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Review

A multivariate meta-analysis of student misbehavior and teacher burnout

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ABSTRACT

A multivariate meta-analysis was conducted to explore the relationship between student misbehavior and the three dimensions of teacher burnout (i.e., emotional exhaustion, depersonalization, and personal accomplishment). A total of 21 independent samples were included in the analysis, which provided a total of 63 effect sizes. Our results indicated that students' misbehavior related significantly with the three dimension of teacher burnout. The largest effect was between students' misbehavior and teacher emotional exhaustion, followed by depersonalization, and then personal accomplishment. Moderator analyses revealed that grade level, teacher age, country, percentage of female teachers, and year of publication each explained some variability among the effects. Practical recommendations and recommendations for future research are discussed.

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1. Introduction

Teacher burnout has become a critical concern for many interested in teacher attrition (Chan, 2006). In the United States of America, it has been documented that half of new teachers are leaving the profession within the first five years (Lambert & McCarthy, 2006), it is important to explore what factors might contribute to this alarming trend. One of the major reasons for teacher attrition is job dissatisfaction, with almost 25% of these departures due to problems related to student misbehavior (Ingersoll, 2003). Thus, it is not surprising that researchers have linked student misbehavior to teacher feelings of burnout (Abel & Sewell, 1999; Betoret, 2009; Gelman, 2008; Kokkinos, 2007).

Teachers indicate that student misbehavior interferes with their teaching activities (Robers, Zhang, Truman, & Snyder, 2012). Moreover, student misbehavior has been reported as the most salient stressor related to teacher burnout (McCormick & Barnett, 2011). However, there is not agreement regarding the magnitude of this relationship. In this study, we explore the evidence of the relationship between student misbehavior and teacher burnout. Our main research questions include: (a) What is the strength of the relationship between student misbehavior and teacher burnout? and (b) Does this relationship vary across publication type, school grade level, number of items in the misbehavior scale, country of origin, year of publication, country of origin, percentage of female teachers, or years of experience (these terms are defined below within the methods section)?

1.1. Teacher burnout

The construct of burnout has been an important focus of psychological research for almost four decades. The term burnout was first coined by Freudenberguer (1974, 1975) to describe the demotivation and emotional exhaustion he witnessed in volunteers working at a free health clinic. He noticed that these feelings developed over time and were often accompanied by various physical and psychological symptoms, including nausea, headaches, sleeplessness, irritability, and frustration (Freudenberguer, 1975; Maslach & Schaufeli, 1993). Around the same time, Maslach (1976) recognized that many workers in human service professions were not only emotionally depleted, but also had negative attitudes regarding their clients. Since Freudenberger's and Maslach's inaugural works, more than 6000 academic publications have been written on job burnout (Schaufeli, Leiter, & Maslach, 2009).

Burnout is a multidimensional construct, comprised of the following components: emotional exhaustion, depersonalization, and lack of personal accomplishment. *Emotional exhaustion* refers to a worker not having the emotional resources to give of oneself psychologically (Maslach, Jackson, & Leiter, 1996). This component is often considered the primary element of burnout (Maslach, Jackson, and Leiter, 1996; Maslach, Jackson, and Schwab, 1996; Schaufeli & Taris, 2005). *Depersonalization* describes the cynical feelings a worker exhibits toward his or her clients. Finally, *lack of personal accomplishment* denotes a worker's feelings of dissatisfaction about his or her achievements in the workplace (Maslach, Jackson, and Leiter, 1996; Maslach, Jackson, and Schwab, 1996).

While burnout has been examined in a variety of human service professions, of particular interest to educators is the study of burnout among teachers. Teacher burnout has been studied in numerous countries, which suggests that it is an issue of international concern. Research on problems related to teacher burnout has been conducted in countries such as Australia (e.g., McCormick & Barnett, 2011), Canada (e.g., Fernet, Guay, Senécal, & Austin, 2012), Cypress (e.g., Kokkinos, 2007), Finland, (e.g., Hakanen, Bakker, & Schaufeli, 2006), Israel (e.g., Friedman, 2003), the Netherlands (e.g., Brouwers & Tomic, 2000), Norway (e.g., Skaalvik & Skaalvik, 2007), Spain (e.g., Betoret, 2009), the United Kingdom (e.g., Hastings & Bham, 2003), and the United States (e.g., Carson, Plemmons, Templin, & Weiss, 2011).

Most researchers interested in studying teacher burnout use some form of the Maslach Burnout Inventory (MBI) to measure how emotionally exhausted, depersonalized, and/or unaccomplished teachers feel (Maslach, Jackson, and Leiter, 1996; Maslach, Jackson, and Schwab, 1996). Three general forms of the MBI currently exist: the MBI-Human Services Survey (MBI-HSS; Maslach & Jackson, 1996), the MBI-Educators Survey (MBI-ES; Maslach, Jackson, and Leiter, 1996; Maslach, Jackson, and Schwab, 1996), and the MBI-General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996). Researchers

have also translated these scales into other languages, such as French (Dion & Tessier, 1994), Greek (Kokkinos, 2007) and Dutch (Schaufeli & Van Horn, 1995), lending credence to the assertion that burnout is an issue of global concern. Generally, most researchers studying teacher burnout use either the MBI-HSS or the MBI-ES, as these inventories were developed specifically for the human service professions, whereas the MBI-GS was created to address all other occupations. According to inventory guidelines, the only difference between the MBI-HSS and the MBI-ES in terms of items is that the MBI-HSS uses the term "recipient" to refer to the clients that human service professionals work with, while the MBI-ES uses the term "students." Both of these burnout inventories in their most recent editions focus on the frequency of emotional exhaustion, depersonalization, and lack of personal accomplishment. Teachers with a greater degree of burnout have higher scores on the dimensions of emotional exhaustion and depersonalization, and lower scores on the personal accomplishment dimension (Maslach, Jackson, & Schwab, 1996).

Numerous studies have examined how individual teacher characteristics affect burnout (Anderson & Iwanicki, 1984; Byrne, 1991; Jackson, Schwab, & Schuler, 1986; Schwab & Iwanicki, 1982), and the results are not always consistent. For example, some research has shown that teachers with less experience generally suffer from higher levels of burnout (Anderson & Iwanicki, 1984; Crane & Iwanicki, 1986; Fisher, 2011); however, this is not always the case (Brissie, Hoover-Dempsey, & Bassler, 1988; Friedman, 1991; Schwab & Iwanicki, 1982). Teacher age, on the other hand, has been associated consistently with burnout. Previous research has indicated that young teachers experience higher levels of emotional exhaustion than their older colleagues (Anderson & Iwanicki, 1984; Maslach & Jackson, 1981; Schwab, Jackson, & Schuler, 1986). In addition, there is a relationship between teacher burnout and grade level taught, such that secondary school teachers tend to experience higher levels of depersonalization and reduced personal accomplishment than elementary school teachers (Anderson & Iwanicki, 1984; Schwab & Iwanicki, 1982).

Recently, there has been a shift from a focus on the role of individual teacher characteristics to the effects of school factors on teacher burnout. In this context, several job demand factors have been shown to be associated with teacher burnout, including, but not limited to, work load (Skaalvik & Skaalvik, 2010), administrative support (Grayson & Alvarez, 2008), time pressures, poor working conditions, lack of recognition (Abel & Sewell, 1999), and student misbehavior (Kyriacou & Sutcliffe, 1978; Tsouloupas, Carson, Matthews, Grawitch, & Barber, 2010).

Teacher burnout has been associated with negative consequences at every level of the school system. Administrators and districts must contend with teacher attrition as burned out teachers are more likely to leave the profession (Goddard & Goddard, 2006; Singh & Billingsley, 1996). Teacher attrition is a financial strain as schools lose the time and money they have invested in the professional development of these teachers. According to the Alliance for Excellent Education (2005), in the United States of America the estimated cost of replacing public school teachers who leave the profession is around $2.2 billion a year. Burnout has also been related to increased absenteeism (Burke & Greenglass, 1995; Cunningham, 1983), which results in the additional costs and difficulties of finding and paying substitutes.

Feelings of burnout among teachers can also have severe a physical and psychological impact on the teachers themselves. Teachers who suffer from burnout often suffer from headaches, gastrointestinal issues, fatigue, low back pain, ulcers, high blood pressure, and depression (Guglielmi & Tatrow, 1998; Hock, 1988). In addition, burned out teachers have lower levels of self-efficacy, meaning that they feel less able to carry out their teaching tasks (Evers, Brouwers, & Tomic, 2002; Friedman, 2003; Skaalvik & Skaalvik, 2010).

Finally, burnout among teacher also impacts students. Teachers with higher levels of burnout assign less value to their relationships with students (Cano-Garcia, Padilla-Munoz, and Carrasco-Ortiz, 2005) and are more likely to use punitive practices in the classroom (Bibou-Nakou, Stogiannidou, & Kiosseoglou, 1999). Teacher absenteeism, a correlate of burnout, is linked to student academic achievement such that teachers who are absent more frequently tend to have lower achieving students (Miller, Murnane, & Willett, 2007; Woods & Montagno, 1997).

1.2. Student misbehavior

As mentioned previously, student misbehavior is one of the factors related most strongly to teacher burnout (Burke, Greenglass, & Schwarzer, 1996; Friedman, 1995). No single definition exists for student misbehavior, although the term is conceptualized consistently as behaviors that disrupt the teaching–learning process or interfere with the orderly operation of the classroom (Finn, Fish, & Scott, 2008; Houghton, Wheldall, & Merrett, 1988; Thompson, 2009). Examples of misbehavior include skipping or being late to class, disrupting instruction (e.g., speaking out of turn, swearing, getting out of seat without permission), verbal abuse or disrespect toward teachers, noncompliance (i.e., failure to follow directions), off-task behavior, bullying, harassment, and gang activity (Bru, Stephens, & Torsheim, 2002; Fernet et al., 2012; Finn et al., 2008; Robers et al., 2012). These types of behaviors fall under the category of disciplinary problems in the National Center for Education Statistics' School Survey on Crime and Safety (NCES SSOCS), which are differentiated from more criminal and violent behavior, such as weapon or drug possession, rape, theft, physical attacks with or without weapons, and vandalism (Robers et al., 2012).

Student misbehavior and disciplinary problems are measured in various ways. Several large, nationally representative samples and census surveys are conducted annually or biennially (e.g., Youth Risk Behavior Surveillance System, SSOCS) to assess the frequency of incidents as reported by students or teachers (Robers et al., 2012). Researchers often use similar surveys to assess the frequency of different misbehaviors (Bru et al., 2002; TsoulouPas, Bradshaw, Hershfeldt, & Leaf, 2010). Office Discipline Referrals (ODRs), which are standardized records of problem behaviors occurring in schools, are also

commonly used as an indicator of misbehavior (McIntosh, Frank, & Spaulding, 2010; Pas et al., 2010). Direct classroom observations of student behavior are frequently used to screen, assess, and monitor behavior (e.g., Volpe, DiPerna, Hintze, & Shapiro, 2005), and are also used in research studies to assess misbehavior (e.g., Ratcliff, Jones, Costner, Savage-Davis, & Hunt, 2010). Some studies ask teachers to report the extent to which certain behaviors cause them problems (e.g., Hakanen et al., 2006).

1.3. The relationship between student misbehavior and teacher burnout

Teachers report spending a significant amount of time dealing with problem behaviors (Beaman, Reynolds, & Stephenson, 2011), and approximately one-third of teachers indicate that misbehavior interferes with their teaching (Robers et al., 2012). Student misbehavior has been associated with reduced instructional time, job dissatisfaction, stress, lack of efficacy, and burnout (Friedman, 1995; Little, 2005; Little & Hudson, 1998; Miller, Ferguson, & Byrne, 2000; Poulou & Norwich, 2000). A more recent study by McCormick and Barnett (2011) reported student misbehavior as the most salient stressor related to teacher burnout.

The relationship between student misbehavior and teacher burnout is dynamic, and is influenced by the teacher's appraisal of the behavior, perceived self-efficacy and methods employed to control the behavior, and the resulting impact on the behavior, relationship, and classroom climate. Teachers' management of the misbehavior not only affects the behavior itself (Bru et al., 2002), but also the classroom environment (Avtgis & Rancer, 2008) and the relationship between the students and the teacher (Marzano, Marzano, & Pickering, 2003). A poor student–teacher relationship and students' perceptions of low emotional support from the teacher may, in turn, increase conflict and misbehavior in the classroom (Boyle, Borg, Falzon, & Baglioni, 1995; Bru et al., 2002).

Several models have been proposed to explain the complex relationship between student misbehavior and teacher burnout. Chang (2009) argues that the habitual pattern in teachers' appraisals of the misbehavior can cause (a) anger when perceived as caused by the student with a high control potential, (b) guilt and shame when perceived as caused by the teacher with high control potential, (c) frustration when viewed as caused by circumstances with low control potential, or anxiety when encountering new and uncertain situations. These repeated experiences of feeling guilt, frustration, anxiety, and anger in response to student misbehavior lead to emotional exhaustion and other aspects of burnout. Another model, proposed by Fernet and colleagues (2012), uses self-determination theory to articulate how misbehavior impedes teachers' intrinsic motivation by reducing their autonomous motivation and sense of self-efficacy, which leads to emotional exhaustion and higher levels of burnout. However, the designs of most primary studies on teacher burnout do not allow researchers to make causal attributions. Rather, we suggest that the reader consider the cyclical nature of the relationship in the context of other factors. This synthesis seeks to explore this relationship by utilizing moderator analyses to help to explain this relationship.

2. Method

Multivariate meta-analysis (Becker, 2000) techniques were used to combine the results of a number of studies that quantified the relationship between student misbehavior and teacher burnout. Using multivariate techniques allows researchers to model the dependence between effect sizes that arises when multiple subscales of an instrument are used in the same sample, as was the case with the Maslach Burnout Inventory.

2.1. Selection of studies

Studies included in this synthesis were obtained from several sources. First, electronic searches of three databases (PsycINFO, ERIC, and ProQuest) were conducted in September 2012, and updated in February 2013. Both published and unpublished manuscripts, including dissertations, were considered in order to reduce the possibility of publication bias (Cooper, 2010). A search was conducted using the key terms (a) misbehavior, (b) discipline, and (c) externalizing behavior combined with (a) burnout, (b) emotional exhaustion, (c) depersonalization, and (d) lack of accomplishment. The resulting 12 unique combined search terms were used in all three databases for a total of 36 unique searches, yielding 531 references. After removing duplicate references, a total of 383 studies remained from the initial literature search. The initial screening reviewed the titles and abstracts of all 383 studies, and eliminated articles that were not quantitative, or did not include a burnout or misbehavior measure. This initial screening allowed for the direct exclusion of 249 manuscripts, and the remaining 134 manuscripts were read in full. Additional studies were collected by conducting a snowball search of the reference lists of included studies, which generated an additional 10 articles for consideration.

The studies selected for inclusion quantified the relationship between student misbehavior and teacher burnout. Studies were excluded from the meta-analysis if they (a) were not written in English (e.g., Kuo, 1989); (b) were not a quantitative study of the relationship between student misbehavior and teacher burnout (e.g., Vanover, 2009); (c) did not include measures of both teacher burnout and student misbehavior (e.g., Hall, Villeme, & Phillippy, 1988; Warren, 2007); (d) did not utilize a sample of in-service teachers (e.g., Hall, Hall, & Abaci, 1997; Swagger, 2010); or (e) did not utilize Pearson's correlation(s) or measures that could be meaningfully converted to a Pearson's correlation (e.g., Huberman, 1993).

2.1.1. Omitted studies

Two studies (Friedman, 1995; Hastings & Bham, 2003) were excluded from our analysis because, although they focused on the relationship between student misbehavior and teacher burnout, they did not report the correlation between them. We emailed the authors requesting this data, but the data were no longer available. Three additional studies (Carbonneau, Vallerand, Fernet, & Guay, 2008; Hock, 1988; Kwiatkowski, 1996) had to be omitted because, while they included correlation coefficients between student misbehavior and teacher burnout, the teacher burnout measures themselves were aggregated. In other words, these studies did not report the correlations between student misbehavior and the subscales of teacher burnout, but rather with a total burnout score.

Another set of six studies was omitted because they did not report on all three of the burnout subscales. One study reported the correlations of student misbehavior with emotional exhaustion and cynicism (from the MBI-General Scale), but did not report on the correlation of misbehavior with personal accomplishment (Hakanen et al., 2006). Four additional studies reported only the correlation between teacher burnout and emotional exhaustion (Pas et al., 2010; Scherzo, 2010; Skaalvik & Skaalvik, 2011; Tsouloupas et al., 2010). In addition, Evers and Tomic (2002) was omitted because they utilized a modified version of the Maslach Burnout Inventory that asked students to report on their perceptions of the level of burnout in their teacher. This method of measuring teacher burnout did not align with the other included studies, which were all teacher self-reported burnout measures, and thus it was omitted. Finally, two studies were omitted because the misbehavior instrument used was not comparable to the scales from the other studies. Rather than reporting on the frequency or severity of misbehaviors, these studies reported on teachers' *emotional responses* to negative behaviors (Chang, 2013; Rose, Horne, Rose, & Hastings, 2004).

2.1.2. Studies sharing common data

One set of manuscripts reviewed for this synthesis (Brouwers & Tomic, 1999, 2000) utilized the same sample, and reported on the same results. For this reason, only Brouwers and Tomic (2000) was included.

In the end, a total of 19 studies with 21 independent samples were included in this review, contributing a total of 63 effect sizes. Of these studies, eleven provided full correlation matrices between student misbehavior and the teacher burnout subscales, and two studies provided full matrices for two independent groups: rural schools and urban schools (Abel & Sewell, 1999), and US and German samples (Ullrich, 2009). Six studies contained bivariate correlations between the subscales of teacher burnout and student misbehavior, but they did not include correlations between the teacher burnout subscales themselves. One study (Sedgwick, 1998) did explicitly include a combination of general and special education teachers, but we included this study after conducting a sensitivity analysis.

The typical study in this review reported on the relationship between student misbehavior and teacher burnout using some form of regression analyses. The typical study was cross-sectional and did not make use of multilevel analyses. From the typical study the Pearson product moment correlations were extracted for this meta-analysis. The majority of studies reported on a combination of grade levels, most typically spanning from elementary through high school (e.g., Grayson & Alvarez, 2008; Hoerr, 1990). In all studies, student misbehavior was reported by the teacher and measured using a scale that had less than 5 items (e.g., Abel & Sewell, 1999; Carson et al., 2011; Fernet, Guay, Senecal, & Austin, 2012; Ullrich, 2009), and in all cases, some form of the Maslach Burnout Inventory was used as the measure of teacher burnout.

2.2. Coding study features

In order to examine potential sources of variation in study findings, several variables were coded as possible moderators of the relationship between student misbehavior and teacher burnout. These included: (a) publication type; (b) teacher sample size; (c) student sample size; (d) year of publication; (e) grade level; (f) unit of analysis; (g) discipline measure used; (h) number of items used from the discipline scale; (i) burnout measure used; (j) number of items used from the burnout scale; (k) location (i.e., urban, suburban, rural); (l) socio-economic status; (m) mean years of teaching experience; (n) country; (o) sector (i.e., public, private, or a combination); (p) discipline scale reports frequency; (q) discipline scale reports severity; (r) person who reported discipline measure; (s) sampling method; (t) and type of statistical analysis. Due to the nature of the reporting practice in the primary studies however, we were not able to use all of these moderators in our analyses. To ensure the reliability of the data, two coders independently reviewed all studies included in our synthesis. Reliability was computed separately for each variable as the percentage of agreement between coders. The reliabilities ranged from 78.66% for the number of items in the discipline scale to 100% for publication type. Low reliabilities for scale items were the result of some coders reporting the number of items in the total scale, while others were reporting the number of items in the misbehavior subscale, and these were resolved straightaway. Coders met to resolve any further disagreements, and when agreement could not be reached, a third coder was consulted to resolve the issue prior to conducting any analyses.

2.2.1. Misbehavior

Student misbehavior was typically reported in one of two ways. In some studies, misbehavior was reported as frequency (e.g., number of occurrences of misbehavior or number of discipline referrals). Other studies reported on the severity of misbehaviors (i.e., the perceived intensity of the misbehaviors within the educational setting or the extent to which behaviors caused problems for teachers). Teachers were the primary reporters of this measure, though principals, students and school records were sources as well.

2.2.2. Burnout measures

The measure of burnout used, including the researcher's name and year of publication, was coded for all studies. All 19 studies in this analysis used some form of the Maslach Burnout Inventory, with 36% explicitly stating that the MBI Educator Survey was used. Some studies (e.g., Betoret, 2009; Carson et al., 2011; Gonzalez, 1997) reverse scored the personal accomplishment subscale such that higher levels of student misbehavior corresponded to higher levels of reduced personal accomplishment (and vice versa). We recoded these correlations so that the relationship between student misbehavior and personal accomplishment was negative. This was done to reflect the underlying theory described in the Maslach Burnout Inventory Manual, which is that lower personal accomplishment scores indicate higher levels of burnout (Maslach, Jackson, & Leiter, 1996).

2.3. Effect sizes

Effect sizes were recorded as Pearson correlation coefficients. Reliabilities for the burnout and discipline measures were used to correct for attenuation (Hunter & Schmidt, 1990). Specifically, the three effect sizes considered in this study were the relationship between students' misbehavior and teachers' emotional exhaustion (r_{M_EE}), depersonalization (r_{M_DP}), and personal accomplishment (r_{M_PA}). Sample reliabilities were preferred over reliabilities reported in the manual if both measures were reported. In instances where no reliability was reported for either discipline or burnout measure, a reliability of one was utilized to ensure the most conservative estimate.

2.4. Analyses

Multivariate meta-analysis (e.g., Becker, 1992; Becker, 2000; Gasparrini, Armstrong, & Kenward, 2012; Jackson, White, & Thompson, 2010; Jackson, White, & Riley, 2012; Kalaian & Raudenbush, 1996; Raudenbush, Becker, & Kalaian, 1988; van Houwelingen, Arends, & Stijnen, 2002) is an extension of univariate meta-analysis (e.g., Cooper, Hedges, & Valentine, 2009; Hedges & Olkin, 1985). Multivariate meta-analysis allows for modeling the relationship between effect sizes. It is customary to adopt a two-stage analysis approach (i.e., within- and between-studies). The first stage, the within-study model, summarizes results from each study in new estimated parameters, and the second stage, the between-studies model, specifies the distribution of the effects and tests for the effect of moderators (the details of each stage are discussed in the Appendix). All the analyses were performed in the unattenuated correlation metric (Hunter & Schmidt, 1990).

2.5. Publication bias

Publication bias (Rothstein, Sutton, & Borenstein, 2006) should be taken into account in any meta-analysis, given that statistically significant results are more likely to be published than non-significant results. In this meta-analysis, we included published and unpublished studies as a strategy to decrease the likelihood of finding publication bias. We conducted Egger's regression test for funnel plot asymmetry for each set of effect sizes (Egger, Davey Smith, Schneider, & Minder, 1997), a statistical significant result suggests the presence of publication bias. The results indicated that there were not statistically significant asymmetries for the three sets of effects (outcomes): students' misbehavior with depersonalization ($z = -1.44$, $p = .15$), students' misbehavior with personal accomplishment ($z = -0.03$, $p = .98$), and students' misbehavior with teacher's emotional exhaustion ($z = 0.47$, $p = .63$).

3. Results

The 21 independent samples included in this meta-analysis each contributed three effect sizes for a total of 63 effect sizes. The values of the unattenuated (a.k.a., disattenuated) correlations between misbehavior and emotional exhaustion (EE) ranged from .09 to .74 with a median of .42, and the distribution was slightly negatively skewed. The unattenuated correlations between misbehavior and depersonalization (DP) ranged from .10 to .71, and were slightly positively skewed with a median of .35. Finally, the unattenuated correlations between misbehavior and personal accomplishment (PA) ranged from −.66 to −.05 with a median of −.29, and the distribution was slightly negative skewed. Fig. 1 presents the histogram for each set of effects, while Fig. 2 presents the forest plots. Both of these figures provide information regarding the distribution of our effect-sizes. Fig. 2 displays the uncertainty around each effect size, indicating that some studies appear to have larger sample size (narrower confidence interval) than other. In addition, we can anticipate a large amount of heterogeneity given that the effects and their confidence interval do not align.

The multivariate homogeneity test (Becker, 1992; Jackson et al., 2012) for the 63 unattenuated correlations was significant ($Q_T(60) = 634.32$, $p < .001$), indicating between-studies heterogeneity. In addition, the multivariate $I^2 = 90.5\%$ suggested a high degree of heterogeneity across studies. The between-study variances of $\tau^2_{M\_EE} = .0187$, $\tau^2_{M\_DP} = .0284$, and $\tau^2_{M\_PA} = .0222$ indicate that the largest variability occurs for the correlations between misbehavior and depersonalization (DP) (see Table 1).

The overall weighted average unattenuated correlation between misbehavior and emotional exhaustion ($\bar{r}_{M\_EE}$) was .44 ($SE = .0333$, $p < .001$), with a 95% *CI* from .37 to .50, under the random-effects model. The random-effects mean correlation

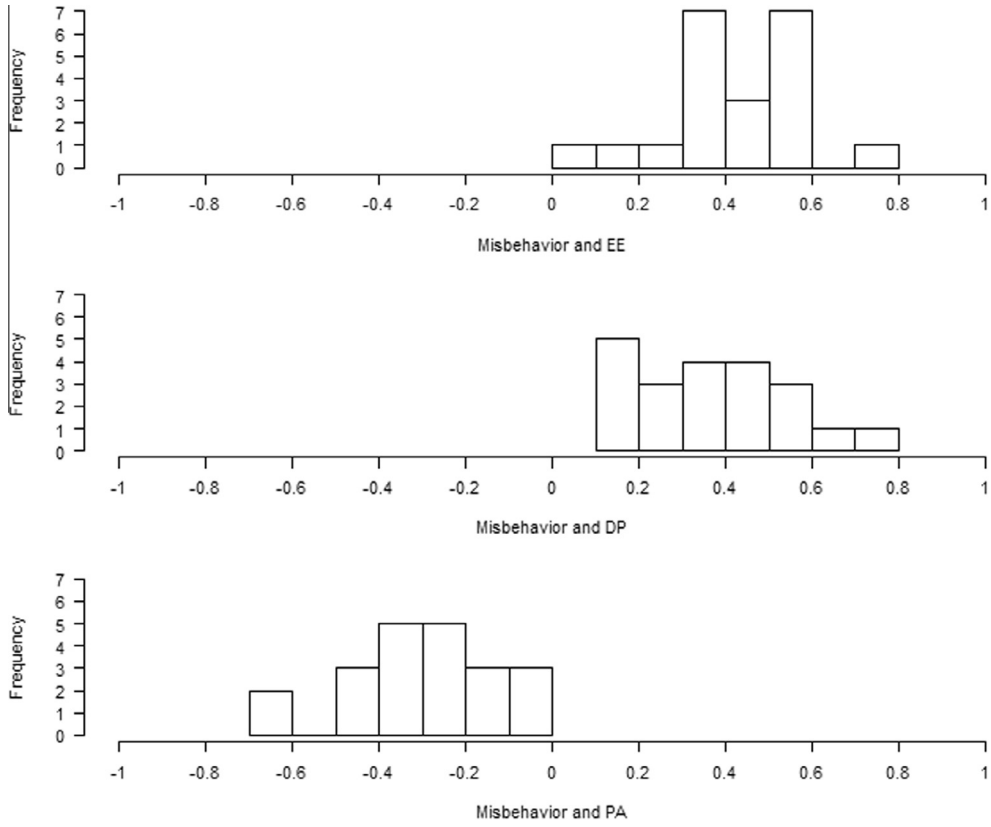

Fig. 1. *Histograms for the Three Groups of Effect Sizes*. Note: EE, emotional exhaustion; DP, depersonalization; PA, personal accomplishment.

between misbehavior and depersonalization ($\bar{r}_{M\_DP}$) was .36 (SE = .0405, p < .001), with a 95% *CI* from .28 to .44. Finally, the mean correlation between misbehavior and personal accomplishment under random- effects ($\bar{r}_{M\_PA}$), was −.31 (SE = .0366, p < .001), with a 95% *CI* from −.38 to −.24.

All of the correlations between the effects reported in primary studies indicated a moderate or strong association. Specifically, when the correlations between misbehavior and emotional exhaustion are large, the correlations between misbehavior and depersonalization are large as well (.83). The other two correlations show a negative relationship, indicating a moderate relationship (−.50) between the magnitudes of r_{M_EE} and r_{M_PA}, and a strong relation (−.73) between r_{M_DP} and r_{M_PA}, respectively. Given that significant amounts of heterogeneity were found, we attempted to explain at least some of the variability among effects by performing moderator analyses. The intercept, slopes, standard errors, and Q test for each moderator analyses are presented in Table 2.

3.1. Moderator analyses

3.1.1. Publication type

In this analysis, we compared the effects based on the publication type of the manuscripts (i.e., published in a peer reviewed journal vs. other). Originally, we specifically coded the publication type as journal article, dissertation, conference paper or report. However, for the analysis we recoded publication type dichotomously into published (11 studies) and other (10 studies). Publication type does not relate significantly to the size of any of the effects and significant variability still exists among the effects under a mixed-effects model ($Q_{Residual}(57) = 568.58$, p < .001). This suggests that there were not statistically significant differences in the size of the effects between published and unpublished manuscripts.

3.1.2. Grade level

Four different grade level categories were examined: studies that reported all three combined – elementary, middle and high school (k = 6), middle and high school combined (k = 5), elementary and middle combined (k = 8), and high school or high school and vocational combined (k = 2). The analysis of grade level differences showed a significantly higher mean correlation for high school or high school and vocational combined for the correlation between misbehavior and emotional exhaustion (b = .22, SE = .1099, z = 2.03, p < .05) and for the correlation between misbehavior and depersonalization (b = .27, SE = .1198, z = 2.23, p < .05) under mixed-effects model. Nonetheless, significant variation ($Q_{Residual}(51) = 286.36$, p < .05) was still unexplained.

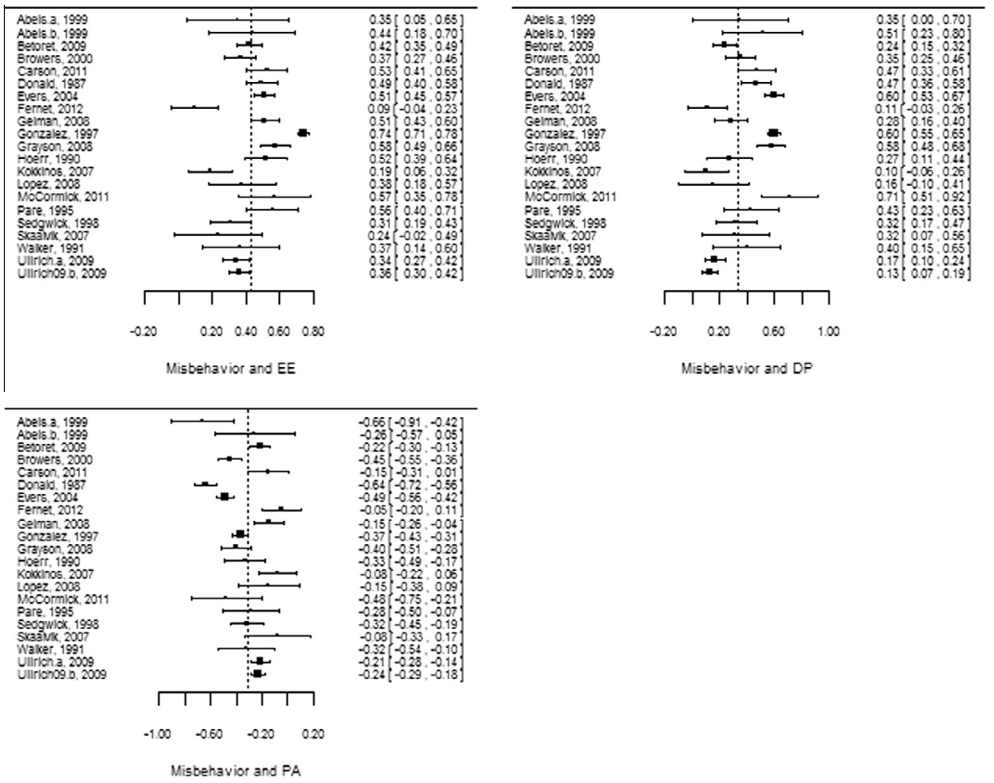

Fig. 2. *Forest Plots for the Three Set of Effect Sizes*. Note: EE, emotional exhaustion; DP, depersonalization; PA, personal accomplishment.

3.1.3. Number of items in misbehavior

The median for the number of items that researchers used in their discipline measures was 6 (range from 1 to 32 items). We rearranged the number of items variable into three mutually exclusive categories: (a) less than five items ($k = 6$); (b) less than or equal to 11 items ($k = 13$); and (c) and 12 or more items ($k = 2$). This moderator did not relate significantly to the size of the correlations under the mixed-effects model for any of our outcomes ($Q_{Residual}(54) = 454.47$, $p < .05$). This indicates that the number of items did not explain any differences among the correlations.

3.1.4. Country of origin

Originally, we coded the specific country of origin for each study (e.g., US, Spain, Netherlands). There were 12 studies from the US, so for the analysis, we recoded country of origin in two categories: US ($k = 12$) and other ($k = 9$). Country of origin showed a significantly higher mean correlation for studies conducted in the US than abroad for the correlation between misbehavior and emotional exhaustion under a mixed-effects model ($b = .14$, $SE = .0607$, $z = 2.34$). Nonetheless, significant variation was still unexplained ($Q_{Residual}(57) = 502.31$, $p < .05$).

3.1.5. Year

This analysis assessed if there was any trend between the magnitude of the three outcomes and the year that the study was published. The median for this predictor was 2005 and it ranged from 1987–2013. The year that the study results were reported significantly related to the correlation between misbehavior and personal accomplishment, reducing some but not all of the between-study variability ($Q_{Residual}(57) = 450.21$, $p < .05$). The slope value of $b = .013$ ($SE = 0.0037$, $z = 3.45$, $p < .05$) suggests that the newer studies reported a smaller average correlation between misbehavior and personal accomplishment than older studies.

3.1.6. Teacher age

The median of teacher age was 42.3 and it ranged from 33.84 to 49.07 years. The analysis of the age of the teachers showed a significantly lower mean correlation for the correlation between misbehavior and depersonalization ($b = .03$, $SE = .0122$, $z = 2.03$, $p < .05$), indicating that the average correlation between misbehavior and depersonalization is lower for older teachers. In addition, results also suggest that older teachers have a significantly lower mean correlation for the correlation between misbehavior and personal accomplishment ($b = -.02$, $SE = .0106$, $z = -2.25$, $p < .05$). Nonetheless, significant variation ($Q_{Residual}(45) = 500.80$, $p < .05$) was still unexplained.

Table 1
Included studies.

Author	Year	Publication type	School level	Country of origin	Years of experience	% Female	Teacher age	# Misbehavior items
Abel & Sewell	1999	Journal	Secondary	United States	15.70	80.77	NA	9
				(2 independent samples)	15.35	91.30	NA	9
Betoret	2009	Journal	Primary and secondary	Spain	14.61	62.56	40.65	7
Brouwers & Tomic	2000	Conference	Secondary	Netherlands	21.00	28.00	46.00	6
Carson, Plemmons, Templin, & Weiss	2011	Book chapter	Middle school	United States	NA	74.11	42.00	1
Donald	1987	Dissertation	Elementary, middle, and high school	United States	17.79	64.50	43.23	7
Evers, Tomic, & Brouwers	2004	Journal	Vocational school	Netherlands	22.00	21.95	49.07	5
Fernet, Guay, Senécal, & Austin	2012	Journal	Elementary, middle, and high school	Canada	15.00	80.15	41.50	11
Gelman	2008	Dissertation	Pre-K, elementary, middle, and high school	United States	13.50	62.34	43.50	6
Gonzalez	1997	Dissertation	High school	United States	NA	53	44	6
Grayson & Alvarez	2008	Journal	Elementary, middle, and high school	United States	NA	73.80	42.34	5
Hoerr	1990	Dissertation	Elementary, middle, and high school	United States	43.63	68.81	40.00	32
Kokkinos	2007	Journal	Elementary and middle school	Greece	11.96	79.30	33.84	8
López et al.	2008	Journal	Middle and high school	Spain	NA	59.40	38.60	6
McCormick & Barnett	2011	Journal	Middle and high school	Australia	17.90	57.00	42.50	4
Pare	1995	Dissertation	Elementary	United States	14.06	NA	NA	1
Sedgwick	1998	Dissertation	Elementary and middle school	United States	10.68	91.30	NA	7
Skaalvik & Skaalvik	2007	Journal	Elementary, middle, and high school	Norway	14.00	63.00	45.00	4
Walker	1991	Dissertation	Elementary	United States	17.79	NA	39.89	1
Ullrich	2009	Dissertation	Elementary	United States	12.80	96.10	37.77	4
			Elementary	Germany	17.63	83.90	44.45	4

3.1.7. Percentage of females

This analysis assessed if there was any trend between the magnitude of the three outcomes and the percentage of females teachers. The median for this predictor was 68.81 and it ranged from 21.95 to 96.1. The percentage of females teachers significantly related to the correlation between misbehavior and depersonalization, reducing some but not all of the between-study variability ($Q_{\text{Residual}}(51) = 461.88$, $p < .05$). The slope value of $b = -.01$ ($SE = 0.0020$, $z = -2.17$, $p < .05$) suggests that the larger the percentage of females reported in a study, the larger the average correlation between misbehavior and depersonalization.

4. Discussion

The overall goal of this study was to provide a quantitative review of the relationship between student misbehavior and teacher burnout. The three main effects synthesized in this study, by ways of multivariate meta-analysis, indicate that there is a statistically significant relationship between misbehavior and the three dimensions of burnout (i.e., emotional exhaustion, personal accomplishment, and depersonalization). Our results indicate that the largest effect is between misbehavior and emotional exhaustion($\bar{r}_{\text{M\_EE}} = .44$). The results also indicate that students' misbehavior is also significantly related to teacher depersonalization ($\bar{r}_{\text{M\_DP}} = .36$). On the other hand, the results indicate that misbehavior is negatively related to personal accomplishment($\bar{r}_{\text{CMSE\_EE}} = -.31$), indicating that when students' misbehavior increases, teachers feelings of personal accomplishment decrease.

The magnitude of the correlations between students' misbehavior and three dimensions of burnout are moderate and comparable to results reported elsewhere from meta-analyses of other professional groups (Lee, Lim, Yang, & Lee, 2011; Melchior, Bours, Schimtz, & Wittich, 1997), suggesting that student misbehavior is a critical correlate of teacher burnout. The moderate to large correlation between students' misbehavior and emotional exhaustion is particularly important as this is a primary element of burnout that indicates a teacher not having the emotional resources to give of himself or herself psychologically (Maslach, Jackson, & Leiter, 1996; Schaufeli & Taris, 2005). Given the previously established relationship between burnout and the use of punitive practices in the classroom (Bibou-Nakou et al., 1999), it is likely that the exhaustion may hamper a teacher's ability to use effective, positive behavior management strategies to reduce students' misbehavior. Our results also indicate that depersonalization and a reduced sense of personal accomplishment are correlated moderately

Table 2
Coefficients, standard errors (in parentheses), and fit statistics with degrees of freedom (in parentheses) for misbehavior and the three dimensions of burnout.

Model		Coefficients			$Q_{Residual}$
		M_EE	M_DP	M_PA	
Null	Intercept	.44* (.0333)	.36* (.0405)	−.31* (.0366)	634.32* (*df* = 60)
Publication type	Intercept (published)	.47* (.0458)	.33* (.0566)	−.34* (.0510)	568.58* (*df* = 57)
	Unpublished	−.06 (.0656)	−.05 (.0820)	.06 (.0732)	
Grade level	Intercept (elementary, middle, and high school)	.41* (.0586)	.33* (.0639)	−.31* (.0639)	286.36* (*df* = 51)
	Middle/middle and high school	.02 (.0942)	.10 (.1030)	−.10 (.1029)	
	Elementary/ elementary and middle	−.00 (.0774)	−.06 (.0846)	.08 (.0845)	
	High school/high school and vocational	.22* (.1099)	.26* (.1198)	−.12 (.1200)	
Number of misbehavior items	Intercept (less than five)	.43* (.0650)	.31* (.0752)	−.29* (.0723)	454.47* (*df* = 54)
	Less or equal eleven	.03 (.0774)	.08 (.0905)	−.05 (.0862)	
	Twelve or more	−.13 (.1263)	−.09 (.1492)	.09 (.1419)	
Country of origin	Intercept (US)	.36* (.0457)	.29* (.0597)	−.26* (.0557)	502.31* (*df* = 57)
	Others	.14* (.0607)	.11 (.0796)	−.08 (.0740)	
Year of publication	Intercept	11.80 (8.61)	12.54 (10.86)	−25.98* (7.47)	450.21* (*df* = 57)
	Slope	−.01 (.0043)	−.01 (.0054)	.01* (.0037)	
Teacher age	Intercept	−.28 (.4540)	−.87 (.5162)	.71 (.4496)	500.80* (*df* = 45)
	Slope	.02 (.0107)	.03* (.0122)	−.02* (.0106)	
Percentage of females	Intercept	.60* (.1246)	.64* (.1393)	−.52* (.1345)	461.88* (*df* = 51)
	Slope	−.00 (.0018)	−.01* (.0020)	.00 (.0019)	

Note: EE, emotional exhaustion; DP, depersonalization; PA, personal accomplishment; M, misbehavior; *$p < .05$.

to student misbehavior. Together, these results suggest that student misbehavior is related to all aspects of teacher burnout as opposed to being related to a more focused aspect of the construct.

Moderator analyses revealed no differences for publication type and number of items on the student misbehavior measures, although grade level, teacher age, country, percentage of females, and year of publication each contributed to variance in the relationship between teacher burnout and student misbehavior. Studies of high school or high school and vocational combined had a higher mean correlation between student misbehavior and emotional exhaustion, as well as student misbehavior and depersonalization. It has been well documented that disruptive behavior in more common in secondary than elementary school settings (Nickerson & Martens, 2008), and this meta-analysis extends this research to establish the connection between this misbehavior and teacher burnout. Consistent with previous findings (Anderson & Iwanicki, 1984; Maslach & Jackson, 1981; Schwab et al., 1986), our meta-analysis revealed stronger correlations for younger teachers between student misbehavior and depersonalization. This finding underscores the importance of preparing pre-service teachers to manage classroom behavior and to learn stress management techniques. Percentage of females in the studies also corresponded related to stronger correlations between the two constructs. Taken together, these results suggest that prevention and intervention efforts for both classroom management and stress management should be prioritized for younger teachers, females, and those who teach at the secondary levels. Moderator analyses also revealed that the relationship was strongest for studies conducted in the United States versus other countries, although, somewhat surprisingly, effects were stronger for earlier rather than for more recently published studies.

This meta-analysis is situated within the larger body of research and theory where teachers are part of an ecosystem that may be impacted by both proximal and distal aspects of their personal and work environments. In this context, if malleable factors can be identified as related to burnout, administrators and/or districts may be able to put supports or policies in place

that may improve teacher burnout. In order to address misbehavior, educational policymakers should use data to assess the prevalence of misbehavior, develop and implement clear policies, provide schoolwide training for staff, implement evidence-based prevention programming, and use effective disciplinary practices that teach and reinforce skill development (Nickerson, Cornell, Smith, & Furlong, 2013; Sprague & Horner, 2012; Wilson & Lipsey, 2007). Because many educators have insufficient preparation in effective classroom management, it is critical that pre-service and in-service training be provided so that teachers can prevent misbehavior and respond effectively when it occurs (Espelage et al., 2013).

Clearly, a primary concern about teacher burnout is attrition (Goddard & Goddard, 2006; Singh & Billingsley, 1996), and the corresponding effect of attrition on students' achievement and engagement in school (National Center for the Analysis of Longitudinal Data in Education Research, 2009). We should also be concerned about teachers who suffer from burnout yet stay in the profession. Teacher burnout is associated with poor teacher–student relationships (Cano-Garcia, Padilla-Munoz, & Carrasco-Ortiz, 2005) and the use of punitive classroom practices (Bibou-Nakou et al., 1999), which may, in turn, contribute to increased conflict and misbehavior in the classroom (Boyle et al., 1995; Bru et al., 2002).

As one of our most valuable resources, the health and well-being of teachers should be a major area of concern. In order to assist in the prevention and or reduction of teacher burnout, emphasis should be placed on strategies that teachers can use to effectively manage student misbehavior (see Espelage et al., 2013). When teachers can effectively manage challenging behaviors, their students are more likely to be participating in on-task behaviors (Marzano et al., 2003), thereby reducing their opportunity for misbehavior. Additionally, teachers should be taught how to manage their own stress, and to learn how to recognize and mitigate signs of burnout. Mindfulness training is emerging as a candidate intervention, as recent preliminary randomized controlled trials have found that this leads to lowered levels of occupational stress and psychological symptoms, as well as reduced teacher burnout compared to control conditions (Flook, Goldberg, Pinger, Bonus, & Davidson, 2013; Roeser et al., 2013).

5. Limitations and future research directions

Although we were able to explain a portion of the variability in teacher burnout scores through student misbehavior, there is still much variability that is not accounted for by any of the variables that we coded in this meta-analysis. The decision of including only studies that reported on the three dimensions of burnout can also be seen as a limitation of this study. However, this decision treated burnout as a multidimensional construct facilitated the multivariate analysis (in the sense that there are not missing correlations), allowed for clear interpretation of our results, and reduce the risk of publication bias. Nevertheless, future research should compared our results with meta-analysis that synthesized burnout as a unidimensional construct.

Finally, our results show significant relationships between student misbehavior and teacher burnout, but caution should be employed in making causal inference regarding the direction of this relationship. It is possible that teachers with higher levels of burnout perceive students' behaviors to be more problematic due to their own exhaustion, depersonalization, and reduced sense of personal accomplishment. The relationship between student misbehavior and burnout is likely cyclical, and influenced by attributions, negative emotions (e.g., guilt, frustration, anxiety, anger) and reduced intrinsic motivation. Future research should examine the moderating and mediating processes in the relationship between student misbehavior and the three aspects of teacher burnout. Moreover, the field could potentially benefit from more primary studies conducting cross-lagged panel design (for examples see Corrigan et al., 1994; Hakanen, Schaufeli, & Ahola, 2008; Schwarzer & Hallum, 2008).

Appendix

In this appendix we described the technical details of our study. First, we describe the within and between stage. Then, the multivariate meta-analysis model (Becker, 1992, 2000; Gasparrini et al., 2012; Jackson et al., 2010; Jackson et al., 2012) is discussed.

Stage-one (Within-study) Analysis. The Pearson product-moment correlations (r_{ij}) between the four variables of interest (discipline, emotional exhaustion, depersonalization, and personal accomplishment) were extracted from each study. We corrected the correlations for attenuation by using the reliability for each variable (Hunter & Schmidt, 1990) and the equation $ES_{ij} = r_{ij}/(\sqrt{r_{ii}}\sqrt{r_{jj}})$, where ES_{ij} represents the unattenuated correlation between variables i and j, r_{ij} is the correlation extracted from the manuscript between variable i and variable j, and r_{ii} and r_{jj} are the reliabilities associated with variable i and variable j, respectively. The variance for each ES_{ij} was computed as $V_r = v(r)/a^2$, where $v(r) = (1 - r_{ij}^2)^2/(n-1)$, and $a = r_{ij}/ES_{ij}$ (Borenstein, Hedges, Higgins, & Rothstein, 2009, p. 343). The asymptotic covariance between each pair of ES_{ij} was estimated using the asymptotic covariance equation between correlations (Becker, 2000; Olkin & Siotani, 1976, p. 238), which is:

$$Cov(r_{ist}, r_{iuv}) = [0.5\rho_{ist}\rho_{iuv}(\rho_{isu}^2 + \rho_{isv}^2 + \rho_{itu}^2 + \rho_{itv}^2) + \rho_{isu}\rho_{itv} + \rho_{isv}\rho_{itu} - (\rho_{ist}\rho_{isu}\rho_{isv} + \rho_{its}\rho_{itu}\rho_{itv} + \rho_{ius}\rho_{iut}\rho_{itv} + \rho_{ivs}\rho_{ivt}\rho_{ivu})]/n_i,$$

where r_{ist} is the correlation between the sth and tth variables in study i, r_{iuv} is the correlation between the vth and uth variables in study i, and ρ_{ist} and ρ_{iuv} are the population values. Our analyses were conducted in the unattenuated correlation metric. Although Hedges and Olkin (1985) recommended the use of Fisher's z transformation when synthesizing correlation coefficients, meta-analytic researchers have debated on whether or not this is necessary. While a detailed discussion of this

issue is not the focus of this manuscript, we direct the reader to Field (2001), Hafdahl (2009), Hunter and Schmidt (1990), Hunter, Schmidt, and Jackson (1982), and Schulze (2004, 2007) for further information.

Stage-two (Between-study) Analysis. Once the three effect sizes (ES_{ij}) were corrected, the three variances and three asymptotic covariances were computed using the mvmeta (Gasparrini et al., 2012) and metafor (Viechtbauer, 2010) packages. First, we estimated the overall weighted effect size for each outcome, as well as the between-study variance–covariance matrix using restricted maximum likelihood estimation. Afterwards, we included moderator variables in our analyses (e.g., publication type, grade level, and country of origin). Dummy coded variables were created, when appropriate. It should be noted that that the Q_{Residual} for the moderators analyses are estimated under the mixed-effects model.

The outcomes (i.e., effect size) for the ith dependent variable ($\mathbf{y}_i$) is represented as a $p \times 1$ vector that is assumed to have a multivariate normal distribution with mean $\mathbf{X}_i\boldsymbol{\beta}$ and $k \times k$ variance–covariance matrix ($\boldsymbol{\Sigma}_i$). When the model has no predictor variables, $\mathbf{X}_i$ is an identity matrix ($p = 1$), and $\boldsymbol{\beta}$ signifies k intercepts. The variance–covariance matrix ($\boldsymbol{\Sigma}_i$) consists of the sum of the within-study variances ($\mathbf{S}_i$) and between-studies ($\boldsymbol{\Psi}$) variance–covariance matrices such as $\boldsymbol{\Sigma}_i = \mathbf{S}_i + \boldsymbol{\Psi}$. While in theory we assume that the elements of $\mathbf{S}_i$ are known, in practice, they need to be estimated from the data. When predictors are included in the model, $\mathbf{X}_i$ becomes a $k \times kp$ design matrix and $\boldsymbol{\beta}$ becomes the vector of the fixed-effect coefficients.

The multivariate test of homogeneity, (which is an extension of the univariate test) can be written as (Becker, 1992; Jackson et al., 2010):

$$Q = \sum_{i=1}^{k} \left\{ (\mathbf{y}_i - \mathbf{X}_i\boldsymbol{\beta})^T \mathbf{S}_i^{-1} (\mathbf{y}_i - \mathbf{X}_i\boldsymbol{\beta}) \right\},$$

which follows a chi-square distribution with $n - q$ degrees of freedom, such that $n = kp$ (the total number of observations), and q is the number of fixed-effects parameters in $\boldsymbol{\beta}$. When there is only one outcome, this test reduces to the typical univariate Q. When interpreting the results of the Q_{Residual} in Table 2, the reader should note that significant value indicates the effect sizes do not all agree and a model that incorporates between-effects variability should be adopted. Thus, a significant Q_{Residual} indicates that there is still remaining variation among the effect sizes after the inclusion of a potential predictor variable in the model.

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