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Relation between Student Mental Health and Academic Achievement Revisited: A Meta-Analysis

Gokhan Bas

Abstract

In the present research, the relationship between mental health and academic achievement in adolescents was investigated. The research adopted meta-analysis model to investigate the relationship between these two phenomena. In the meta-analysis, 13 independent studies were included, and their data were combined to display effect sizes. According to the result of the research, it was indicated that there was a positive relationship between mental health and academic achievement. Also, it was revealed that there was no significant relationship within sub-group variation in the relationship between mental health and academic achievement in terms of year of publication, publication type, community, and sample size, but not the setting.

Keywords: mental health, academic achievement, mental health in adolescents, meta-analysis

1. Introduction

In recent years, mental health of adolescents has taken considerable attention worldwide, because of a dramatic upward trend in suicide [1]. More than twenty percent of adolescents in the U.S. have a mental health disorder [2], and one in five of them are affected by a mental health problem [3], which is estimated to account for a larger burden of disease than any other class of health conditions [4].

The mental health field has traditionally focused on psychological ill-health, such as symptoms of anxiety or depression [5]. The most common mental health disorders among adolescents include obsessive-compulsive disorder, attention deficit hyperactive disorder, bi-polar disorder, impulse disorders, and oppositional defiance disorder [6]. Often, adolescents experience mental health problems, with fewer than half of them [7], in other words nearly one third of them need receiving treatment [8]. The situation is much more severe in adolescents living in racial and ethnic communities, who are more likely to have mental health problems [9]. Moreover, evidence suggests that adolescents coming from such communities are less likely to use mental health services, compared adolescents living in non-racial and ethnic communities [10]. Thus, when adolescents struggle with mental health problems, they often have attendance problems, difficulty completing assignments,

increased conflicts with adults and peers [11]. Also, mental health problems adolescents have negatively impact their academic productivity and interpersonal relationships [12], and as a result of such problems, one million of adolescents – which is deemed to be very high – drop out of school annually in the U.S., for example [13].

Mental health issues among adolescents not only cause such problems, but they also negatively influence schooling [14]. Adolescents with mental health problems are at risk for schooling [15], and they may have increased difficulties primarily with academic achievement in school [16]. Frequent feelings of mental health problems exhibit school difficulties, including poor academic achievement [17]. Adolescents displaying strong mental health are likely to have better academic achievement, compared to adolescents displaying weak mental health [18]. Adolescents showing strong mental health have good social skills with both adults and peers [19], and their enhanced social and emotional behaviors have a strong impact on academic achievement [20]. Therefore, mental health problems in adolescents may have an important influence on academic achievement, which in turn have lifelong consequences for employment, income, and other outcomes [21]. Mental health issues may become problematic for adolescents in that they negatively influence academic achievement [22], which also might affect their future employment, health, and socioeconomic status [23].

Mental health problems of adolescents have an important influence on their schooling, particularly their academic achievement, which in turn may create important lifelong consequences. Due to a growing interest in mental health of adolescents in recent years, a meta-analysis seems timely, not only to demonstrate the association between mental health and academic achievement, but also to identify moderators that should be articulated in more depth in future research. Although there is a body of research on the relationship between mental health and academic achievement across the world, the literature is missing a meta-analysis of this relationship. To date, no meta-analytic research has examined the potential relationship between mental health and academic achievement, and the present research aims to fill this gap in the scope. Thus, the present research attempts to synthesize this association between mental health and academic achievement of adolescents. This meta-analysis aimed to answer the following research questions: (a) What is the relationship between mental health and academic achievement? (b) Does this relationship depend on year of publication? (c) Does this relationship depend on setting? (d) Does this relationship depend on community? (e) Does this relationship depend on sample size?

2. Methodology

2.1 Model

The present research adopted meta-analysis model [24] to combine data from independent studies to draw a single conclusion with greater statistical power [25]. Meta-analysis is a model that reviews the research results and combines the data obtained from independent studies in statistical ways [26].

2.2 Data sources

Research examining the relationship between mental health and academic achievement was identified through a search of reference databases. To identify relevant empirical research on the relationship between mental health and academic achievement, a systematic literature review was conducted over a

two-month time for the period 2000 to 2020, using such databases as Education Resources Information Center (ERIC), PsycINFO, Web of Science, EBSCOhost, Science Direct, Scopus, ProQuest®, and Google Scholar, with the following queries: [(“mental health” OR “mental health disorders”) AND (“mental health and academic achievement” OR “mental health disorders and academic achievement”), [“academic achievement” AND “academic success”], [(“adolescents mental disorders” OR “adolescents mental health”) AND (“adolescents mental health academic achievement” OR “adolescents mental health disorders academic success”)]. As a result of such review, a total of 52 studies including 34 journal articles and 18 postgraduate dissertations were reached. Thus, over 50 potential independent studies were generated for preliminary review as a result of the literature search.

2.3 Inclusion criteria

To be eligible for inclusion in the present meta-analysis, a study had to (a) investigate the relationship between mental health and academic achievement; (b) include studies conducted on adolescents; (c) have taken place from 2000 to the present; (d) be reported to be available in English; and (e) include sample size and correlation coefficients.

The first four criteria were used in an initial screening of the abstracts of the studies. If the study had no abstract available, the full publication was collected and examined thoroughly. For the last criterion, the full publication was examined, and it was checked whether it included sample size as well as correlation coefficients. For the studies with insufficient statistical information, the corresponding author was contacted and the relevant information for the missing data was requested. If the author did not respond or could not provide the missing data, the study was excluded from the meta-analysis. After checking each study in the light of the inclusion criteria, the author agreed that 13 studies met all the five criteria of the research (see **Table 1**).

In order to investigate possible relationship between mental health and academic achievement, five moderators were extracted from the studies [40]. The first moderator concerned with the year of publication. The year of the publications were classified as 2009–2014 and 2015–2020, with a range of five years. The second moderator, publication type, referred to whether a study appeared as a journal article or a postgraduate dissertation. The third moderator, setting, referred to the country in which the research was conducted. Because the studies included in the meta-analysis were not from diverse settings – they were mainly coming from the U.S. and some Asian countries including India and Iran – the setting was classified as U.S. and non-U.S. The fourth moderator of the research, community, referred to the society people are living in. Because there was no study only conducted in rural settings, the community included urban and combination (urban, suburban, and rural). The last moderator, sample size, was classified as 1–500 and 501 above.

2.4 Computation of effect sizes

Standard procedures for conducting meta-analyses were followed [41], and the correlation between mental health and academic achievement were examined though effect sizes of independent studies. The effect size obtained in meta-analysis is a standard measure value used to determine the strength and direction of the relationship in the research [42]. In meta-analytic research, the variance depends strongly on correlation coefficient [43]. Pearson's correlation coefficient

Author(s)	Publication type	Setting	Community	Sample size
White [27]	Dissertation	U.S.	Urban	780
Sathiyaraj and Babu [28]	Journal article	Non-U.S. (India)	Combination	750
Chung [29]	Dissertation	Non-U.S. (Australia)	Urban	261
Eisenberg et al. [30]	Journal article	U.S.	Urban	2.798
Gilavand and Shooriabi [31]	Journal article	Non-U.S. (Iran)	Combination	200
Mundia [32]	Journal article	Non-U.S. (Brunei)	Urban	6
Geetha [33]	Dissertation	Non-U.S. (India)	Combination	1.088
Jenkins [34]	Dissertation	U.S.	Urban	331
Singh [35]	Journal article	Non-U.S. (India)	Urban	200
Sheykhjan et al. [36]	Journal article	Non-U.S. (Iran)	Urban	314
Murphy et al. [37]	Journal article	Non-U.S. (Chile)	Urban	37.397
Talawar and Das [38]	Journal article	Non-U.S. (India)	Combination	200
Manchri et al. [39]	Journal article	Non-U.S. (India)	Urban	270

Table 1.
Studies included in the meta-analysis.

(*r*) was calculated as effect size in the present research. For this reason, correlation coefficients were transformed into Fisher’s *z* coefficient for computing the effect sizes, and analyses were conducted through the transformed coefficients [44]. In meta-analysis research, when the variable consists of more than one factor and when more than one correlation value is given, there are two different approaches about which one of them can be used [45]. In this research, if the correlations were independent, all relevant correlations were included in the analysis and accepted as independent studies. When dependent correlations were given, the correlations were averaged.

There are two basic models in meta-analysis research; they are fixed effects and random effects models. When deciding which model to use, it is necessary to look at which model’s prerequisites are met by the features of the studies included in meta-analysis [46]. The fixed effect model is based on the assumption that when the data obtained are homogeneous, all the collected studies estimate exactly the same effect [47]. In this model, it is thought that the variance among the study results is caused by the data related to each other [48]. According to the fixed effect model, there is one effect size shared by the studies showing the same effect size for all studies [49]. In cases where the studies included in the meta-analysis show heterogeneous characteristics, it is more appropriate to use the random effect model [50]. This model is used in cases where the data obtained are not homogeneous [51]. As a result, while deciding which statistical model to use during meta-analysis, it should be tested whether the effect sizes show a homogeneous distribution.

In addition, the coefficient classification is taken into account in the interpretation of the effect sizes obtained as a result of meta-analysis [52]. In this research, Cohen’s [53] effect size classification was taken into account in the interpretation of effect sizes. According to this classification, values between .20 and .50 correspond to small effect size; values between .50 and .80 correspond to medium effect size; and values above .80 correspond to large effect size.

2.5 Publication bias

Publication bias refers to the possibility that all studies performed on a particular subject will not be representative of the reported studies [54]. Since the studies where statistically significant relationships are not determined or studies with low level relationships are not deemed worthy to be published, this affects the total effect size negatively and increases the average effect size bias [55]. So, effect sizes seem to be higher than what they normally are [56].

A number of calculations are used to reveal publication bias in meta-analysis research, including methods such as funnel plot, classical fail-safe N , Orwin's fail-safe N , and Duval and Tweedie's trim and fill. The first method used to determine whether studies have publication bias is funnel plot [57]. The funnel plot, which displays the possibility of a publication bias in meta-analysis research [58], created for the relationships between mental health and academic achievement was shown in **Figure 1**.

The funnel plot is expected to be significantly asymmetrical in publication bias. In cases where publication bias is not observed on the funnel plot, the effect sizes are symmetrically scattered around the vertical line. The line in the middle of the funnel plot shows the overall effect, and individual studies are expected to cluster around this line [59]. Studies which are asymmetrically scattered around the funnel plot refer to a possible publication bias in meta-analysis [60].

Also, classical fail-safe N was performed to reduce the average effect size to insignificant levels which is needed to increase the p -value for the meta-analysis to above .05 [61]. Classical fail-safe N showed that a total of 1699 studies with null results would be required to bring the overall effect size to trivial level at .01. Besides, Orwin's fail-safe N was performed to decide the values of criterion for a trivial log odd's ratio and mean log odds ratio in missing studies [62]. As a result of it, the number of missing null studies to bring the existing overall average effect sizes to trivial level at .01 was found to be .243.

Lastly, to assess the possibility of publication bias in the studies the trim and fill method, which is a nonparametric method of data augmentation used to estimate

Figure 1.
Funnel plot for the effect size of the relationship between mental health and academic achievement.

the number of studies absent from a meta-analysis due to the exclusion on one side of the funnel plot of the most extreme findings [63], was performed. With the help of this statistic, small studies at the far end on the positive side of the funnel plot are removed. The effect size is recalculated until the funnel plot is symmetrical [64]. When there is publication bias in the studies, the effect sizes are distributed asymmetrical on the funnel plot. In the research, the funnel plot provided evidence that there is no publication bias in the meta-analysis.

3. Results

3.1 Overall results

A total of 13 studies were included in the meta-analysis with a sample size of 44.595 adolescents. As a result of the comparisons, the Q value indicated that the distribution of effect size of the studies was heterogeneous, $Q(12) = 1002.815$, $p < .001$, so that a random effects model was adopted in the meta-analysis (see Table 2).

Table 2 demonstrated the relationship between mental health and academic achievement of adolescents. The effect size of the relationship between mental health and academic achievement computed by random effects model was $r = .334$ (95% CI = .187–.467). The confidence interval showed that the true effect size was likely to fall in the .187 to .467, which indicated a low to medium effect [65]. The computed effect size revealed that there is a moderate level of positive correlation between mental health and academic achievement. The forest plot of the relationship between mental health and academic achievement was displayed in Figure 2.

Moderator analyses were performed to examine whether the effect sizes were attributable to the basic research sub-groups. Results indicated that this was not the

Model	k	d	SE	95% CI		Q _b	df _q	p _q	I ²
				Lower	Upper				
Overall	13	.334	.155	[.187	.467]				98.803
Year of publication	4	.256	.034	[.227	.285]	.004	1	.949	.00
2009–2014	9	.267	.010	[.258	.276]	.005	1	.942	.00
2015–2020	9	.256	.010	[.247	.265]				
Publication type	4	.430	.047	[.397	.462]				
Journal article									
Dissertation									
Setting ^a	3	.107	.232	[–.126	.329]	3.899	1	.048	.00
U.S.	10	.399	.206	[.212	.557]				
Non-U.S.									
Community ^b	9	.250	.010	[.241	.259]	.990	1	.320	.00
Urban	4	.532	.051	[.502	.562]	.796	1	.360	.00
Combination	8	.408	.053	[.369	.447]				
Sample size	5	.260	.010	[.251	.268]				
1 ≤ N ≤ 500									
501 ≤ N									

^aDue to that they did not report in English, other studies coming from diverse settings across the world were not included.
^bBecause there was no study only conducted in rural settings, the community included urban and combination (urban, suburban and rural).

Table 2.
Results related to overall effect sizes of the studies.

Figure 2.
Forest plot of the relationship between mental health and academic achievement.

case, as neither sub-group, excluding the setting, moderated the research findings. There was no significant relationship within sub-group variation in the relationship between mental health and academic achievement in terms of year of publication $Q_b(1) = .004, p = ns$, publication type $Q_b(1) = .005, p = ns$, community $Q_b(1) = .990, p = ns$, and sample size $Q_b(1) = .796, p = ns$, but not the setting $Q_b(1) = 3.899, p = .048$. In other words, no significant moderation effect was found, which means that the relationship between mental health and academic achievement does not depend on the basic sub-groups, excluding the setting.

4. Discussion

The present research quantitatively synthesized the results of 13 independent studies, conducted over the past two decades, which examined the relationship between mental health and academic achievement in adolescents. The results of the research confirmed that there is a significant positive relationship between mental health and academic achievement. These results are consistent with the recent research investigating the relationship between mental health and academic achievement [27, 34]. Mental health problems may create many obstacles to adolescents, not just in their daily life routines, but also in their schooling academically. Mental health risks have long term and complex interactions with academic outcomes [27]. Mental health issues among adolescents not only cause pain and distress, but they also influence negatively their potential for success in school [14]. More and more adolescents – for example in the U.S. – face with mental health problems annually [1], and their behaviors lead to feelings of anxiety or depression [66]. The effects of mental health problems negatively influence the academic performance primarily [22], and as a result of it, more than one million adolescents drop out of school every year in the U. S. [23]. Mental health problems make adolescents face with a decline in academic achievement [67], which in turn results in school absence, poor grades, and even repeating a grade in school [68]. Those adolescents reporting high level of mental health problems are more likely to perceive themselves as less academically competent [69], and they display low academic achievement in school [70]. When schools identify problem behaviors with programs of intervention, it is likely to improve academic achievement of adolescents [71]. Well planned and well-implemented programs to foster mental health [72] can make

adolescents achieve better academically in school [20]. However, in the U.S. – for example – 70 percent of adolescents who need mental health intervention cannot receive services [22], and nearly one third of them who need help receive treatment [8], which in turn negatively influences their academic achievement. Therefore, early detection of mental health problems of adolescents can have access to appropriate services which lead to improvement in both mental disorder symptoms and academic performance [73].

In addition to these overall findings, this meta-analysis also looked at the influence of some moderators in the association between mental health and academic achievement. It was revealed that no variables moderated the relationship between mental health and academic achievement, but not the setting. There was no significant relationship within sub-group variation in the relationship between mental health and academic achievement in terms of year of publication, publication type, community, and sample size.

First, year of publication did not appear to be a moderator in the association between mental health and academic achievement, indicating that the effect sizes of all studies included in the meta-analysis were similar. Second, the publications included in this meta-analysis were dissertations and journal articles. Although dissertations had a higher effect size compared to journal articles, publication type did not appear to be a moderator in the relationship between mental health and academic achievement. This showed that in spite of the fact that journal articles are selective to display significant results [74], they produced similar effect sizes as with dissertations which keep relatively minor results unpublished. Third, community did not appear to be a moderator in the association between mental health and academic achievement, which indicated that studies conducted both in urban and combination societies had similar effect sizes. This result revealed that mental health of adolescents living in both urban and combination communities is associated positively with academic achievement. Also, sample size did not appear to be a moderator in the relationship between mental health and academic achievement. Studies including more than 500 adolescents did not contribute significantly to the effect sizes, which indicated that the association between mental health and academic achievement was not affected by sample size.

However, it was indicated that setting appeared to be a significant moderator in the association between mental health and academic achievement. This result showed that studies conducted in the U.S. and countries out of the U.S. impacted differently to overall effect size. According to this result, countries out of the U.S., which are mainly Asian contexts, had a high effect size in the relationship between mental health and academic achievement. It may be due that the U.S. has relatively more racial and ethnic communities, or immigrants, compared to other countries, and such diversity of the U.S. may have an influence on the result obtained in the research. In the U.S. 70 percent of the adolescents need mental health interventions [22]; however, the situation is much more severe in minority communities [9]. Adolescents living in racial and ethnic communities in the U.S. are less likely to use mental health services due to poverty in particular [10]. Poverty has a disproportionate effect on racial and ethnic minorities, and adolescents who live in such condition are more likely to have a mental disorder [9]. As a result, almost half of the adolescents living in ethnic and racial communities in the U.S. fail to graduate due to the low level of academic achievement in school [75].

Lastly, although the meta-analysis included the studies which took place from 2000 to the present, no study could be reached in 2020 probably due to the Covid-19 pandemic. Since the outbreak in Wuhan, China, nearly all countries across the world has faced with the Covid-19 pandemic in 2020. The pandemic has created severe consequences for millions of people in either losing their lives or their jobs.

Many countries, including the U.S., the U.K., France, Germany, China, Italy, and Spain at the top, imposed lockdowns for several months and tried to prevent the fast spread of the virus. The pandemic not only affected general health of individuals and social lives of people, but it also impacted the schooling of many students. Most educational institutions around the world canceled in-person instruction and moved to distant teaching in an attempt to contain the spread of Covid-19 [76], and they are still pursuing this kind of teaching through digital platforms, such as Zoom, Skype, Google Meet, Microsoft Teams, and so on. Owing to the closure of schools, researchers have faced with considerable difficulty in reaching participants to conduct empirical studies; so this may have influenced the future research on the relationship between mental health and academic achievement in 2020.

On the other hand, the Covid-19 pandemic might have affected the mental health of adolescents worldwide because they were imposed curfew for several months at home. During the lockdown, millions of adolescents had to stay home, and they were in social isolation both from their peers and the society. Many countries implemented isolation policies for adolescents in particular, due to the fact that these individuals have the potential to spread the virus easily to relatively older people which may result in higher fatalities. Affected by the long months in lockdown, many adolescents had to spend their time at home and pursue their education through digital platforms. Many adolescents faced with severe difficulties in pursuing their education at home, as well as they had problems in access to treatment as a result of losing their mental health. Many students confined at home due to Covid-19 may have felt stressed and anxious, and this may negatively have affected their mental health [76]. Many adolescents, having mental health problems, have faced with severe academic difficulties and dropped out of school [77]. During the pandemic, the dropout rates in adolescents have substantially increased across the world, and this in turn may have affected their schooling negatively, particularly their academic achievement. However, there is no empirical evidence to support the relationship between mental health and academic achievement during the Covid-19 pandemic; therefore it is timely to conduct research to investigate this potential association to prevent mental health disorders in adolescents and improve their academic achievement. Although the present meta-analysis showed that there is a positive relationship between mental health and academic achievement in adolescents, this cannot be the case during the pandemic. Months of curfew and lockdown may have influenced the mental health and academic achievement of adolescents; so future research is needed to better clarify the relationship between these two phenomena.

5. Conclusion

The present meta-analysis aimed to determine the relationship between mental health and academic achievement in adolescents. This research, as expected, confirmed that there is a positive relationship between mental health and academic achievement. The research also indicated that mental health of adolescents is very important for schooling, in that it has a potential to influence academic achievement positively or negatively. Therefore, it is deemed crucial for adolescents to have a strong mental health to perform better academically in school, which in turn have lifelong consequences for employment, income, and other outcomes [21].

Results also indicated that there was no significant relationship within subgroup variation in the relationship between mental health and academic achievement in terms of year of publication, publication type, community, and sample size, but not the setting. It was indicated that setting appeared to be a significant

moderator in the association between mental health and academic achievement. This result showed that studies conducted in the U.S. and countries out of the U.S. impacted differently to overall effect size. According to this result, countries out of the U.S. had a high effect size in the relationship between mental health and academic achievement. The effect size of the studies conducted in the U.S. was found to be relatively low, which implied that ethnic and racial diversity might have an impact on the result obtained in the research. This underlines the role of the school; thus, if schools identify mental health problems of adolescents with programs of intervention, it is likely to improve academic achievement [71]. Schools play an important role in determining the mental health of adolescents because they serve more than 95 percent of a country's young people population [78].

A relatively small number of studies have been identified in the present meta-analysis, so more studies are needed to better clarify the relationship between mental health and academic achievement in adolescents. This research included only studies reported in English; therefore further meta-analyses might be conducted to include other reports out of English. Also, the role of school-based intervention programs in the relationship between mental health and academic achievement has not been taken into account in the present meta-analysis, so further research might be carried out to clarify the issue. The research has reported that school-based intervention programs may be effective to prevent mental health problems, and thus foster academic achievement [14]. In particular, adolescents living in ethnic and racial communities suffer from mental health problems, and academic achievement in school is influenced by such background. Because of this, mental health issues of adolescents living in ethnic and racial communities should be taken into consideration seriously.

Conflict of interest

The author has no conflicts of interest to declare.

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References

- [1] National Institute of Mental Health 2018. Suicide statistics in the U.S. [Internet]. 2020. Available from <https://www.nimh.nih.gov/health/statistics/suicide.shtml> [Accessed: 2020, 24 November].
- [2] Ball A. School mental health content in state in-service k-12 teaching standards in the United States. *Teaching and Teacher Education*. 2016; **60**: 312-320.
- [3] American Academy of Pediatrics. Promoting children's mental health. [Internet]. 2018. Available from <https://www.aap.org/enus/advocacyandpolicy/federaladvocacy/Pages/mentalhealth.aspx> [Accessed: 2019, September 12].
- [4] Michaud CM, McKenna MT, Begg S, Tomijima N, Majmudar M, Bulzacchelli MT, Ebrahim S, Ezzati M, Salomon JA, Kreiser JG, Hogan M, Murray CJL. The burden of disease and injury in the United States 1996. *Population health metrics*. 2006; **4**(1): 1-49.
- [5] O'Connor M, Cloney D, Kvalsvig A, Goldfeld S. Positive mental health and academic achievement in elementary school: New evidence from a matching analysis. *Educational Researcher*. 2019. **48**(4): 205-216
- [6] Cash RE. Depression in children and adolescents: Information for parents and educators. [Internet]. 2004. Available from <http://www.nasponline.org/resources/handouts/revisedPDFs/depression.pdf> [Accessed: 2020, 24 November].
- [7] Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, Ustun TB. Age of onset of mental disorders: A review of recent literature. *Current Opinion in Psychiatry*. 2007; **20**: 359-364.
- [8] Schlozman S. The shrink in the classroom: Mental health specialists in schools. *Educational Leadership*. 2003; **60**(5): 80-83.
- [9] Manson SM. Extending the boundaries, bridging the gaps: Crafting mental health: Culture, race, and ethnicity, a supplement to the surgeon general's report on mental health. *Culture, Medicine & Psychiatry*. 2003; **27**(4): 395-408.
- [10] U. S. Department of Health and Human Services. 2001. Mental health: Culture, race, and ethnicity-a supplement to mental health: A report of the surgeon general. Rockville, MD: U. S. Department of Health and Human Services.
- [11] Skaalski A, Smith M. Responding to the mental health needs of students. *Principal Leadership*. 2006; **7**(1): 12-15.
- [12] Heiligenstein E, Guenther G, Hsu K, Herman K. Depression and academic impairment in college students. *Journal of American College Health*. 1996; **45**(2): 59-64.
- [13] Hinman, C. Assessing the student at risk: A new look at school-based credit recovery. In: Guskey TR, editor. *The Principal as Assessment Leader*. Bloomington, IN: Solution Tree; 2009. p. 225-242.
- [14] Williams LO. The relationship between academic achievement and schoolbased mental health services for middle school students [dissertation]. Hattiesburg, MS: University of Southern Mississippi; 2012.
- [15] Asarnow JR, Jaycox LH, Duan N, LaBorde AP, Rea MM, Tang L, Anderson M, Murray P, Landon C, Tang B, Huizar DP, Wells KB. Depression and role impairment among adolescents in primary care clinics. *Journal of Adolescent Health*. 2005; **37**: 477-483.

- [16] DeBerard MS, Spielmans GI, Julka DL. Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal*, 2004; **38**(1): 66-81.
- [17] Roeser RW, Eccles JS, Strobel KR. Linking the study of schooling and mental health: Selected issues and empirical illustrations at the level of the individual. *Educational Psychologist*. 1998; **33**: 153-176.
- [18] Roeser RW, Eccles JS, Strobel KR. Linking the study of schooling and mental health: Selected issues and empirical illustrations at the level of the individual. *Educational Psychologist*. 1998; **33**: 153-176.
- [19] Malecki CK, Elliott SN. Children's social behaviors as predictors of academic achievement: A longitudinal analysis. *School Psychology Quarterly*. 2002; **17**: 1-23.
- [20] Zins JE, Bloodworth MR, Weissberg RP, Walberg HJ. The scientific base linking social and emotional learning to school success. In: Zins J, Weissberg R, Wang M, Walberg HJ. editors, *Building Academic Success on Social and Emotional Learning: What Does the Research Say?* New York, NY: Teachers College Press; 2004. p. 3-22.
- [21] Eisenberg D., Golberstein E, Hunt J. Mental health and academic success in college. *B.E. Journal of Economic Analysis & Policy*. 2009; **9**(1): 1-35.
- [22] Whelley P, Cash RE, Bryson D. Children's mental health: Information for educators [Internet]. 2003. Available from http://www.nasponline.org/resources/handouts/abcs_handout.pdf [Accessed: 2020, October 04].
- [23] Hinman C. Assessing the student at risk: A new look at school-based credit recovery. In: Guskey TR, editor. *The Principal as Assessment Leader*. Bloomington, IN: Solution Tree; 2009. p. 225-242.
- [24] Lipsey M, Wilson D. *Practical Meta-Analysis*. Thousand Oaks, CA: Sage; 2001.
- [25] Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. *Introduction to Meta-Analysis*. Chichester: Wiley; 2009.
- [26] Durlak JA. Basic Principles of Meta-Analysis. In: Roberts MC, Ilardi SS, editors. *Handbook of Research Methods in Clinical Psychology*. Oxford: Blackwell; 2008. p. 196-209.
- [27] White G W. Mental health and academic achievement: The effects of self-efficacy. [dissertation]. New Brunswick, NJ: The State University of New Jersey; 2016.
- [28] Sathiyaraj M, Babu R. A Study of academic achievement and mental health of the special school students. *IOSR Journal of Humanities and Social Science*. 2016; **21**(12): 49-52.
- [29] Chung EW-Y. Resilience, complete mental health and academic achievement in traditional and non-traditional first year psychology students. [dissertation]. Adelaide: University of Adelaide; 2016.
- [30] Eisenberg D, Golberstein E, Hunt J. Mental health and academic success in college. *B.E. Journal of Economic Analysis & Policy*. 2009; **9**(1): 1-35.
- [31] Gilavand A, Shooriabi M. Investigating the Relationship between mental health and academic achievement of dental students of Ahvaz Jundishapur University of Medical Sciences. *International Journal of Medical Research & Health Sciences*. 2016; **5**(7): 328-333.

- [32] Mundia L. Effects of psychological distress on academic achievement in Brunei student teachers: Identification challenges and counseling implications. *Higher Education Studies*. 2011; **1**(1): 51-63.
- [33] Geetha V. Mental health and academic achievement of B.ED. students. [dissertation]. Madurai: Madurai Kamaraj University; 2014.
- [34] Jenkins AS. Associations between mental health, academic success, and perceived stress among high school freshman in accelerated coursework. [dissertation]. Tampa, FL: University of South Florida; 2019.
- [35] Singh SK. Mental health and academic achievement of college students. *The International Journal of Indian Psychology*. 2015; **2**(4): 112-119.
- [36] Sheykhjan TM., Rajeswari K, Jabari K. Mental health and academic achievement among M.Ed. Students in Kerala. *Studies in Education*. 2017; **2**(1): 115-123.
- [37] Murphy JM, Guzmán J, McCarthy A, Squicciarini AM, George M, Canenguez K, Dunn EC, Baer L, Simonsohn A, Smoller JW, Jellinek M. Mental health predicts better academic outcomes: A longitudinal study of elementary school students in Chile. *Child Psychiatry and Human Development*. 2015; **46**(2): 245-256.
- [38] Talawar MS, Anindita D. A study of relationship between academic achievement and mental health of secondary school tribal students of Assam. *Paripex: Indian Journal of Research*. 2014; **3**(11): 55-57.
- [39] Manchri H, Sanagoo A, Jouybari L, Sabzi Z, Jafari SY. The relationship between mental health status with academic performance and demographic factors among students of university of medical sciences. *Journal of Nursing and Midwifery Sciences*. 2017; **4**(1): 8-13.
- [40] Hall JA, Rosenthal R. Testing for moderator variables in meta-analysis: Issues and methods. *Communications Monographs*. 1991; **58**(4): 437-448.
- [41] Cooper H, Hedges, LV, Valentine JC, editors. *Handbook of Research Synthesis and Meta-Analysis*. 2nd ed. New York, NY: Russell Sage; 2009.
- [42] Rosenthal R. *Meta-Analytic Procedures for Social Research*. Newbury Park, CA: Sage; 1991.
- [43] Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. *Introduction to Meta-Analysis*. Chichester: Wiley; 2009.
- [44] Hedges L, Olkin I. *Statistical Methods for Meta-Analysis*. San Diego, CA: Academic Press; 1985.
- [45] Kulinskaya E, Morgenthaler S, Staudte RG. *Meta Analysis: A Guide to Calibrating and Combining Statistical Evidence*. New York, NY: John Wiley & Sons; 2008.
- [46] Hedges L, Olkin I. *Statistical Methods for Meta-Analysis*. San Diego, CA: Academic Press; 1985.
- [47] Ellis PD. *The Essential Guide to Effect Sizes: Statistical Power, Meta-Analysis, and the Interpretation of Research Results*. Cambridge: Cambridge University Press; 2010.
- [48] Shelby LB, Vaske JJ. Understanding meta-analysis: A review of the methodological literature. *Leisure Sciences*. 2008; **30**(2): 96-110.
- [49] Lipsey M, Wilson D. *Practical Meta-Analysis*. Thousand Oaks, CA: Sage; 2001.
- [50] Hunter JE., Schmidt FL. *Methods of Meta-Analysis: Correcting Error*

and Bias in Research Findings. 2nd ed. Newbury Park, CA: Sage; 2004.

[51] Card NA. *Applied Meta-Analysis for Social Science Research*. New York, NY: Guilford Press; 2012.

[52] Hartung J, Knapp G, Sinha BK. *Bayesian Meta-Analysis: Statistical Meta-Analysis with Applications*. New York, NY: John Wiles & Sons; 2008.

[53] Cohen J. Statistical power analysis. *Current Directions in Psychological Science*. 1992; 1(3): 98-101.

[54] Rothstein HR, Sutton AJ, Borenstein M, editors. *Publication Bias in Meta-Analysis: Prevention, Assessment and Adjustments*. New York, NY: Wiley; 2005.

[55] Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. *Introduction to Meta-Analysis*. Chichester: Wiley; 2009.

[56] Rothstein HR, Sutton AJ, Borenstein M, editors. *Publication Bias in Meta-Analysis: Prevention, Assessment and Adjustments*. New York, NY: Wiley; 2005.

[57] Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. *Introduction to Meta-Analysis*. Chichester: Wiley; 2009.

[58] Sterne JA, Becker BJ, Egger M. The funnel plot. In: Rothstein HR, Sutton AJ, Borenstein M, editors. *Publication Bias in Meta-Analysis: Prevention, Assessment and Adjustments*. London: John Wiley & Sons; 2005. p. 75-98.

[59] Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. *Introduction to Meta-Analysis*. Chichester: Wiley; 2009.

[60] Sterne JA, Egger M. Regression methods to detect publication and other bias in meta-analysis. In: Rothstein HR,

Sutton AJ, Borenstein M, editors. *Publication Bias in Meta-Analysis: Prevention, Assessment and Adjustments*. London: John Wiley & Sons; 2005. p. 99-110.

[61] Rosenthal R. The file drawer problem and tolerance for null results. *Psychological Bulletin*. 1979; 86(3): 638-641.

[62] Orwin RG. A fail-safe N for effect size in meta-analysis. *Journal of Educational Statistics*. 1983; 8(2): 157-159.

[63] Duval S, Tweedie R. Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*. 2000; 56: 455-463.

[64] Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. *Introduction to Meta-Analysis*. Chichester: Wiley; 2009.

[65] Cohen J. Statistical power analysis. *Current Directions in Psychological Science*. 1992; 1(3): 98-101.

[66] Repie, M. A School mental health issues survey from the perspective of regular and special education teachers, school counselors, and school psychologists. *Education and Treatment of Children*. 2005; 28(3): 279-298

[67] Suldo S, Thalji A, Ferron J. Longitudinal academic outcomes predicted by early adolescents' subjective well-being, psychopathology, and mental health status yielded from a dual factor model. *The Journal of Positive Psychology*. 2011; 6(1): 17-30.

[68] Gall G, Pagano ME, Desmond MS, Perrin JM, Murphy JM. Utility of psychosocial screening at a school-based health center. *Journal of School Health*. 2000; 70(7): 292-298.

- [69] Masi G, Tomaiuolo F, Sbrana B, Poli P, Baracchini G, Pruneti CA, Favilla L, Floriani C, Marcheschi M. Depressive symptoms and academic self-image in adolescence. *Psychopathology*. 2001; **34**: 57-61.
- [70] Fosterling F, Binser MJ. Depression, school performance and the veridicality of perceived grades and causal attributions. *Personality and Social Psychology Bulletin*. 2002; **28**(10): 1441-1449.
- [71] Fleming CB, Haggerty KP, Catalano RF. Do social and behavioral characteristics targeted by preventive interventions predict standardized test scores and grades? *Journal of School Health*. 2005; **75**(9): 342-349.
- [72] Greenberg MT, Weissberg RP, O'Brien MU, Zins JE, Fredericks L, Resnick H, Elias MJ. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist*. 2003; **58**: 466-474.
- [73] Baskin TW, Slaten CD, Sorenson C, Glover-Russell J, Merson DN. Does youth psychotherapy improve academically related outcomes? A meta-analysis. *Journal of Counseling Psychology*. 2010; **57**(3): 290-296.
- [74] Iyenger S, Greenhouse JB. Selection models and the file drawer problem. *Statistical Science*. 1988; **3**:109-135.
- [75] U. S. Department of Education. *ESEA Blueprint for Reform*. Washington, DC: U. S. Department of Education; 2010.
- [76] Di Pietro G, Biagi F, Costa P, Karpiński Z, Mazza J. *The likely Impact of COVID-19 on Education: Reflections Based on the Existing Literature and International Datasets*. Luxembourg: Publications Office of the European Union; 2020.
- [77] United Nations. *Policy Brief: Education During COVID-19 and Beyond*. New York, NY: United Nations; 2020.
- [78] Dunn E, Milliren C, Evans C, Subramanian S, Richmond T. Disentangling the relative influence of schools and neighborhoods on adolescents' risk for depressive symptoms. *American Journal of Public Health*. 2015; **105**(4): 732-740.