysis was conducted separately for each moderator. For categorical moderators, the second variable in each comparison is the reference group (e.g., in Positive Affect vs. Life Satisfaction, Life Satisfaction is the reference group in the dummy coding).  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  bOnly studies from the United States were included.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | | |

**Table S19**

*Syntheses of the Correlation between Cognitive Engagement and Subjective Well-Being*

| **Variable** | ***j*** | ***k*** | ***l*** | ***df*** | ***r*** | **95% CI of *r*** | ***τ*2** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Overall Correlation** | 13 | 13 | 50 | 12.00 | .35\*\*\* | [.26, .43] | .06 |
| **Publication Status** | | | | | | | |
| Published | 12 | 12 | 46 | 11.00 | .35\*\*\* | [.25, .44] | .07 |
| Unpublisheda | 1 | 1 | 4 | 1.00 | .37 | [.37, .37] | - |
| **Cognitive Engagement Subtypes** | | | | | | | |
| Motivational | 6 | 6 | 21 | 4.99 | .40\*\*\* | [.31, .48] | .02 |
| Self-Regulatory | 8 | 8 | 29 | 7.00 | .30\*\* | [.16, .43] | .08 |
| **Geographical Region** | | | | | | | |
| US/ Canadaa | 5 | 5 | 21 | 3.99 | .38\*\*\* | [.28, .47] | .02 |
| Europe/ Australiaa | 3 | 3 | 5 | 2.00 | .28 | [-.27, .70] | .07 |
| Asiaa | 4 | 4 | 22 | 3.00 | .41\* | [.18, .60] | .07 |
| **Life Domain of SWB** | | | | | | | |
| General | 9 | 9 | 22 | 7.99 | .33\*\*\* | [.21, .44] | .05 |
| School Domain | 7 | 7 | 16 | 6.00 | .42\*\* | [.26, .56] | .08 |
| Other Domainsa | 3 | 3 | 12 | 2.00 | .34 | [-.03, .63] | .04 |
| **Component of SWB** | | | | | | | |
| Positive Affect | 6 | 6 | 8 | 4.96 | .38\*\*\* | [.28, .48] | .01 |
| Negative Affect | 6 | 6 | 8 | 4.98 | -.12 | [-.25, .02] | .01 |
| Life Satisfaction | 8 | 8 | 30 | 6.99 | .39\*\*\* | [.29, .48] | .04 |
| Overalla | 2 | 2 | 4 | 1.00 | .34 | [-.98, .99] | .13 |
| **Time Lag in Measurement** | | | | | | | |
| Same-Year Associations | 13 | 13 | 46 | 12.00 | .36\*\*\* | [.26, .46] | .07 |
| Different-Year Associations | 2 | 2 | 4 | 1.00 | .44\*\* | [.38, .49] | .01 |
| *Note*. Analyses were performed using meta-regression with RVE (correlated effects) random-effects model. The correlation coefficients (*r*) presented in the table were corrected from measurement errors and converted from Fisher’s *z* to *r* after the meta-analysis. Note that only categorical moderators are displayed as this table reports the synthesized correlations at each level of the categorical moderator variables.  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | |

**Table S20**

*Univariate Moderation Analyses on the Relation between Cognitive Engagement and Subjective Well-Being*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Moderator** | ***j*** | ***k*** | ***l*** | ***b*** | ***SE*** | ***t*** | ***df*** | **95% CI** |
| **Sampling Variance (B)**a | 13 | 13 | 50 | -23.35 | 28.35 | -.82 | 2.81 | [-117.07, 70.36] |
| **Cognitive Engagement Subtypes (B)** | | | | | | | | |
| Motivational vs. Self-Regulatory | 13 | 13 | 50 | .12 | .08 | 1.41 | 10.00 | [-.07, .31] |
| **Geographical Region (B)** | | | | | | | | |
| Europe/Australia vs. US/Canada | 12 | 12 | 48 | -.10 | .14 | -.75 | 4.32 | [-.48, .27] |
| Asia vs. US/Canada | .04 | .09 | .44 | 6.60 | [-.18, .26] |
| **Age (B)**a | 13 | 13 | 50 | -.03 | .03 | -.79 | 2.75 | [-.14, .08] |
| **Sex (B)** | 12 | 12 | 45 | .00 | .85 | .00 | 4.61 | [-2.25, 2.24] |
| **Race & Ethnicity (B)**ab | 5 | 5 | 21 | -.15 | .25 | -.58 | 1.57 | [-1.57, 1.28] |
| **SES (B)**ab | 5 | 5 | 21 | -.07 | .24 | -.31 | 2.13 | [-1.03, .88] |
| **Life Domain of SWB** | | | | | | | | |
| School Domain vs. General (B) | 13 | 13 | 50 | .13 | .10 | 1.39 | 5.57 | [-.11, .37] |
| School Domain vs. General (W)a | -.03 | .10 | -.29 | 2.05 | [-.46, .40] |
| Other Domains vs. General (B)a | .14 | .18 | .78 | 2.81 | [-.46, .75] |
| Other Domains vs. General (W)a | -.15 | .10 | -1.57 | 1.92 | [-.58, .28] |
| **Component of SWB (W)** | | | | | | | | |
| Positive Affect vs. Life Satisfactiona | 11 | 11 | 46 | .03 | .03 | .84 | 2.38 | [-.09, .14] |
| Negative Affect vs. Life Satisfactiona | -.25\*\* | .02 | -13.95 | 2.38 | [-.32, -.19] |
| *Note*. Moderation analysis was conducted separately for each moderator. For categorical moderators, the second variable in each comparison is the reference group (e.g., in Positive Affect vs. Life Satisfaction, Life Satisfaction is the reference group in the dummy coding).  *j* = number of studies, *k* = number of independent samples, *l* = number of effect sizes, *τ*2 = measure of heterogeneity  aResults are not reliable as the Satterthwaite *df* is less than 4.  bOnly studies from the United States were included.  \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001 | | | | | | | | |

# **Figure S1**

*Interaction between Informant Source of Engagement and Type of Achievement Measure in the Association between Behavioral Engagement and Academic Achievement*

# **References**

1. Al-Alwan, A. F. (2014). Modeling the relations among parental involvement, school engagement and academic performance of high school students. *International Education Studies, 7*(4), 47-56.
2. Alverson, J. R. (2014). *A model of hopelessness, belongingness, engagement, and academic achievement* (Publication No. 3620050) [Doctoral dissertation, The University of Alabama]. ProQuest Dissertations Publishing.
3. Anagurthi, C. (2017). *Applying an ecological model to predict adolescent academic achievement* (Publication No. 10257579) [Doctoral dissertation, Wayne State University]. ProQuest Dissertations Publishing.
4. Archambault, I., Janosz, M., & Chouinard, R. (2012). Teacher beliefs as predictors of adolescents’ cognitive engagement and achievement in mathematics. *The Journal of Educational Research, 105*(5), 319–328. <https://doi.org/10.1080/00220671.2011.629694>
5. Archambault, I., Pagani, L. S., & Fitzpatrick, C. (2013). Transactional associations between classroom engagement and relations with teachers from first through fourth grade. *Learning and Instruction, 23*, 1–9. <https://doi.org/10.1016/j.learninstruc.2012.09.003>
6. Awang-Hashim, R., Kaur, A., & Noman, M. (2015). The interplay of socio-psychological factors on school engagement among early adolescents. *Journal of Adolescence, 45*, 214–224. <https://doi.org/10.1016/j.adolescence.2015.10.001>
7. Bliss, S. (2011). *Positive affect, coping, and student engagement in early adolescence* (Publication No. 3489663) [Doctoral dissertation, University of South Carolina]. ProQuest Dissertations Publishing.
8. Bradley, T. L. (2013). *Student engagement and reading competence: Important connections and the moderating role of parent support* (Publication No. 3586693) [Doctoral dissertation, The University of Memphis]. ProQuest Dissertations Publishing.
9. Bryce, C. I., Goble, P., Swanson, J., Fabes, R. A., Hanish, L. D., & Martin, C. L. (2018). Kindergarten school engagement: Linking early temperament and academic achievement at the transition to school. *Early Education and Development, 29*(5), 780–796. <https://doi.org/10.1080/10409289.2017.1404275>
10. Burrows, P. L. (2010). *An examination of the relationship among affective, cognitive, behavioral, and academic factors of student engagement of 9th grade students* (Publication No. 3420338) [Doctoral dissertation, University of Oregon]. ProQuest Dissertations Publishing.
11. Chase, P. A., Hilliard, L. J., John Geldhof, G., Warren, D. J. A., & Lerner, R. M. (2014). Academic achievement in the high school years: The changing role of school engagement. *Journal of Youth and Adolescence, 43*(6), 884–896. <https://doi.org/10.1007/s10964-013-0085-4>
12. Chen, Q., Hughes, J. N., Liew, J., & Kwok, O.-M. (2010). Joint contributions of peer acceptance and peer academic reputation to achievement in academically at-risk children: Mediating processes. *Journal of Applied Developmental Psychology, 31*(6), 448–459. <https://doi.org/10.1016/j.appdev.2010.09.001>
13. Cho, E., Toste, J. R., Lee, M., & Ju, U. (2019). Motivational predictors of struggling readers’ reading comprehension: The effects of mindset, achievement goals, and engagement. *Reading and Writing: An Interdisciplinary Journal, 32*(5), 1219–1242. <https://doi.org/10.1007/s11145-018-9908-8>
14. Darensbourg, A. M., & Blake, J. J. (2014). Examining the academic achievement of black adolescents: Importance of peer and parental influences. *Journal of Black Psychology, 40*(2), 191-212. <https://doi.org/10.1177/0095798413481384>
15. Datu, J. A. D., Valdez, J. P., Cabrera, I. K., & Salanga, M. G. (2017). Subjective happiness optimizes educational outcomes: Evidence from Filipino high school students. *The Spanish Journal of Psychology, 20*, Article E60. <https://doi.org/10.1017/sjp.2017.55>
16. Datu, J. A. D. (2018). Flourishing is associated with higher academic achievement and engagement in Filipino undergraduate and high school students. *Journal of Happiness Studies, 19*, 27-39. <https://doi.org/10.1007/s10902-016-9805-2>
17. Dickensen, P. A. (2009). *Goal orientation of Latino English language: The relationship between students' engagement, achievement and teachers' instructional practices in mathematics* (Publication No. 3368513) [Doctoral dissertation, University of Southern California]. ProQuest Dissertations Publishing.
18. Dogan, U. (2015). Student engagement, academic self-efficacy, and academic motivation as predictors of academic performance. *The Anthropologist, 20*(3), 553-561. <https://doi.org/10.1080/09720073.2015.11891759>
19. Dotterer, A. M., & Lowe, K. (2011). Classroom context, school engagement, and academic achievement in early adolescence. *Journal of Youth and Adolescence, 40*(12), 1649–1660. <https://doi.org/10.1007/s10964-011-9647-5>
20. Dotterer, A. M., & Wehrspann, E. (2016). Parent involvement and academic outcomes among urban adolescents: Examining the role of school engagement. *Educational Psychology, 36*(4), 812-830. <https://doi.org/10.1080/01443410.2015.1099617>
21. Dunkle, J. B. (2009). *Peer victimization, student engagement, and school attendance: Structural equation models* (Publication No. 3366162) [Doctoral dissertation, University of Denver]. ProQuest Dissertations Publishing.
22. Engels, M. C., Pakarinen, E., Lerkkanen, M.-K., & Verschueren, K. (2019). Students' academic and emotional adjustment during the transition from primary to secondary school: A cross-lagged study. *Journal of School Psychology, 76*, 140–158. <https://doi.org/10.1016/j.jsp.2019.07.012>
23. Fall, A.-M., & Roberts, G. (2012). High school dropouts: Interactions between social context, self-perceptions, school engagement, and student dropout. *Journal of Adolescence, 35*(4), 787–798. <https://doi.org/10.1016/j.adolescence.2011.11.004>
24. Fallon, C. M. (2010). *School factors that promote academic resilience in urban Latino high school students* (Publication No. 3419908) [Doctoral dissertation, Loyola University Chicago]. ProQuest Dissertations Publishing.
25. Fernández, A. R., Revuelta, L. R., Maya, M. S., & Lasarte, O. F. (2018). The role of parental socialization styles in school engagement and academic performance. *European Journal of Education and Psychology, 11*(2), 123–139.
26. Finn, J. D., & Zimmer, K. S. (2012). Student engagement: What is it? Why does it matter? In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds*.), Handbook of research on student engagement* (pp. 97-131). Springer. <https://doi.org/10.1007/978-1-4614-2018-7_5>
27. Froiland, J. M., & Worrell, F. C. (2016). Intrinsic motivation, learning goals, engagement, and achievement in a diverse high school. *Psychology in the Schools, 53*(3), 321–336. <https://doi.org/10.1002/pits.21901>
28. Frontier, A. C. (2007). *What is the relationship between student engagement and student achievement? A quantitative analysis of middle school students’ perceptions of their emotional, behavioral, and cognitive engagement as related to their performance on local and state measures of achievement* (Publication No. 3293073). [Doctoral dissertation, Cardinal Stritch University]. ProQuest Dissertations Publishing.
29. Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95*(1), 148–162. <https://doi.org/10.1037/0022-0663.95.1.148>
30. Galla, B. M., Wood, J. J., Tsukayama, E., Har, K., Chiu, A. W., & Langer, D. A. (2014). A longitudinal multilevel model analysis of the within-person and between-person effect of effortful engagement and academic self-efficacy on academic performance. *Journal of School Psychology, 52*(3), 295–308. <https://doi.org/10.1016/j.jsp.2014.04.001>
31. González, A., & Paoloni, P. V. (2014). Self-determination, behavioral engagement, disaffection, and academic performance: A mediational analysis. *The Spanish Journal of Psychology, 17*, e82. <https://doi.org/10.1017/sjp.2014.82>
32. Green, J., Liem, G. A. D., Martin, A. J., Colmar, S., Marsh, H. W., & McInerney, D. (2012). Academic motivation, self-concept, engagement, and performance in high school: Key processes from a longitudinal perspective. *Journal of Adolescence, 35*(5), 1111–1122. <https://doi.org/10.1016/j.adolescence.2012.02.016>
33. Greene, B. A., Miller, R. B., Crowson, H. M., Duke, B. L., & Akey, K. L. (2004). Predicting high school students' cognitive engagement and achievement: Contributions of classroom perceptions and motivation. *Contemporary Educational Psychology, 29*(4), 462–482. <https://doi.org/10.1016/j.cedpsych.2004.01.006>
34. Griffin, C. B., Cooper, S. M., Metzger, I. W., Golden, A. R., & White, C. N. (2017). School racial climate and the academic achievement of African American high school students: The mediating role of school engagement. *Psychology in the Schools, 54*(7), 673–688. <https://doi.org/10.1002/pits.22026>
35. Guo, J., Nagengast, B., Marsh, H. W., Kelava, A., Gaspard, H., Brandt, H., Cambria, J., Flunger, B., Dicke, A., Häfner, I., Brisson, B., & Trautwein, U. (2016). Probing the unique contributions of self-concept, task values, and their interactions using multiple value facets and multiple academic outcomes. *AERA Open, 2*(1), 1-20. <https://doi.org/10.1177/2332858415626884>
36. Hakimzadeh, R., Besharat, M., Khaleghinezhad, S. A., & Jahromi, R. G. (2016). Peers' perceived support, student engagement in academic activities and life satisfaction: A structural equation modeling approach. *School Psychology International, 37*(3), 240-254. <https://doi.org/10.1177/0143034316630020>
37. Hanin, V., & Van Nieuwenhoven, C. (2016). The influence of motivational and emotional factors in mathematical learning in secondary education. *European Review of Applied Psychology / Revue Européenne de Psychologie Appliquée, 66*(3), 127–138. <https://doi.org/10.1016/j.erap.2016.04.006>
38. Hart, S. R. (2011). *Examining the Psychometric Properties of Two International Student Engagement Forms* (Publication No. 3456149). [Doctoral dissertation, University of California]. ProQuest Dissertations Publishing.
39. Hayes, D., Blake, J. J., Darensbourg, A., & Castillo, L. G. (2015). Examining the academic achievement of Latino adolescents: The role of parent and peer beliefs and behaviors. *The Journal of Early Adolescence*, 35(2), 141-161. <https://doi.org/10.1177/0272431614530806>
40. Hazel, C. E., Vazirabadi, G. E., Albanes, J., & Gallagher, J. (2014). Evidence of convergent and discriminant validity of the Student School Engagement Measure. *Psychological Assessment, 26*(3), 806–814. <https://doi.org/10.1037/a0036277>
41. Heberlein Riley, W. (2003). *The relation between two models of how children's achievement -related beliefs affect academic task engagement and achievement* (Publication No. 3109307). [Doctoral dissertation, The Florida State University]. ProQuest Dissertations Publishing.
42. Heffner, A. L., & Antaramian, S. P. (2016). The role of life satisfaction in predicting student engagement and achievement. *Journal of Happiness Studies, 17*(4), 1681–1701. <https://doi.org/10.1007/s10902-015-9665-1>
43. Hoffman, A. S., Hamm, J. V., Lambert, K., & Meece, J. (2020). Peer-collaborator preferences of African American and White sixth-graders in mathematics classrooms. *Journal of Experimental Education, 88*(4), 559–577. <https://doi.org/10.1080/00220973.2019.1615857>
44. Holland, E. (2015). *Establishing normative benchmarks for on-task, off-task, and disruptive behaviors in early elementary classrooms* (Publication No. 3723999). [Doctoral dissertation, University of Washington]. ProQuest Dissertations Publishing.
45. Hornstra, L., Kamsteeg, A., Pot, S., & Verheij, L. (2018). A dual pathway of student motivation: Combining an implicit and explicit measure of student motivation. *Frontline Learning Research, 6*(1), 1-18.
46. Huebner, E. S., Antaramian, S. P., Hills, K. J., Lewis, A. D., & Saha, R. (2011). Stability and predictive validity of the Brief Multidimensional Students’ Life Satisfaction Scale. *Child Indicators Research, 4*, 161-168. <https://doi.org/10.1007/s12187-010-9082-2>
47. Hughes, K., & Coplan, R. J. (2010). Exploring processes linking shyness and academic achievement in childhood. *School Psychology Quarterly, 25*(4), 213–222. <https://doi.org/10.1037/a0022070>
48. Jelas, Z. M., Azman, N., Zulnaidi, H., & Ahmad, N. A. (2016). Learning support and academic achievement among Malaysian adolescents: The mediating role of student engagement. *Learning Environments Research, 19*(2), 221–240. <https://doi.org/10.1007/s10984-015-9202-5>
49. Kahraman, N. (2014). Cross-grade comparison of relationship between students’ engagement and TIMSS 2011 science achievement. *Education and Science, 39*(172). 95-107.
50. Kim, H. Y., & Suárez-Orozco, C. (2015). The language of learning: The academic engagement of newcomer immigrant youth. *Journal of Research on Adolescence, 25*(2), 229-245. <https://doi.org/10.1111/jora.12130>
51. King, R. B., & Datu, J. A. D. (2018). Grateful students are motivated, engaged, and successful in school: Cross-sectional, longitudinal, and experimental evidence. *Journal of School Psychology, 70*, 105–122. <https://doi.org/10.1016/j.jsp.2018.08.001>
52. King, R. B. (2016). Gender differences in motivation, engagement and achievement are related to students' perceptions of peer—but not of parent or teacher—attitudes toward school. *Learning and Individual Differences, 52*, 60–71. <https://doi.org/10.1016/j.lindif.2016.10.006>
53. Kwon, K., Hanrahan, A. R., & Kupzyk, K. A. (2017). Emotional expressivity and emotion regulation: Relation to academic functioning among elementary school children*. School Psychology Quarterly, 32*(1), 75–88. <https://doi.org/10.1037/spq0000166>
54. Ladd, G. W., & Dinella, L. M. (2009). Continuity and change in early school engagement: Predictive of children's achievement trajectories from first to eighth grade? *Journal of Educational Psychology, 101*(1), 190–206. <https://doi.org/10.1037/a0013153>
55. Lam, S.-f., Jimerson, S., Wong, B. P. H., Kikas, E., Shin, H., Veiga, F. H., Hatzichristou, C., Polychroni, F., Cefai, C., Negovan, V., Stanculescu, E., Yang, H., Liu, Y., Basnett, J., Duck, R., Farrell, P., Nelson, B., & Zollneritsch, J. (2014). Understanding and measuring student engagement in school: The results of an international study from 12 countries. *School Psychology Quarterly, 29*(2), 213–232. <https://doi.org/10.1037/spq0000057>
56. Lee, J.-S. (2014). The relationship between student engagement and academic performance: Is it a myth or reality? *The Journal of Educational Research, 107*(3), 177–185. <https://doi.org/10.1080/00220671.2013.807491>
57. Leon, J., Medina-Garrido, E., & Núñez, J. L. (2017). Teaching quality in math class: The development of a scale and the analysis of its relationship with engagement and achievement. *Frontiers in Psychology, 8*, Article 895. <https://doi.org/10.3389/fpsyg.2017.00895>
58. Leonard, S. H. (2008). *Measuring cognitive and psychological engagement in middle school students* (Publication No. 3351184). [Doctoral dissertation, University of South Dakota]. ProQuest Dissertations Publishing.
59. Leora, G., Nakamoto, J., Oh, Y. J., & Rueda, R. (2013). Factors that promote motivation and academic engagement in a career technical education context. *Career and Technical Education Research, 38*(3), 173-190. <https://doi.org/10.5328/cter38.3.173>
60. Lombardi, E., Traficante, D., Bettoni, R., Offredi, I., Giorgetti, M., & Vernice, M. (2019). The Impact of school climate on well-being experience and school engagement: A study with high-school students. *Frontiers in Psychology, 10*, Article 2482. <https://doi.org/10.3389/fpsyg.2019.02482>
61. Lovett, C. R. (2009). *Academic engagement in alternative education settings* (Publication No. 3379890). [Doctoral dissertation, The University of Oklahoma]. ProQuest Dissertations Publishing.
62. Lynch, S. C. (2003). *A proposed model of reading motivation for young children* (Publication No. 3121589). [Doctoral dissertation, University of California]. ProQuest Dissertations Publishing.
63. Martin, A. J., Nejad, H. G., Colmar, S., & Liem, G. A. D. (2013). Adaptability: How students’ responses to uncertainty and novelty predict their academic and non-academic outcomes. *Journal of Educational Psychology, 105*(3), 728–746. <https://doi.org/10.1037/a0032794>
64. Martin, M. (2012). *Situated academic engagement for immigrant origin males: Student centered studies of the relationship between sources of academic stress/support, academic engagement, and academic outcomes* (Publication No. 3511442). [Doctoral dissertation, New York University]. ProQuest Dissertations Publishing.
65. Mih, V., & Mih, C. (2013). Perceived autonomy-supportive teaching, academic self-perceptions and engagement in learning: Toward a process model of academic achievement. *Cognition, Brain, Behavior. An Interdisciplinary Journal, 17*(4), 289-313.
66. Mo, Y., & Singh, K. (2008). Parents’ relationships and involvement: Effects on students’ school engagement and performance. *RMLE Online, 31*(10), 1-11. <https://doi.org/10.1080/19404476.2008.11462053>
67. Moore, S. E. (2016). *The role of mathematics engagement as a mediator in the relationship among attribution for failure, mathematics self-efficacy, and mathematics performance* (Publication No. 10190641). [Doctoral dissertation, George Mason University]. ProQuest Dissertations Publishing.
68. Moreira, P. A. S., & Dias, M. A. (2019). Tests of factorial structure and measurement invariance for the Student Engagement Instrument: Evidence from middle and high school students. *International Journal of School & Educational Psychology, 7*(3), 174-186. <https://doi.org/10.1080/21683603.2017.1414004>
69. Motti-Stefanidi, F., Masten, A., & Asendorpf, J. B. (2015). School engagement trajectories of immigrant youth: Risks and longitudinal interplay with academic success. *International Journal of Behavioral Development, 39*(1), 32–42. <https://doi.org/10.1177/0165025414533428>
70. Newton-Curtis, L. M. (2015). *The peer network as a context for the socialization of academic engagement* (Publication No. 2652). [Doctoral dissertation, Portland State University]. Dissertations and Theses.
71. O'Neal, C. R., Boyars, M. Y., & Riley, L. W. (2019). Dual language learners' grit, engagement, and literacy achievement in elementary school. *School Psychology International, 40*(6), 598–623. <https://doi.org/10.1177/0143034319875176>
72. Olivier, E., Archambault, I., De Clercq, M., & Galand, B. (2019). Student self-efficacy, classroom engagement, and academic achievement: Comparing three theoretical frameworks. *Journal of Youth and Adolescence, 48*(2), 326–340. <https://doi.org/10.1007/s10964-018-0952-0>
73. Ozkal, N. (2019). Relationships between self-efficacy beliefs, engagement and academic performance in math lessons. *Cypriot Journal of Educational Science. 14*(2), 190-200.
74. Perry, J. C., Liu, X., & Pabian, Y. (2010). School engagement as a mediator of academic performance among urban youth: The role of career preparation, parental career support, and teacher support. *The Counseling Psychologist, 38*(2), 269–295. <https://doi.org/10.1177/0011000009349272>
75. Phan, H. P., Ngu, B. H., & Alrashidi, O. (2016). Role of student well-being: A study using structural equation modeling. *Psychological Reports, 119*(1), 77–105. <https://doi.org/10.1177/0033294116656819>
76. Pietarinen, J., Soini, T., & Pyhältö, K. (2014). Students’ emotional and cognitive engagement as the determinants of well-being and achievement in school. *International Journal of Educational Research, 67*, 40-51. <https://doi.org/10.1016/j.ijer.2014.05.001>
77. Ponitz, C. C., Rimm-Kaufman, S. E., Grimm, K. J., & Curby, T. W. (2009). Kindergarten classroom quality, behavioral engagement, and reading achievement. *School Psychology Review, 38*(1), 102–120.
78. Porcaro, J. (2017). *Examination of microsystem and intrapersonal variables associated with academic achievement in middle school* (Publication No. 10258289). [Doctoral dissertation, Wayne State University]. ProQuest Dissertations Publishing.
79. Putwain, D. W., Symes, W., & Wilkinson, H. M. (2017). Fear appeals, engagement, and examination performance: The role of challenge and threat appraisals. *British Journal of Educational Psychology, 87*(1), 16–31. <https://doi.org/10.1111/bjep.12132>
80. Putwain, D. W., Symes, W., Nicholson, L. J., & Becker, S. (2018). Achievement goals, behavioural engagement, and mathematics achievement: A mediational analysis. *Learning and Individual Differences, 68*, 12–19. <https://doi.org/10.1016/j.lindif.2018.09.006>
81. Ramos-Díaz, E., Rodríguez-Fernández, A., & Revuelta, L. (2016). Validation of the Spanish version of the School Engagement Measure (SEM). *The Spanish Journal of Psychology, 19*, Article E86. <https://doi.org/10.1017/sjp.2016.94>
82. Raval, V. V., Ward, R. M., Raval, P. H., & Trivedi, S. S. (2018). Reports of adolescent emotion regulation and school engagement mediating the relation between parenting and adolescent functioning in India. *International Journal of Psychology, 53*(6), 439–448. <https://doi.org/10.1002/ijop.12413>
83. Reeve, J., & Tseng, C.-M. (2011). Agency as a fourth aspect of student engagement during learning activities. *Contemporary Educational Psychology, 36*(4), 257-267. <https://doi.org/10.1016/j.cedpsych.2011.05.002>
84. Reschly, A. L., Huebner, E. S., Appleton, J. J., & Antaramian, S. (2008). Engagement as flourishing: The contribution of positive emotions and coping to adolescents' engagement at school and with learning. *Psychology in the Schools, 45*(5), 419–431. <https://doi.org/10.1002/pits.20306>
85. Rivas‐Drake, D. (2011). Public ethnic regard and academic adjustment among Latino adolescents. *Journal of Research on Adolescence, 21*(3), 537–544. <https://doi.org/10.1111/j.1532-7795.2010.00700.x>
86. Robinson, K., & Mueller, A. S. (2014). Behavioral engagement in learning and math achievement over kindergarten: A contextual analysis. *American Journal of Education, 120*(3), 325–349. <https://doi.org/10.1086/675530>
87. Rodríguez-Fernández, A., Ramos-Díaz, E., Fernández-Zabala, A., Goñi, E., Esnaola, I., & Goñi, A. (2016). Contextual and psychological variables in a descriptive model of subjective well-being and school engagement. *International Journal of Clinical and Health Psychology, 16*(2), 166–174. <https://doi.org/10.1016/j.ijchp.2016.01.003>
88. Sakız, G. (2015). Perceived teacher factors in relation to students’ achievement-related outcomes in science classrooms in elementary school. *European Journal of Science and Mathematics Education, 3*(2), 115-129.
89. Sbrocco, R. (2009). *Student academic engagement and the academic achievement gap between Black and White middle school students: Does engagement increase student achievement?* (Publication No. 3379401). [Doctoral dissertation, University of Minnesota]. ProQuest Dissertations Publishing.
90. Schwartz, D., Kelly, B. M., & Duong, M. T. (2013). Do academically-engaged adolescents experience social sanctions from the peer group? *Journal of Youth and Adolescence, 42*(9), 1319–1330. <https://doi.org/10.1007/s10964-012-9882-4>
91. Shih, S-S. (2005). Taiwanese sixth graders’ achievement goals and their motivation, strategy use, and grades: An examination of the multiple goal perspective. *The Elementary School Journal, 106*(1), 39-58. <https://doi.org/10.1086/496906>
92. Shim, S. S., Rubenstein, L. D., & Drapeau, C. W. (2016). When perfectionism is coupled with low achievement: The effects on academic engagement and help seeking in middle school. *Learning and Individual Differences, 45*, 237–244. <https://doi.org/10.1016/j.lindif.2015.12.016>
93. Singh, K., Chang, M., & Dika, S. (2010). Ethnicity, self-concept, and school belonging: Effects on school engagement. *Educational Research for Policy and Practice, 9*, 159-175. <https://doi.org/10.1007/s10671-010-9087-0>
94. Skalsky, N. R. (2009). *School engagement and the achievement gap* (Publication No. 3359929). [Doctoral dissertation, University of Denver]. ProQuest Dissertations Publishing.
95. Steinmayr, R., Weidinger, A. F., & Wigfield, A. (2018). Does students’ grit predict their school achievement above and beyond their personality, motivation, and engagement? *Contemporary Educational Psychology, 53*, 106–122. <https://doi.org/10.1016/j.cedpsych.2018.02.004>
96. Strunk, T. A. (2014). *An exploration of the relationships between academic enablers and middle school achievement* (Publication No. 3690161). [Doctoral dissertation, The Pennsylvania State University]. ProQuest Dissertations Publishing.
97. Suárez, N., Regueiro, B., Estévez, I., del Mar Ferradás, M., Guisande, M. A., & Rodríguez, S. (2019). Individual precursors of student homework behavioral engagement: The role of intrinsic motivation, perceived homework utility and homework attitude. *Frontiers in Psychology, 10*, Article 941. <https://doi.org/10.3389/fpsyg.2019.00941>
98. Suldo, S. M., Shaunessy-Dedrick, E., Ferron, J., & Dedrick, R. F. (2018). Predictors of success among high school students in advanced placement and international baccalaureate programs. *Gifted Child Quarterly, 62*(4), 350-373. <https://doi.org/10.1177/0016986218758443>
99. Sunawan, Dwistia, H., Kurniawan, K., Hartati, S., & Sofyan, A. (2017). *Classroom engagement and mathematics achievement in senior and junior high school students*. International Conference on Teacher Training and Education 2017 (ICTTE 2017). Atlantis Press.
100. Tolinski, C. (2015). *Examining academic engagement among elementary students: The role of parent-child and teacher-student relationships* (Publication No. 3700684). [Doctoral dissertation, Wayne State University.]. ProQuest Dissertations Publishing.
101. Vandenkerckhove, B., Soenens, B., Van der Kaap-Deeder, J., Brenning, K., Luyten, P., & Vansteenkiste, M. (2019). The role of weekly need-based experiences and self-criticism in predicting weekly academic (mal)adjustment. *Learning and Individual Differences, 69*, 69–83. <https://doi.org/10.1016/j.lindif.2018.11.009>
102. Veiga, F. H. (2012). Proposal to the PISA of a new scale of Students’ engagement in school (WCES 2012). *Procedia - Social and Behavioral Sciences, 46*, 1224-1231. <https://doi.org/10.1016/j.sbspro.2012.05.279>
103. Veiga, F. H. (2016). Assessing student engagement in school: Development and validation of a four-dimensional scale (Future Academy®’s Multidisciplinary Conference). *Procedia - Social and Behavioral Sciences, 217*, 813-819. <https://doi.org/10.1016/j.sbspro.2016.02.153>
104. Véronneau, M.-H., & Dishion, T. J. (2011). Middle school friendships and academic achievement in early adolescence: A longitudinal analysis. *The Journal of Early Adolescence, 31*(1), 99–124. <https://doi.org/10.1177/0272431610384485>
105. Videen, C. A. (2009). *Longitudinal look at student achievement and psychological engagement* (Publication No. 3389382). [Doctoral dissertation, University of Minnesota]. ProQuest Dissertations Publishing.
106. Virtanen, T. E., Lerkkanen, M.-K., Poikkeus, A.-M., & Kuorelahti, M. (2018). Student engagement and school burnout in Finnish lower-secondary schools: Latent profile analysis. *Scandinavian Journal of Educational Research, 62*(4), 519–537. <https://doi.org/10.1080/00313831.2016.1258669>
107. Virtanen, T. E., Vasalampi, K., Kiuru, N., Lerkkanen, M. -K., & Poikkeus, A. -M. (2020). The role of perceived social support as a contributor to the successful transition from primary to lower secondary school. *Scandinavian Journal of Educational Research, 64*(7), 967–983. <https://doi.org/10.1080/00313831.2019.1639816>
108. Wang, M.‐T., & Eccles, J. S. (2012). Adolescent behavioral, emotional, and cognitive engagement trajectories in school and their differential relations to educational success. *Journal of Research on Adolescence, 22*(1), 31–39. <https://doi.org/10.1111/j.1532-7795.2011.00753.x>
109. Wang, M.‐T., & Sheikh‐Khalil, S. (2014). Does parental involvement matter for student achievement and mental health in high school? *Child Development, 85*(2), 610–625. <https://doi.org/10.1111/cdev.12153>
110. Wang, M., Deng, X., & Du, X. (2018). Harsh parenting and academic achievement in Chinese adolescents: Potential mediating roles of effortful control and classroom engagement. *Journal of School Psychology, 67*, 16–30. <https://doi.org/10.1016/j.jsp.2017.09.002>
111. Wang, M.-T., Kiuru, N., Degol, J. L., & Salmela-Aro, K. (2018). Friends, academic achievement, and school engagement during adolescence: A social network approach to peer influence and selection effects. *Learning and Instruction, 58*, 148–160. <https://doi.org/10.1016/j.learninstruc.2018.06.003>
112. Wang, Y., Tian, L., & Scott Huebner, E. (2019). Basic psychological needs satisfaction at school, behavioral school engagement, and academic achievement: Longitudinal reciprocal relations among elementary school students. *Contemporary Educational Psychology, 56*, 130–139. <https://doi.org/10.1016/j.cedpsych.2019.01.003>
113. Wei, D., Zhang, D., He, J., & Bobis, J. (2020). The impact of perceived teachers’ autonomy support on students’ mathematics achievement: Evidences based on latent growth curve modelling. *European Journal of Psychology of Education, 35*(3), 703–725. <https://doi.org/10.1007/s10212-019-00437-5>
114. Wolters, C. A. (2004). Advancing Achievement Goal Theory: Using Goal Structures and Goal Orientations to Predict Students' Motivation, Cognition, and Achievement. *Journal of Educational Psychology, 96*(2), 236–250. <https://doi.org/10.1037/0022-0663.96.2.236>
115. Xia, Z., Yang, F., Praschan, K., & Xu, Q. (2019). The formation and influence mechanism of mathematics self-concept of left-behind children in mainland China. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*. Advance online publication. <https://doi.org/10.1007/s12144-019-00495-4>
116. Yi, H., Tian, L., & Huebner, E. S. (2020). Mastery goal orientations and subjective well-being in school among elementary school students: The mediating role of school engagement. *European Journal of Psychology of Education, 35*, 429-450. <https://doi.org/10.1007/s10212-019-00431-x>
117. Yuen, C. Y. M. (2016). Linking life satisfaction with school engagement of secondary students from diverse cultural backgrounds in Hong Kong. *International Journal of Educational Research, 77*, 74-82. <https://doi.org/10.1016/j.ijer.2016.03.003>
118. Zhang, L. (2016). Social and School-Related Correlates of Shyness and Unsociability in Chinese Adolescents (Publication No. 10243144). [Doctoral dissertation, Arizona State University]. ProQuest Dissertations Publishing.
119. Mameli, C., & Passini, S. (2019). Development and validation of an enlarged version of the student agentic engagement scale. *Journal of Psychoeducational Assessment, 37*(4), 450-463. <https://doi.org/10.1177/0734282918757849>
120. Metallidou, P., & Vlachou, A. (2007). Motivational beliefs, cognitive engagement, and achievement in language and mathematics in elementary school children. *International Journal of Psychology, 42*(1), 2–15. <https://doi.org/10.1080/00207590500411179>
121. Wang, M.-T., Fredricks, J. A., Ye, F., Hofkens, T. L., & Linn, J. S. (2016). The Math and Science Engagement Scales: Scale development, validation, and psychometric properties. *Learning and Instruction, 43*, 16–26. <https://doi.org/10.1016/j.learninstruc.2016.01.008>
122. Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument. *Journal of School Psychology, 44*(5), 427–445. <https://doi.org/10.1016/j.jsp.2006.04.002>
123. Wang, Z., Bergin, C., & Bergin, D. A. (2014). Measuring engagement in fourth to twelfth grade classrooms: The Classroom Engagement Inventory. *School Psychology Quarterly, 29*(4), 517–535. <https://doi.org/10.1037/spq0000050>
124. Patrick, H., Ryan, A. M., & Kaplan, A. (2007). Early adolescents' perceptions of the classroom social environment, motivational beliefs, and engagement. *Journal of Educational Psychology, 99*(1), 83–98. <https://doi.org/10.1037/0022-0663.99.1.83>
125. Bircan, H., & Sungur, S. (2016). The role of motivation and cognitive engagement in science achievement. *Science Education International, 27*(4), 509-529.
126. Gutiérrez, M., Sancho, P., Galiana, L., & Tomás, J. M. (2018). Autonomy support, psychological needs satisfaction, school engagement and academic success: A mediation model. *Universitas Psychologica, 17*(5), 1–12. <https://doi.org/10.11144/Javeriana.upsy17-5.aspn>
127. Jang, H., Kim, E. J., & Reeve, J. (2012). Longitudinal test of self-determination theory's motivation mediation model in a naturally occurring classroom context. *Journal of Educational Psychology, 104*(4), 1175–1188. <https://doi.org/10.1037/a0028089>
128. Lemos, M. S., Gonçalves, T., & Cadima, J. (2020). Examining differential trajectories of engagement over the transition to secondary school: The role of perceived control. *International Journal of Behavioral Development, 44*(4), 313–324. <https://doi.org/10.1177/0165025419881743>
129. Marchand, G. C., & Furrer, C. J. (2014). Formative, informative, and summative assessment: The relationship among curriculum‐based measurement of reading, classroom engagement, and reading performance. *Psychology in the Schools, 51*(7), 659–676. <https://doi.org/10.1002/pits.21779>
130. McElhone, D. (2012). Tell us more: Reading comprehension, engagement, and conceptual press discourse. *Reading Psychology, 33*(6), 525–561. <https://doi.org/10.1080/02702711.2011.561655>
131. Owen, K. B., Parker, P. D., Astell-Burt, T., & Lonsdale, C. (2018). Regular physical activity and educational outcomes in youth: A longitudinal study. *Journal of Adolescent Health, 62*, 334-340. <https://doi.org/10.1016/j.jadohealth.2017.09.014>
132. Reeve, J., & Lee, W. (2014). Students’ classroom engagement produces longitudinal changes in classroom motivation. *Journal of Educational Psychology, 106*(2), 527–540. <https://doi.org/10.1037/a0034934>
133. Stefansson, K. K., Gestsdottir, S., Geldhof, G. J., Skulason, S., & Lerner, R. M. (2016). A bifactor model of school engagement: Assessing general and specific aspects of behavioral, emotional and cognitive engagement among adolescents. *International Journal of Behavioral Development, 40*(5), 471–480. <https://doi.org/10.1177/0165025415604056>
134. Virtanen, T. E., Moreira, P., Ulvseth, H., Andersson, H., Tetler, S., & Kuorelahti, M. (2018). Analyzing measurement invariance of the Students’ Engagement Instrument Brief Version: The cases of Denmark, Finland, and Portugal. *Canadian Journal of School Psychology, 33*(4), 297–313. <https://doi.org/10.1177/0829573517699333>
135. Martin, A. J., Martin, T. G., & Evans, P. (2018). Motivation and engagement in Jamaica: Testing a multidimensional framework among students in an emerging regional context. *Journal of Psychoeducational Assessment, 36*(3), 233–248. <https://doi.org/10.1177/0734282916674424>
136. Burns, E. C., Martin, A. J., & Collie, R. J. (2018). Adaptability, personal best (PB) goals setting, and gains in students’ academic outcomes: A longitudinal examination from a social cognitive perspective. *Contemporary Educational Psychology, 53*, 57–72. <https://doi.org/10.1016/j.cedpsych.2018.02.001>
137. Collie, R. J., & Martin, A. J. (2017). Students’ adaptability in mathematics: Examining self-reports and teachers’ reports and links with engagement and achievement outcomes. *Contemporary Educational Psychology, 49*, 355–366. <https://doi.org/10.1016/j.cedpsych.2017.04.001>