

Social Support and Psychological Adjustment: A Quantitative Synthesis of 60 Meta-Analyses

Ethan Zell and Christopher A. Stockus
Department of Psychology, UNC Greensboro



Social support is the degree to which people are accepted by, cared for, and attended to by important others and is one of the most popular constructs in the psychological canon. This project synthesized data from 60 meta-analyses, which included over 2,700 studies and 2.1 million participants, to evaluate the association of social support with psychological adjustment. Results from a second-order meta-analysis indicated that, overall, social support yielded a robust association with psychological adjustment, $r = .24$, 95% CI [.22, .26]. Effects of social support were detectable across several outcome categories (mental health, psychological traits, educational outcomes, workplace outcomes), specific outcomes (depression, posttraumatic stress disorder, stress, burnout), and sources of support (friends, family, peers, teachers, coworkers, supervisors), and were detectable across age and cultural groups. However, perceived support was more strongly associated with psychological adjustment than received support. Furthermore, social support effects were larger when examining unhealthy samples, well-validated scales, and cross-sectional studies. Finally, effects were less pronounced in six meta-analyses that controlled for relevant covariates, $r = .17$, 95% CI [.10, .23]. Given the substantial variability of social support effects across prior meta-analyses (range = .07–.41), future study is needed to identify additional moderators of its association with psychological adjustment.

Public Significance Statement

This study indicates that social support has a robust association with overall psychological adjustment that obtains across a variety of outcomes, populations, and sources of support. In addition, it indicates that perceived social support has a stronger connection with psychological adjustment than received support and that social support effects are more pronounced in unhealthy samples.

Keywords: social support, psychological adjustment, mental health, depression, posttraumatic stress disorder

Supplemental materials: <https://doi.org/10.1037/amp0001323.supp>

Some people attain greater psychological adjustment than others, as indexed by several outcomes such as greater happiness, better social relationships, and better performance at school and work as well as fewer symptoms of anxiety,

depression, and stress. For decades, a primary focus of psychological science has been to identify resources, both inside and outside the person, that promote psychological adjustment. Indeed, theorists have long proposed that

This article was published Online First May 2, 2024.

Ethan Zell  <https://orcid.org/0000-0002-8363-8418>

Data, data codebooks, analysis syntax, and additional online materials for this project are publicly available on the Open Science Framework at https://osf.io/8pk72/?view_only=39dbe79623f1479499902d3d2ce18b5e.

Ethan Zell played a lead role in conceptualization, data curation, formal analysis, methodology, validation, writing—original draft, and writing—review and editing. Christopher A. Stockus played a supporting role in data

curation, methodology, validation, and writing—review and editing.

 The data are available at https://osf.io/8pk72/?view_only=39dbe79623f1479499902d3d2ce18b5e.

 The experimental materials are available at https://osf.io/8pk72/?view_only=39dbe79623f1479499902d3d2ce18b5e.

Correspondence concerning this article should be addressed to Ethan Zell, Department of Psychology, UNC Greensboro, P.O. Box 26170, Greensboro, NC 27402, United States. Email: e_zell@uncg.edu

social support, namely, the degree to which people are accepted by, cared for, and attended to by important others is an essential resource that enhances well-being (Taylor, 2012; Uchino et al., 2016; Wills, 1991). Although social support is a complex construct, often operationalized and measured in different ways (French et al., 2018; Holt-Lunstad, 2018), a voluminous empirical literature has amassed exploring its association with a wide variety of psychological outcomes. According to APA PsycInfo, there were over 4,000 articles on “social support” published in 2022 alone. Thus, the time is ripe to take stock of this large literature and to assess the degree to which it comports with core theoretical assumptions about the potential benefits of social support.

Previous efforts have largely focused on the association of social support with specific indices of psychological adjustment. Along these lines, major meta-analyses have explored the association of social support with a diverse array of outcomes including depression (Gariépy et al., 2016; O'Hara & Swain, 1996), posttraumatic stress disorder (PTSD; Ozer et al., 2003; Zalta et al., 2021), job stress (Gonzalez-Mulé et al., 2021; Viswesvaran et al., 1999), school belonging (Allen et al., 2018), creativity (Hunter et al., 2007), and resilience (Lee et al., 2013). Furthermore, some meta-analyses have examined the effects of social support in specific populations, such as adolescents (Rueger et al., 2016), people in China (Lei et al., 2018), and people with HIV (Rueda et al., 2016). By synthesizing data across many disconnected sources, this project examines whether social support is generally beneficial for psychological adjustment across domains and populations. Adopting a broader scope allows the current project to estimate the overall association between social support and psychological adjustment and to evaluate the degree to which this association varies across populations, types of social support, and indices of psychological adjustment. As the first article to quantitatively aggregate prior meta-analyses in this literature, the present report provides unique tests of theoretical assumptions about the robustness and universality of social support effects.

Definitions and Theoretical Background

Scholars have long recognized the fundamental contribution of social relationships to health and well-being (Cobb, 1976; Durkheim, 1951; Helgeson, 2003). According to an influential meta-analysis, people with worse social relationships have a 50% higher mortality rate, which rivals or exceeds other known risk factors such as obesity, physical activity, and smoking (Holt-Lunstad et al., 2010; see also House et al., 1988). The concept of “social relationships” is broad and can be deconstructed into three higher order constructs (Holt-Lunstad, 2018). Specifically, social connection is thought to consist of (a) *structural components* reflecting the existence of relationships (e.g., marital status, social isolation), (b) *quality components* reflecting the valence of relationship

experiences (e.g., marital quality, relationship strain), and (c) *functional components* reflecting potential or actual benefits provided by relationships, including perceived social support, received social support, and reduced loneliness. Given the long-standing interest in the potential benefits of social support for psychological adjustment (Barrera, 1986; Lakey & Orehek, 2011; Thoits, 1986), the present analysis specifically focuses on this construct. Furthermore, although partially overlapping, social support and loneliness are nonredundant ($r = .39$; Zhang & Dong, 2022) and have yielded largely separate research literatures.

Two prominent theoretical perspectives stipulate that social support should be generally beneficial for psychological adjustment (Cohen, 2004; Cohen & Wills, 1985; see also Taylor, 2012; Uchino et al., 2016). First, the *stress-buffering model* argues that social support mitigates the impact of stressful life events on mental health. Presumably, social support exerts a buffering effect either because the mere perception of supportive others provides a psychological resource that helps people navigate stressful situations with equanimity or because supportive others provide tangible resources (i.e., informational, emotional, or financial support) that help people overcome challenges. Second, the *direct effect model* asserts that social support, regardless of whether one is experiencing acute stress, is beneficial for well-being. When viewed collectively, these models suggest that social support should ultimately reduce adverse psychological outcomes (e.g., anxiety, depression, stress) and promote beneficial outcomes (e.g., belonging, happiness, self-esteem). Nonetheless, because research on social support has largely focused on one or a few outcomes, the degree to which social support is generally associated with psychological adjustment is unclear.

Social support can come from a variety of sources, in part reflecting the different contexts in which it occurs. Along these lines, many studies focus on “generalized” social support, that is the degree to which people overall assess that they are supported by others in their network. This approach provides a nonspecific or aggregate conceptualization of social support and is the most common operationalization in the literature (Lakey & Orehek, 2011). Other research focuses on social support from specific relationship targets such as family, friends, or romantic partners, under the assumption that support perceptions and experiences may vary across targets, and therefore yield different associations with psychological adjustment (Mahon & Yarcheski, 2017; Zalta et al., 2021). Furthermore, research in educational settings has examined the association of social support from peers, teachers, and other school personnel with psychological adjustment at school (Credé & Niehorster, 2012; Rueger et al., 2016). Similarly, research in organizational settings has examined the association of social support from coworkers, supervisors, and from one's organization more generally with psychological adjustment at work (Halbesleben, 2006; Mathieu et al., 2019). Few efforts have been made to integrate research on social

support across these different sources and contexts, making it unclear whether effects generalize across them.

In addition, scholarship on social support distinguishes between two principal forms (Barrera, 1986; Taylor, 2012). First, *perceived social support* reflects the degree to which people believe that important others are available to provide high-quality assistance. Second, *received social support* reflects the degree to which important others have provided key sources, such as informational, emotional, and financial support (also known as “enacted support”). Although perceived support is universally thought to reap benefits for psychological adjustment, received support effects may be more variable, yielding positive effects when it is timely, effective, and tailored to the specific type of support needed but null or negative effects when it lacks these core features (French et al., 2018; Lakey & Orehek, 2011; Uchino et al., 2016). Prior meta-analyses suggest that perceived support is more strongly associated with specific outcomes than received support (e.g., depression, PTSD; Rueger et al., 2016; Zalta et al., 2021). However, these comparisons were limited by a small number of studies for received support. Furthermore, it remains unclear whether perceived support is more strongly associated with a broad range of psychological variables than received support.

Social Support and Psychological Adjustment

Beyond mortality, a large body of research indicates that social support is inversely associated with a wide array of physical health outcomes including heart disease, stroke, and respiratory infections (Holt-Lunstad, 2022; Holt-Lunstad et al., 2017). In fact, social support is regarded as one of the most robust and well-documented psychological predictors of physical health (Berkman et al., 2000; Cohen, 2004; Uchino, 2009). Furthermore, a large literature has explored the connection between social support and *psychological adjustment*, defined broadly in the present work to include mental health, adaptive traits, and adaptive functioning at school and work (Rueger et al., 2016; Taylor, 2012). Given that psychological adjustment is considered a viable pathway by which social support may result in poor health and premature mortality, it is important to assess the degree to which social support correlates with this outcome, both overall and when examining specific indices of adjustment such as depression, stress, and burnout.

Thousands of studies have examined the association between social support and specific indices of psychological adjustment. As studies have accumulated, researchers have increasingly used meta-analysis to integrate findings. Presently, there are dozens of unique meta-analyses that examine the association of social support with specific indices of psychological adjustment. Nonetheless, research on social support is largely scattered across content areas, with little integration across them. Furthermore, research on social

support has been conducted by scholars across several content areas in psychology (e.g., clinical, health, educational, industrial–organizational, social personality) and by scholars in other fields (e.g., counseling, management, medicine, nursing, public health, psychiatry) with little communication across disciplines. Thus, the overall association of social support across different indices of psychological adjustment remains unclear, as does the degree to which effects fluctuate across prior meta-analyses.

The Present Research

The present research aggregates across a diverse array of meta-analyses to assess several core questions about the association between social support and psychological adjustment. First, this research examines the degree to which social support is generally connected with psychological adjustment across domains. That is, rather than assessing the relation between social support and psychological adjustment for a single outcome or population, this research synthesizes data from a large database of previously disconnected meta-analyses to explore overall effects. Social support effects are theorized to be broadly beneficial (Cohen & Wills, 1985; Taylor, 2012; Uchino et al., 2016), but because prior meta-analyses have been limited to a specific outcome or context (e.g., Finch et al., 1999), it remains unclear how strongly it is associated with overall psychological adjustment. The present research synthesizes a vast and diverse set of independent meta-analyses on social support to uniquely address this question.

Second, turning to moderators, the present research tests whether associations with psychological adjustment vary when comparing perceived social support to received social support. Prior theories argue that there are fundamental differences between perceived and received support and that the former should connect more strongly with psychological adjustment than the latter (Barrera, 1986; French et al., 2018; Lakey & Orehek, 2011). By synthesizing data from a large collection of meta-analyses, which examine social support effects across a wide variety of outcomes and contexts, the present research provides the most comprehensive test of the relative effect of perceived versus received social support in the literature to date. For exploratory purposes, the present work also examines whether associations with psychological adjustment vary across different sources of social support (e.g., family vs. friends) and different social support scales (well-validated vs. author-developed scales; additional details below).

Third, the present research uniquely explores whether social support–psychological adjustment associations vary across different outcome categories and types. Research has examined associations of social support with mental health outcomes, psychological traits, as well as adaptive functioning at school and work (Allen et al., 2018; Gonzalez-Mulé et al., 2021; Lee et al., 2013; Zalta et al., 2021). Nonetheless,

research has yet to examine whether social support associations vary across these different components of psychological adjustment. Social support is theorized to be broadly beneficial for psychological adjustment (e.g., Finch et al., 1999), and thus the present work did not anticipate substantial variation across outcome categories. Relatedly, multiple independent meta-analyses have now examined the association of social support with core outcomes such as depression, PTSD, and stress, albeit in different conditions or contexts. Thus, the present work provides a unique test of the degree to which social support is associated with specific outcomes after aggregating across meta-analyses.

Fourth and last, this research examines whether a variety of demographic and methodological factors moderate associations between social support and psychological adjustment (e.g., age, region, sample health). Although the benefits of social support are likely universal (Taylor, 2012; Uchino et al., 2016), social support associations with psychological adjustment may be more pronounced for unhealthy versus healthy samples, given their greater exposure to stress (Cohen, 2004; Cohen & Wills, 1985). The present research also examines whether social support associations are more pronounced in cross-sectional studies, which comprise the bulk of this literature.

Method

This research followed recommended procedures for second-order meta-analysis (Cooper & Koenka, 2012; Zell & Lesick, 2022). First, an extensive literature search was conducted to identify potentially relevant first-order meta-analyses. Second, obtained meta-analyses were assessed using formal inclusion criteria to identify a final set of relevant articles. Third, effect sizes and other information were extracted from each meta-analysis. Fourth, second-order meta-analyses were conducted to determine the association between social support and psychological adjustment, both overall and in specific conditions.

Article Search and Inclusions

Three scholarly databases were searched for relevant meta-analyses on social support (i.e., APA PsycInfo, CINAHL, and PubMed). Specifically, databases were searched by entering the search term *meta-ana** along with *social support*. A preliminary search found that entering additional search terms for social support (e.g., perceived support, received support, parent support, peer support, supervisor support) did not substantially increase the number of relevant articles retrieved. The database search was restricted to full-text journal articles published in English. Additional search details and a flowchart are provided in the [Supplemental Materials](#).

After removing duplicates, the searched yielded 479 potentially relevant articles. An additional 22 published articles were identified by scanning the reference lists of four

major meta-analyses (French et al., 2018; Kent de Grey et al., 2018; Rueger et al., 2016; Uchino et al., 2018) and two major reviews (Taylor, 2012; Uchino, 2009) of research on social support. Finally, 16 meta-analyses on social support that did not surface via other methods were located on Google Scholar, resulting in a total of 517 potentially relevant articles.

Next, each article was evaluated to determine whether it was eligible for inclusion in the quantitative synthesis. To be included, articles had to provide at least one meta-analytic effect indexing the relation between social support and psychological adjustment. Thus, articles were excluded if they were not a meta-analysis, if they did not examine social support, or if they did not examine psychological adjustment ($n = 409$). As have other relevant reviews (e.g., French et al., 2018; Zalta et al., 2021), this project operationalized social support broadly to include both perceived and received social support as well as social support in general and from specific others including parents, peers, teachers, family, friends, coworkers, and supervisors. It also operationalized psychological adjustment broadly to include measures of mental health, adaptive or maladaptive psychological traits, and psychological functioning at school or work (e.g., Rueger et al., 2016; details below).

Given its focus on psychological adjustment, this project excluded articles that examined the association between social support and indicators of physical health (e.g., pain, inflammation, mortality) or health behaviors (e.g., exercise, sleep). In addition, this project excluded articles that did not provide a meta-analytic effect indexing the association between social support and psychological adjustment ($n = 25$) or that did not meet a minimum threshold of $k \geq 3$ and $N \geq 500$ ($n = 8$; Wilmot et al., 2019; Zell & Lesick, 2022).

Finally, to promote the independence of observations, articles were evaluated to identify meta-analyses that were reliant upon the same or similar samples (i.e., incorporated the same database of studies; Nater & Zell, 2015; Zell & Lesick, 2022). Specifically, this project compared reference sections for meta-analyses on related topics (e.g., meta-analyses that examined similar measures of social support, psychological adjustment, or populations) to determine the percentage of samples that were overlapping across them. The amount of sample overlap (SO), namely, the number of shared samples divided by the total number of samples, was estimated for all pairs of meta-analyses on related topics. When a meta-analysis was related to more than one article, the highest amount of overlap was used as an estimate of its uniqueness. As a result, several meta-analyses that were fully overlapping with other (larger) meta-analyses in the database were excluded ($n = 15$).

This left the present research with a final sample of 60 independent meta-analyses (see the References and [Supplemental Materials](#)). Of the included meta-analyses, 54 were estimated to be fully independent (i.e., they did not appear to share any samples with other meta-analyses).

The other six meta-analyses did contain some overlap with another meta-analysis, but in all instances, the amount of overlap was less than 25% ($M = 11\%$, $SD = 9\%$, range = 1%–23%). Across the 60 included meta-analyses (m), the total number of effects (k) was 2,742 and the total number of participants (N) was 2,195,820. In cases where meta-analyses provided multiple effects (see below), the present study estimated N and k conservatively from the effect with the largest sample and/or number of studies, to avoid double counting.

Effect Extraction and Coding

Effect sizes indexing the association between social support and psychological adjustment, and the standard error of each effect, were extracted from each of the 60 included meta-analyses. Effect sizes (r s) were coded uniformly such that higher values indicate positive associations between social support and psychological adjustment (i.e., associations with outcomes reflecting poor adjustment were reversed). Effects reported as an odds ratio or Cohen's d were converted to r (Villacura-Herrera & Kenner, 2020). Five meta-analyses did not provide sufficient information to determine the standard error of effects provided in their report (e.g., 95% confidence intervals). Missing standard errors were imputed using the average standard error across the remaining 55 meta-analyses that did provide this information ($SE = .032$).

All of the included meta-analyses used fixed-effect, random-effects, or other approaches to weight individual study effects. This project extracted effects from each meta-analysis that were uncorrected for measurement unreliability (since this was the dominant approach). Two meta-analyses only provided corrected effects, which were attenuated in this project to ensure comparability (see the [Supplemental Materials](#)). Furthermore, nine meta-analyses provided both corrected and uncorrected effects that this project examined separately. When meta-analyses reported effects for multiple samples, measures of social support, or outcome measures ($m = 26$), these effects were averaged in the present study so that each meta-analysis contributed only a single effect in data analyses. However, the impact of this approach was explored in a sensitivity analysis. Furthermore, moderation analyses were conducted in the present study to compare effect sizes by the type of sample, social support, and outcome measure (details below).

Most meta-analyses reported a bivariate association between social support and psychological adjustment ($m = 54$). However, six meta-analyses reported the association between social support and psychological adjustment after controlling for relevant covariates (i.e., provided adjusted odds ratios), which were explored in a sensitivity analysis. Furthermore, 10 meta-analyses provided additional effect sizes that were adjusted for publication bias using trim-and-fill analyses

(Duval & Tweedie, 2000). The present study aggregated these effects in a sensitivity analysis.

To enable moderation tests, the final set of meta-analyses were coded along several dimensions. Coding was done by the first and second authors, and disagreements were resolved by discussion ($\kappa > .92$ for each category). Specifically, coding was done to identify whether the *support type* exclusively reflected perceived social support or reflected other conceptualizations (i.e., both perceived and received social support or unspecified). In addition, coding identified whether the *outcome type* exclusively pertained to mental health (e.g., anxiety, depression, PTSD, stress, suicidal ideation), psychological traits (e.g., attachment, happiness, loneliness, resilience, stigma), educational outcomes (e.g., school adjustment, school belonging, student burnout), workplace outcomes (e.g., creativity at work, employee burnout, job satisfaction, job stress), or other (multiple of the above categories). To isolate articles that examined a similar topic, coding identified whether the *specific outcome* pertained to burnout (e.g., employee burnout, student burnout), depression (e.g., adult depression, childhood depression, postpartum depression), PTSD (e.g., PTSD symptoms, PTSD diagnosis), stress (e.g., general stress, job stress, acculturative stress, parenting stress), or other outcomes.

Furthermore, the authors coded several methodological characteristics of each meta-analysis. Along these lines, coding identified the *sample age* as exclusively adolescents, adults, college students, or other (unspecified or multiple age groups). The *sample region* was coded as Western (at least 75% of the included studies were from Western nations, such as the United States or those in Europe), non-Western (at least 75% of the studies were conducted in non-Western nations, such as China), or other (multiple regions or unspecified). The *sample health* was coded as exclusively unhealthy (people with physical health issues such as cancer, diabetes, and HIV) or other (healthy people, both healthy and unhealthy people, or unspecified). Finally, the *study type* was coded as cross-sectional (at least 75% of the studies were cross-sectional or unspecified) or other (at least 25% of the studies were longitudinal; $M = 53.4\%$). Only one meta-analysis was exclusive to longitudinal studies (Wang et al., 2021).

Finally, when multiple meta-analyses tested the same moderator, meta-analytic effects were extracted from prior articles across multiple conditions to enable additional moderation tests (Zell & Krizan, 2014). Specifically, separate effects from relevant meta-analyses were extracted indexing associations of social support and psychological adjustment when examining perceived and received social support ($m = 17$); support from family and friends ($m = 8$); support from family, peers, and teachers ($m = 5$); support from coworkers and supervisors ($m = 4$); published and unpublished studies ($m = 5$), in addition to well-validated and author-developed measures of social support ($m = 4$).

Analytic Approach

Following other second-order meta-analyses (e.g., Strickhouser et al., 2017; Zell & Lesick, 2022), the present research aggregated social support–psychological adjustment effects provided by prior meta-analyses to estimate population effects (ρ). Specifically, it conducted random-effects meta-analyses to estimate the association between social support and psychological adjustment both overall and in specific conditions. This approach is parallel to first-order meta-analysis of individual studies, except the unit of analysis is meta-analytic effects instead of study-level effects.

Although the primary analyses in this article used a random-effects approach, this article also reports sensitivity analyses that weight meta-analytic effects by their respective sample size (N), number of effects (k), and degree of sample overlap (SO), as well as a sensitivity analysis that uses an unweighted approach (Bonett, 2009). Given ongoing debates about effect size interpretation (Ferguson, 2009; Funder & Ozer, 2019), the present work does not use small, medium, or large labels to interpret effects. Instead, the smallest effect size of interest (SESOI) was set to a cutoff that is proposed to reflect clinical or practical significance ($r = .20$; Ferguson, 2009). Where possible, 95% confidence intervals (CIs) are reported around all effects.

Transparency and Openness

This research was not preregistered. No first-order meta-analyses were conducted as part of this project. Data, data codebooks, analysis syntax, and additional online materials for this project are publicly available on the open science framework at https://osf.io/8pk72/?view_only=39dbe79623f1479499902d3d2ce18b5e.

Results

The final set of meta-analyses collectively examined 36 unique outcomes, broadly indicative of psychological adjustment. A word cloud depicting all outcomes is provided in the [Supplemental Materials](#). Most of the included meta-analyses were relatively recent: 2020s (17), 2010s (26), 2000s (12), and 1990s (5). Forest plots for the primary analysis and each moderation test are provided in the [Supplemental Materials](#).

Primary Model and Sensitivity Analyses

After aggregating across the full set of 60 meta-analyses, the present analysis obtained a robust association between social support and psychological adjustment, $r = .24$ [.22, .26]. Furthermore, in all 60 meta-analyses, social support was positively associated with psychological adjustment (range = .07–.41; $SD = .08$; see [Figure 1](#)). Nonetheless, there was considerable variability in the size of social support–

psychological adjustment associations, 95% prediction interval [.09, .39], $Q = 1207.82$, $p < .001$, $I^2 = 96.4$, which motivated moderation tests exploring conditions under which it was most pronounced.

Sensitivity analyses indicated that the overall association between social support and psychological adjustment was similar when using a fixed-effect model, $r = .20$ [.20, .20], as well as an unweighted model, $r = .24$ [.22, .26]. Furthermore, the overall effect was similar in analyses that weighted individual meta-analytic effects by N and k , $r = .21$ and $r = .23$, as well as analyses that inverse-weighted meta-analyses by their degree of sample overlap (i.e., weighted by uniqueness; $1 - SO$), $r = .24$. Taken together, these analyses suggest the overall effect size estimate was robust to different statistical approaches. Furthermore, the association between social support and psychological adjustment approached but was slightly below the SESOI across six meta-analyses that controlled for relevant covariates, $r = .17$ [.10, .23]. Thus, clinical or practical significance is less definitive when examining studies that control for other theoretically relevant predictors.

Finally, nine meta-analyses provided effect sizes indexing the association of social support with psychological adjustment both with and without correction for measurement unreliability. Effects that were corrected for measurement unreliability were somewhat larger than those that were not, $r = .32$ [.24, .40] versus $r = .26$ [.20, .32]. Thus, correcting for measurement unreliability appears to slightly increase effects in this literature. Relatedly, 10 meta-analyses provided effects both with and without adjustment for publication bias using trim-and-fill analyses. Effects that were corrected for publication bias were only slightly smaller than those that were not, $r = .25$ [.21, .30] versus $r = .26$ [.23, .29], which suggests that publication bias had little impact across these reports. However, trim-and-fill analyses may have limited ability to detect publication bias (see Ferguson & Brannick, 2012). As such, it remains possible that there is undiscovered publication bias in this literature.

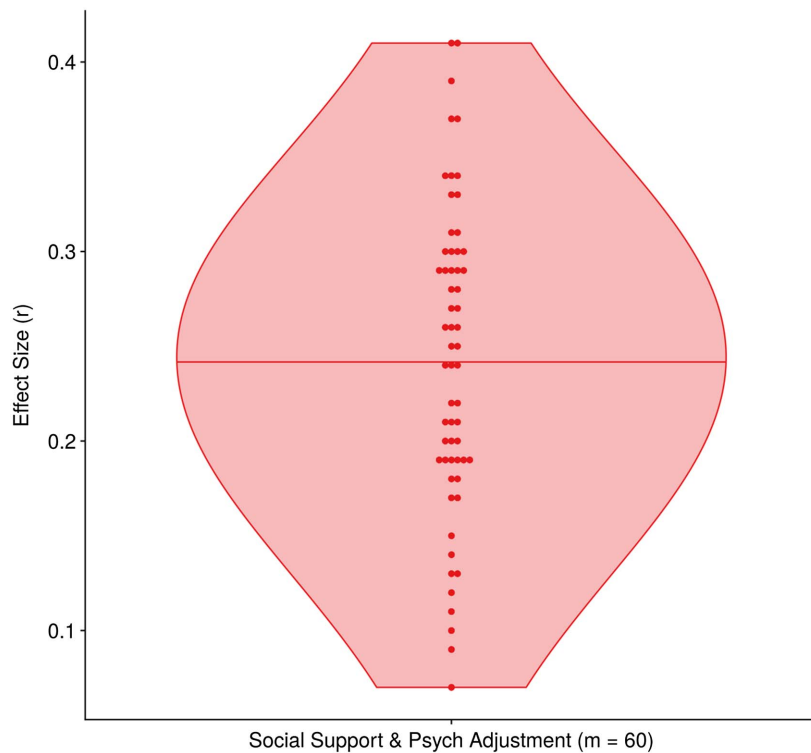
Moderation Tests: Between-Article Effects

First, this article reports moderation tests examining variations in effect size across factors that were extracted or coded from included meta-analyses. These are referred to as “between-article” tests since they involve an analysis of factors that varied across meta-analyses and that were coded for the present research (see [Table 1](#)). Prediction intervals (95%) for effects resulting from the moderation tests are provided in the [Supplemental Materials](#).

Support Type

There was a significant difference in effect size by the type of social support examined in prior meta-analyses, $Q(1) = 6.04$, $p = .014$. Meta-analyses that exclusively focused on

Figure 1
Violin Plot of Effect Sizes



Note. The plot was created using a public visualization tool (Allen et al., 2021). Horizontal line reflects the median effect size. See the online article for the color version of this figure.

perceived social support yielded a robust association with psychological adjustment, $r = .29$ [.25, .33]. However, meta-analyses that included a broader conceptualization of social support, including both perceived and received support, yielded a somewhat smaller effect, $r = .23$ [.20, .25]. These data suggest that perceived social support has a stronger association with psychological adjustment than received social support (see below for a more direct test of this hypothesis using a within-article approach). Although several meta-analyses focused exclusively on perceived social support ($m = 13$), most conceptualized social support more broadly ($m = 47$).

Outcome Type

Effect sizes did not significantly differ across outcome categories, $Q(4) = 3.00$, $p = .558$. Consistent with the notion that social support is generally correlated with psychological adjustment regardless of the domain, the present research obtained robust associations between social support and educational outcomes, $r = .29$ [.20, .38]; workplace outcomes, $r = .26$ [.20, .32]; psychological traits, $r = .26$ [.19, .32]; and mental health, $r = .23$ [.20, .26]. By far the most frequently studied outcome category was mental health ($m = 31$),

followed by workplace outcomes ($m = 10$), psychological traits ($m = 10$), and educational outcomes ($m = 3$).

Specific Outcome

Similarly, effect sizes did not significantly differ across a variety of specific outcomes that were tested in prior meta-analyses, $Q(4) = 4.02$, $p = .404$. Along these lines, nine independent meta-analyses examined the association between social support and depression. Overall, these meta-analyses yielded a robust cumulative effect, $r = .24$ [.20, .28]. In addition, social support yielded a comparable association with PTSD across six independent meta-analyses, $r = .25$ [.19, .30], and with stress across seven independent meta-analyses, $r = .22$ [.15, .28]. Finally, there was a detectable association between social support and burnout across three meta-analyses, $r = .21$ [.18, .24]. The pronounced effect sizes generated by meta-analyses on each of these specific outcomes provides further support for the notion that social support is generally correlated with psychological adjustment.

Sample Characteristics

Effect sizes were generally similar across age and cultural groups. Specifically, the association between social support

Table 1
Effect Sizes by Moderator (Between-Article Effects)

Moderator	<i>m</i>	<i>k</i>	<i>N</i>	<i>r</i> [95% CI]	<i>Q</i> _{btw}
Support type					<i>Q</i> (1) = 6.04, <i>p</i> = .014
Other	47	2,409	2,065,542	.23 [.20, .25]	
Perceived	13	333	130,278	.29 [.25, .33]	
Outcome type					<i>Q</i> (4) = 3.00, <i>p</i> = .558
Educational	3	71	134,553	.29 [.20, .38]	
Mental health	31	1,446	1,431,176	.23 [.20, .26]	
Other	6	188	64,303	.22 [.15, .29]	
Traits	10	470	207,635	.26 [.19, .32]	
Workplace	10	567	358,153	.26 [.20, .32]	
Specific outcome					<i>Q</i> (4) = 4.02, <i>p</i> = .404
Burnout	3	158	146,948	.21 [.18, .24]	
Depression	9	461	688,102	.24 [.20, .28]	
Other	35	1,293	930,054	.25 [.22, .28]	
PTSD	6	385	199,450	.25 [.19, .30]	
Stress	7	445	231,266	.22 [.15, .28]	
Sample age					<i>Q</i> (3) = 1.21, <i>p</i> = .752
Adolescent	7	602	640,877	.21 [.13, .29]	
Adult	33	1,243	1,130,934	.25 [.22, .27]	
College	4	130	149,982	.25 [.19, .31]	
Other	16	767	274,027	.23 [.19, .28]	
Sample region					<i>Q</i> (2) = 0.55, <i>p</i> = .758
Non-West	10	537	317,478	.26 [.20, .32]	
Other	20	771	528,554	.23 [.20, .27]	
West	30	1,434	1,349,788	.24 [.21, .27]	
Sample health					<i>Q</i> (1) = 4.03, <i>p</i> = .045
Other	53	2,649	2,176,514	.24 [.21, .26]	
Unhealthy	7	93	19,306	.28 [.25, .31]	
Study type					<i>Q</i> (1) = 7.35, <i>p</i> = .007
Cross-sectional	55	2,485	1,403,444	.25 [.23, .27]	
Other	5	257	792,376	.16 [.09, .22]	
Number of effects					<i>Q</i> (1) = 0.26, <i>p</i> = .608
One	34	1,512	1,108,767	.25 [.22, .27]	
Multiple	26	1,230	1,087,053	.23 [.20, .27]	

Note. Between-article effects involve characteristics of prior meta-analyses that were coded for the present research. Effect sizes (*rs*) were coded uniformly such that higher values indicate positive associations with psychological adjustment. *m* = number of meta-analyses; *k* = number of effects; *N* = sample size; btw = between; PTSD = posttraumatic stress disorder.

and psychological adjustment did not significantly vary as a function of sample age, $Q(3) = 1.21, p = .752$. Most meta-analyses examined adult samples ($m = 33$), and these articles yielded a cumulative effect size that was robust, $r = .25$ [.22, .27]. A comparable effect was obtained in seven meta-analyses examining adolescent samples, $r = .21$ [.13, .29], as well as four meta-analyses examining college student samples, $r = .25$ [.19, .31]. Similarly, effect sizes did not significantly differ across regions, $Q(2) = 0.55, p = .758$. A comparable effect was obtained in 30 meta-analyses examining primarily Western samples, $r = .24$ [.21, .27], versus 10 meta-analyses examining primarily non-Western samples, $r = .26$ [.20, .32]. However, effect sizes did significantly vary by sample health, $Q(1) = 4.03, p = .045$. Although relatively few meta-analyses examined unhealthy samples ($m = 7$), these meta-analyses yielded a somewhat larger effect than those that examined general population samples, $r = .28$ [.25, .31] versus $r = .24$ [.21, .26].

Methodological Factors

There was a significant difference in effect size by the type of studies incorporated in prior meta-analyses, $Q(1) = 7.35, p = .007$. Most meta-analyses primarily examined cross-sectional studies and yielded a cumulative effect that was robust, $r = .25$ [.23, .27]. This effect was somewhat smaller, and was slightly below the SESOI, across five meta-analyses that included a substantial number of longitudinal studies (25% or more), $r = .16$ [.09, .22]. These data suggest that the inclusion of longitudinal studies may slightly decrease estimates of the association between social support and psychological adjustment and that clinical or practical significance is less definitive when including longitudinal studies.

However, there was not a significant difference by the number of effects generated by prior meta-analyses, $Q(1) = 0.26, p = .608$. That is, meta-analyses that provided a single relevant effect yielded a cumulative effect size that was very similar to meta-analyses that provided multiple effects, $r = .25$

[.22, .27] versus $r = .23$ [.20, .27]. Thus, the decision to average multiple effects within articles (so that each article entered a single effect into the final model) had little impact on the overall estimate of effect size. Although 34 meta-analyses (57%) reported a single effect, 26 meta-analyses (43%) reported multiple effects that were averaged before entry into the final model ($M = 3.35$, $SD = 1.83$, range = 2–8).

Moderation Tests: Within-Article Effects

Next, this article reports moderation tests examining variations in effect size across factors that were coded in a parallel way across prior meta-analyses. These are referred to as “within-article” tests since they involve an analysis of factors that were examined within multiple meta-analyses and later aggregated for the present research (see Table 2).

Type of Social Support

This research aggregated effects across 17 meta-analyses that compared the association of psychological adjustment with perceived versus received social support. There was a significant difference in effect size by type of social support, $Q(1) = 10.55$, $p = .001$. That is, perceived social support was more strongly associated with psychological adjustment than received social support, $r = .26$ [.22, .31] versus $r = .16$ [.13, .20], with the latter falling slightly below the SESOI. This analysis, which aggregated effects across more than 460 studies and 148,000 participants, provides more direct evidence for the argument that perceived support is a stronger correlate of psychological adjustment than received support.

Source of Social Support

The present study provided three separate tests of whether the source of social support impacts the association between social support and psychological adjustment. Each of these analyses found robust associations between social support and psychological adjustment, regardless of the source. That is, data from eight meta-analyses suggest that psychological adjustment has similar associations with social support from family versus friends, $r = .26$ [.19, .32] versus $r = .23$ [.13, .33], $Q(1) = 0.15$, $p = .701$. In addition, data from six meta-analyses indicate that psychological adjustment relates substantially to social support from coworkers and supervisors, $r = .23$ [.16, .30] versus $r = .27$ [.20, .33], $Q(1) = 0.64$, $p = .425$. Finally, data from five meta-analyses indicate that psychological adjustment has robust associations with social support from family, peers, and teachers; family $r = .25$ [.17, .32], peers $r = .25$ [.14, .35], and teachers $r = .31$ [.14, .47], $Q(2) = 0.45$, $p = .798$.

Methodological Factors

Two additional tests examined how social support–psychological adjustment associations vary across select methodological characteristics of prior meta-analyses. Specifically, data from five meta-analyses found that social support–psychological adjustment associations did not significantly differ across published and unpublished studies, $r = .26$ [.21, .31] versus $r = .22$ [.16, .27], $Q(1) = 1.04$, $p = .307$ (see the Supplemental Materials, for additional details). However, data from four meta-analyses found that effects were significantly larger when examining well-validated

Table 2
Effect Sizes by Moderator (Within-Article Effects)

Moderator	<i>m</i>	<i>k</i>	<i>N</i>	<i>r</i> [95% CI]	<i>Q</i> _{btw}
Support type					$Q(1) = 10.55$, $p = .001$
Perceived	17	1,061	553,643	.26 [.22, .31]	
Received	17	460	148,545	.16 [.13, .20]	
Support Source 1					$Q(1) = 0.15$, $p = .701$
Family	8	301	175,126	.26 [.19, .32]	
Friends	8	241	141,683	.23 [.13, .33]	
Support Source 2					$Q(1) = 0.64$, $p = .425$
Coworkers	6	152	77,572	.23 [.16, .30]	
Supervisor	6	160	98,029	.27 [.20, .33]	
Support Source 3					$Q(2) = 0.45$, $p = .798$
Family	5	326	225,881	.25 [.17, .32]	
Peers	5	215	123,337	.25 [.14, .35]	
Teachers	5	178	194,584	.31 [.14, .47]	
Publication					$Q(1) = 1.04$, $p = .307$
Published	5	366	115,439	.26 [.21, .31]	
Unpublished	5	132	54,903	.22 [.16, .27]	
Support scale					$Q(1) = 7.28$, $p = .007$
Valid	4	466	309,612	.28 [.27, .30]	
Developed	4	68	40,019	.22 [.17, .26]	

Note. Within-article effects involve those that were examined in a parallel manner across multiple meta-analyses and later aggregated for the present research. *m* = number of meta-analyses; *k* = number of effects; *N* = sample size; btw = between.

versus author-developed measures of social support, $r = .28$ [.27, .30] versus $r = .22$ [.17, .26], $Q(1) = 7.28$, $p = .007$. Thus, measure validity appears to increase effect sizes obtained in this literature.

Discussion

The connection between social support and psychological adjustment has occupied scholars for decades (Cohen & Wills, 1985; Uchino et al., 2016). Although thousands of empirical studies and dozens of unique meta-analyses have examined this connection when examining specific outcomes or contexts, it remains unclear to what extent social support is generally associated with psychological adjustment or when such effects are most pronounced. The present report describes a novel quantitative synthesis of meta-analyses on social support and various indices of psychological adjustment. Specifically, this project integrated data from 60 unique meta-analyses, including over 2,700 studies and 2.1 million participants. By synthesizing this enormous database of previously disconnected sources, the present work provides the most comprehensive analysis of the potential benefits of social support in the psychological literature to date.

Several key findings emerged from the present analysis. First, social support yielded a robust association with psychological adjustment across meta-analyses ($r = .24$). This finding suggests that social support is an important correlate of overall psychological adjustment—not just adjustment in specific conditions or contexts—and therefore reinforces both classic and contemporary theories on the critical link between social connections and psychological functioning (Cohen, 2004; Holt-Lunstad, 2018). As such, the present report substantially builds upon prior meta-analyses, which documented associations of social support with specific outcomes or in specific contexts (e.g., Gariépy et al., 2016; Rueger et al., 2016; Zalta et al., 2021), by demonstrating that social support is associated with a wide array of salubrious outcomes across a variety of contexts. Nonetheless, there was considerable variability in the size of social support–psychological adjustment associations. Thus, although uniformly positive, social support effects appear to fluctuate substantially across domains.

Second, two different moderator analyses point to the unique importance of perceived social support. Specifically, meta-analyses focusing exclusively on perceived support yielded a larger effect than meta-analyses including both perceived and received support. Furthermore, data from 17 meta-analyses found that perceived support yielded a larger overall effect than received support. Prior theories argue that perceived support is fundamentally different from received support and should yield a larger association with psychological adjustment than its counterpart (Barrera, 1986; Lakey & Orehek, 2011; Uchino, 2009). Given the sheer size and breadth of the literature incorporated, the present report

provides the most comprehensive test of this issue so far. The present findings indicate that perceived support has a larger effect, and although smaller, received support also has a detectable positive association with overall psychological adjustment. This latter finding counters some perspectives, which have noted that received support may yield null or even negative effects, although it remains possible that such deleterious effects occur in specific conditions or contexts unexamined in the present work (e.g., when received support is poorly matched to the needs of the recipient; see French et al., 2018).

Third, associations between social support and psychological adjustment were found to be robust across different outcome types, including mental health, adaptive traits, as well as workplace and educational outcomes. The present work also identified broadly similar effects across a few specific outcomes—that is, depression, stress, PTSD, and burnout—which have been tested in multiple independent meta-analyses (e.g., Gariépy et al., 2016; Halbesleben, 2006; Ozer et al., 2003). Taken together, these data suggest that social support yields robust associations with a wide array of psychological adjustment outcomes and may therefore emerge regardless of the particular outcome. Furthermore, although the present study was limited by a relatively small number of meta-analyses in some instances (e.g., educational outcomes), it indicates that social support effects do not appear to differ substantially across outcome domains.

Fourth, the present research found that social support–psychological adjustment associations were robust across a variety of age groups and regions and across a variety of social support sources, such as family, friends, peers, teachers, coworkers, and supervisors. Thus, correlations between social support and beneficial outcomes appear to occur across samples and sources (Taylor, 2012). Social support effects were also robust when examining published versus unpublished studies, and effects that were versus were not adjusted for publication bias using trim-and-fill, which suggests that publication bias has not had an undue influence on this literature. However, consistent with the stress-buffering model (Cohen, 2004; Cohen & Wills, 1985), social support effects were somewhat more pronounced in unhealthy samples. In addition, social support effects were larger when researchers used well-validated measures of social support. Finally, meta-analyses that primarily focused on cross-sectional studies yielded somewhat larger effects than those that incorporated longitudinal studies. Thus, initial effects of social support may decrease somewhat, but likely remain detectable, when examining changes in psychological adjustment over time (Wang et al., 2021).

Limitations and Future Directions

Despite substantial progress, several exciting directions remain for the next generation of research. Many meta-

analyses have accumulated examining associations of social support with a large and growing collection of psychological outcomes. However, meta-analyses are needed for outcomes that have so far received less attention, especially educational outcomes as well as mental health outcomes besides depression, stress, and PTSD. Meta-analyses are also needed to examine whether the benefits of social support are especially evident during times of stress, while noting that interaction effects between social support and stress are likely small (Cohen, 2004; Cohen & Wills, 1985). Having established a robust cross-sectional association between social support and psychological adjustment, more work is needed to examine prospective or longitudinal effects in addition to the causal impact of social support interventions on psychological adjustment (see Holt-Lunstad et al., 2017; Lakey, 2023).

Furthermore, although the effects of social support appear robust across populations and contexts, there is substantial variability in the size of these effects, much of it unexplained. Thus, an important task for future research will be to uncover additional moderators of social support effects. The list of moderators examined in the present work was not necessarily exhaustive because it was restricted to factors that could be extracted or coded from prior meta-analyses. Relatedly, some of the moderation tests in the present work involved a relatively small number of meta-analyses in select conditions and should therefore be interpreted with caution due to low statistical power. As this literature develops, research should explore not just the effect of moderators but also whether the effect of some moderators depends on others (e.g., the effect of the source of support may depend on the outcome category) and whether the effects of some moderators remain after holding other factors constant. The present research did not address the dispersion (i.e., range) of each constituent meta-analytic effect. Prior meta-analyses often did not include precise information regarding the dispersion of effects, and thus better reporting is needed to enhance analysis of this issue.

In the present research, moderating factors explained a relatively small amount of the variability in social support–psychological adjustment associations. Nonetheless, many potential moderators of the association between social support and psychological adjustment exist at the individual level (e.g., traits, dispositions). Meta-analyses incorporate study-level data and thus are not typically able to identify these moderation effects. Furthermore, this issue is potentially magnified in second-order meta-analyses, which incorporate primarily meta-analytic data. Therefore, the fact that the present work failed to identify moderation effects in some cases should not be interpreted to suggest that such effects do not exist. A critical task for future research will be to provide additional explorations of moderating factors, including those that were not statistically significant in the present work.

The present research suggests that social support has a robust overall association with psychological adjustment

($r = .24$) that exceeds the threshold for clinical or practical significance. However, in some cases, the association of social support was slightly below this threshold (i.e., meta-analyses that adjusted for relevant covariates, incorporated longitudinal studies, or focused on received support). Therefore, more work is needed to identify whether and when social support effects achieve clinical or practical significance. Research is also needed to examine the degree to which social support–psychological adjustment associations are inflated by the use of bivariate correlations, citation bias, and publication bias (see Ferguson, 2015). Standardized regression coefficients, which provide associations after controlling for relevant covariates, provide a more precise test of some hypotheses than bivariate correlations and their inclusion would bolster future meta-analyses. In addition, the selective inclusion of highly cited publications with unusually large effects should be addressed in future meta-analyses via greater inclusion of unpublished studies (e.g., dissertations). Finally, preregistration as well as open sharing of data and materials are recommended for future studies and are needed to increase confidence in effect size estimates.

Conclusions

The present analysis took a “bird’s eye” or “30,000-foot” view of the vast social support literature. By identifying a large and diverse collection of meta-analyses, synthesizing effects across these previously disconnected sources, and exploring several moderators, the present report provides a one-stop resource for scholars and laypersons seeking a unified view of this sprawling literature. Furthermore, the present work provides a compendium of independent meta-analyses on social support and psychological adjustment (see the References and Supplemental Materials). As such, it documents the specific outcomes and contexts in which social support–psychological adjustment effects have been explored. The present report also identified factors that appear to be substantial moderators of social support effects (e.g., perceived vs. received support), as well as factors that do not appear to be strong moderators of its effect across domains (e.g., the specific source of support), which should provide a roadmap for future research. Given that social support may be widely beneficial for psychological adjustment, research exploring its correlates, consequences, and moderators should continue for decades to come.

References

References marked with an asterisk indicate meta-analyses included in the quantitative synthesis.

- *Allen, K., Kern, M. L., Vella-Brodrick, D., Hattie, J., & Waters, L. (2018). What schools need to know about fostering school belonging: A meta-analysis. *Educational Psychology Review*, 30(1), 1–34. <https://doi.org/10.1007/s10648-016-9389-8>

- Allen, M., Poggiali, D., Whitaker, K., Marshall, T. R., van Langen, J., & Kievit, R. A. (2021). Raincloud plots: A multi-platform tool for robust data visualization. *Wellcome Open Research*, 4, Article 63. <https://doi.org/10.12688/wellcomeopenres.15191.2>
- *Azmiardi, A., Murti, B., Febrinasari, R. P., & Tamtomo, D. G. (2022). Low social support and risk for depression in people with type 2 diabetes mellitus: A systematic review and meta-analysis. *Journal of Preventive Medicine and Public Health*, 55(1), 37–48. <https://doi.org/10.3961/jpmph.21.490>
- Barrera, M., Jr. (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology*, 14(4), 413–445. <https://doi.org/10.1007/BF00922627>
- *Bedaso, A., Adams, J., Peng, W., & Sibbritt, D. (2021). The relationship between social support and mental health problems during pregnancy: A systematic review and meta-analysis. *Reproductive Health*, 18(1), Article 162. <https://doi.org/10.1186/s12978-021-01209-5>
- Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine*, 51(6), 843–857. [https://doi.org/10.1016/S0277-9536\(00\)00065-4](https://doi.org/10.1016/S0277-9536(00)00065-4)
- *Blais, R. K., Tirone, V., Orlowska, D., Lofgreen, A., Klassen, B., Held, P., Stevens, N., & Zalta, A. K. (2021). Self-reported PTSD symptoms and social support in U.S. military service members and veterans: A meta-analysis. *European Journal of Psychotraumatology*, 12(1), Article 1851078. <https://doi.org/10.1080/20008198.2020.1851078>
- Bonett, D. G. (2009). Meta-analytic interval estimation for standardized and unstandardized mean differences. *Psychological Methods*, 14(3), 225–238. <https://doi.org/10.1037/a0016619>
- *Chan, R., Steel, Z., Brooks, R., Heung, T., Erlich, J., Chow, J., & Suranyi, M. (2011). Psychosocial risk and protective factors for depression in the dialysis population: A systematic review and meta-regression analysis. *Journal of Psychosomatic Research*, 71(5), 300–310. <https://doi.org/10.1016/j.jpsychores.2011.05.002>
- *Chervonsky, E., & Hunt, C. (2017). Suppression and expression of emotion in social and interpersonal outcomes: A meta-analysis. *Emotion*, 17(4), 669–683. <https://doi.org/10.1037/emo0000270>
- *Chronister, J., Chou, C. C., Frain, M., & da Silva Cardoso, E. (2008). The relationship between social support and rehabilitation related outcomes: A meta-analysis. *Journal of Rehabilitation*, 74(2), 16–32.
- Cobb, S. (1976). Presidential Address-1976. Social support as a moderator of life stress. *Psychosomatic Medicine*, 38(5), 300–314. <https://doi.org/10.1097/00006842-197609000-00003>
- Cohen, S. (2004). Social relationships and health. *American Psychologist*, 59(8), 676–684. <https://doi.org/10.1037/0003-066X.59.8.676>
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357. <https://doi.org/10.1037/0033-2909.98.2.310>
- Cooper, H., & Koenka, A. C. (2012). The overview of reviews: Unique challenges and opportunities when research syntheses are the principal elements of new integrative scholarship. *American Psychologist*, 67(6), 446–462. <https://doi.org/10.1037/a0027119>
- *Credé, M., & Niehorster, S. (2012). Adjustment to college as measured by the student adaptation to college questionnaire: A quantitative review of its structure and relationships with correlates and consequences. *Educational Psychology Review*, 24(1), 133–165. <https://doi.org/10.1007/s10648-011-9184-5>
- *Del-Pino-Casado, R., Frías-Osuna, A., Palomino-Moral, P. A., Ruzafa-Martínez, M., & Ramos-Morcillo, A. J. (2018). Social support and subjective burden in caregivers of adults and older adults: A meta-analysis. *PLOS ONE*, 13(1), Article e0189874. <https://doi.org/10.1371/journal.pone.0189874>
- *Du, L., Shi, H.-Y., Qian, Y., Jin, X.-H., Li, Y., Yu, H.-R., Liu, X.-M., Fu, X.-L., & Chen, H.-L. (2021). Association between social support and suicidal ideation in patients with cancer: A systematic review and meta-analysis. *European Journal of Cancer Care*, 30(2), Article e13382. <https://doi.org/10.1111/ecc.13382>
- Durkheim, E. (1951). *Suicide: A study in sociology*. The Free Press.
- Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, 56(2), 455–463. <https://doi.org/10.1111/j.0006-341X.2000.00455.x>
- *Edwards, L. M., Le, H.-N., & Garnier-Villarreal, M. (2021). A systematic review and meta-analysis of risk factors for postpartum depression among Latinas. *Maternal and Child Health Journal*, 25(4), 554–564. <https://doi.org/10.1007/s10995-020-03104-0>
- *Eschleman, K. J., Bowling, N. A., & Alarcon, G. M. (2010). A meta-analytic examination of hardiness. *International Journal of Stress Management*, 17(4), 277–307. <https://doi.org/10.1037/a0020476>
- Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology, Research and Practice*, 40(5), 532–538. <https://doi.org/10.1037/a0015808>
- Ferguson, C. J. (2015). Pay no attention to that data behind the curtain: On angry birds, happy children, scholarly squabbles, publication bias, and why betas rule metas. *Perspectives on Psychological Science*, 10(5), 683–691. <https://doi.org/10.1177/1745691615593353>
- Ferguson, C. J., & Brannick, M. T. (2012). Publication bias in psychological science: Prevalence, methods for identifying and controlling, and implications for the use of meta-analyses. *Psychological Methods*, 17(1), 120–128. <https://doi.org/10.1037/a0024445>
- *Finch, J. F., Okun, M. A., Pool, G. J., & Ruehlman, L. S. (1999). A comparison of the influence of conflictual and supportive social interactions on psychological distress. *Journal of Personality*, 67(4), 581–621. <https://doi.org/10.1111/1467-6494.00066>
- *Ford, M. T., Heinen, B. A., & Langkamer, K. L. (2007). Work and family satisfaction and conflict: A meta-analysis of cross-domain relations. *Journal of Applied Psychology*, 92(1), 57–80. <https://doi.org/10.1037/0021-9010.92.1.57>
- French, K. A., Dumani, S., Allen, T. D., & Shockley, K. M. (2018). A meta-analysis of work–family conflict and social support. *Psychological Bulletin*, 144(3), 284–314. <https://doi.org/10.1037/bul0000120>
- Funder, D. C., & Ozer, D. J. (2019). Evaluating effect size in psychological research: Sense and nonsense. *Advances in Methods and Practices in Psychological Science*, 2(2), 156–168. <https://doi.org/10.1177/25152451919847202>
- *Gariépy, G., Honkaniemi, H., & Quesnel-Vallée, A. (2016). Social support and protection from depression: Systematic review of current findings in Western countries. *The British Journal of Psychiatry*, 209(4), 284–293. <https://doi.org/10.1192/bjp.bp.115.169094>
- *Goh, J., Pfeffer, J., & Zenios, S. A. (2016). The relationship between workplace stressors and mortality and health costs in the United States. *Management Science*, 62(2), 608–628. <https://doi.org/10.1287/mnsc.2014.2115>
- *Gonzalez-Mulé, E., Kim, M. M., & Ryu, J. W. (2021). A meta-analytic test of multiplicative and additive models of job demands, resources, and stress. *Journal of Applied Psychology*, 106(9), 1391–1411. <https://doi.org/10.1037/apl0000840>
- *Halbesleben, J. R. B. (2006). Sources of social support and burnout: A meta-analytic test of the conservation of resources model. *Journal of Applied Psychology*, 91(5), 1134–1145. <https://doi.org/10.1037/0021-9010.91.5.1134>
- *Harandi, T. F., Taghinasab, M. M., & Nayeri, T. D. (2017). The correlation of social support with mental health: A meta-analysis. *Electronic Physician*, 9(9), 5212–5222. <https://doi.org/10.19082/5212>
- *Heerde, J. A., & Hemphill, S. A. (2018). Examination of associations between informal help-seeking behavior, social support, and adolescent psychosocial outcomes: A meta-analysis. *Developmental Review*, 47, 44–62. <https://doi.org/10.1016/j.dr.2017.10.001>

- Helgeson, V. S. (2003). Social support and quality of life. *Quality of Life Research*, 12(Suppl. 1), 25–31. <https://doi.org/10.1023/A:1023509117524>
- *Hensel, J. M., Ruiz, C., Finney, C., & Dewa, C. S. (2015). Meta-analysis of risk factors for secondary traumatic stress in therapeutic work with trauma victims. *Journal of Traumatic Stress*, 28(2), 83–91. <https://doi.org/10.1002/jts.21998>
- *Hoeve, M., Dubas, J. S., Eichelsheim, V. I., van der Laan, P. H., Smeenk, W., & Gerris, J. R. M. (2009). The relationship between parenting and delinquency: A meta-analysis. *Journal of Abnormal Child Psychology*, 37(6), 749–775. <https://doi.org/10.1007/s10802-009-9310-8>
- Holt-Lunstad, J. (2018). Why social relationships are important for physical health: A systems approach to understanding and modifying risk and protection. *Annual Review of Psychology*, 69(1), 437–458. <https://doi.org/10.1146/annurev-psych-122216-011902>
- Holt-Lunstad, J. (2022). Social connection as a public health issue: The evidence and a systemic framework for prioritizing the “social” in social determinants of health. *Annual Review of Public Health*, 43(1), 193–213. <https://doi.org/10.1146/annurev-publichealth-052020-110732>
- Holt-Lunstad, J., Robles, T. F., & Sbarra, D. A. (2017). Advancing social connection as a public health priority in the United States. *American Psychologist*, 72(6), 517–530. <https://doi.org/10.1037/amp0000103>
- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLOS Medicine*, 7(7), Article e1000316. <https://doi.org/10.1371/journal.pmed.1000316>
- House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science*, 241(4865), 540–545. <https://doi.org/10.1126/science.3399889>
- *Howard, M. C., Cogswell, J. E., & Smith, M. B. (2020). The antecedents and outcomes of workplace ostracism: A meta-analysis. *Journal of Applied Psychology*, 105(6), 577–596. <https://doi.org/10.1037/apl0000453>
- *Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology*, 92(5), 1332–1356. <https://doi.org/10.1037/0021-9010.92.5.1332>
- *Hunter, S. T., Bedell, K. E., & Mumford, M. D. (2007). Climate for creativity: A quantitative review. *Creativity Research Journal*, 19(1), 69–90. <https://doi.org/10.1080/10400410709336883>
- Kent de Grey, R. G., Uchino, B. N., Trettervik, R., Cronan, S., & Hogan, J. N. (2018). Social support and sleep: A meta-analysis. *Health Psychology*, 37(8), 787–798. <https://doi.org/10.1037/hea0000628>
- *Kim, B., Jee, S., Lee, J., An, S., & Lee, S. M. (2018). Relationships between social support and student burnout: A meta-analytic approach. *Stress and Health*, 34(1), 127–134. <https://doi.org/10.1002/smi.2771>
- *Kristiana, I. F., Karyanta, N. A., Simanjuntak, E., Prihatsanti, U., Ingarianti, T. M., & Shohib, M. (2022). Social support and acculturative stress of international students. *International Journal of Environmental Research and Public Health*, 19(11), Article 6568. <https://doi.org/10.3390/ijerph19116568>
- *Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C. S. (2017). Perceived organizational support: A meta-analytic evaluation of organizational support theory. *Journal of Management*, 43(6), 1854–1884. <https://doi.org/10.1177/0149206315575554>
- Lakey, B. (2023). Low social support and relational regulation. In D. J. A. Dozois & K. S. Dobson (Eds.), *Treatment of psychosocial risk factors in depression* (pp. 55–79). American Psychological Association. <https://doi.org/10.1037/0000332-004>
- Lakey, B., & Orehek, E. (2011). Relational regulation theory: A new approach to explain the link between perceived social support and mental health. *Psychological Review*, 118(3), 482–495. <https://doi.org/10.1037/a0023477>
- *Lapierre, L. M., Li, Y., Kwan, H. K., Greenhaus, J. H., DiRenzo, M. S., & Shao, P. (2018). A meta-analysis of the antecedents of work–family enrichment. *Journal of Organizational Behavior*, 39(4), 385–401. <https://doi.org/10.1002/job.2234>
- *Lee, J. H., Nam, S. K., Kim, A., Kim, B., Lee, M. Y., & Lee, S. M. (2013). Resilience: A meta-analytic approach. *Journal of Counseling and Development*, 91(3), 269–279. <https://doi.org/10.1002/j.1556-6676.2013.00095.x>
- *Lei, H., Li, S., Chiu, M. M., & Lu, M. (2018). Social support and Internet addiction among mainland Chinese teenagers and young adults: A meta-analysis. *Computers in Human Behavior*, 85, 200–209. <https://doi.org/10.1016/j.chb.2018.03.041>
- *Luchman, J. N., & González-Morales, M. G. (2013). Demands, control, and support: A meta-analytic review of work characteristics interrelationships. *Journal of Occupational Health Psychology*, 18(1), 37–52. <https://doi.org/10.1037/a0030541>
- *Mahon, N. E., & Yarcheski, A. (2017). Parent and friend social support and adolescent hope. *Clinical Nursing Research*, 26(2), 224–240. <https://doi.org/10.1177/1054773815619881>
- *Mathieu, M., Eschleman, K. J., & Cheng, D. (2019). Meta-analytic and multiwave comparison of emotional support and instrumental support in the workplace. *Journal of Occupational Health Psychology*, 24(3), 387–409. <https://doi.org/10.1037/ocp0000135>
- Nater, C., & Zell, E. (2015). Accuracy of social perception: An integration and review of meta-analyses. *Social and Personality Psychology Compass*, 9(9), 481–494. <https://doi.org/10.1111/spc3.12194>
- *Nissen, K. G. (2016). Correlates of self-rated attachment in patients with cancer and their caregivers: A systematic review and meta-analysis. *Psycho-Oncology*, 25(9), 1017–1027. <https://doi.org/10.1002/pon.4057>
- *Nweke, M., Ukwuoma, M., Adiuku-Brown, A. C., Ugwu, P., & Nseka, E. (2022). Characterization and stratification of the correlates of postpartum depression in sub-Saharan Africa: A systematic review with meta-analysis. *Women's Health*, 18, 1–10. <https://doi.org/10.1177/17455057221118773>
- *O'Hara, M. W., & Swain, A. M. (1996). Rates and risk of postpartum depression—A meta-analysis. *International Review of Psychiatry*, 8(1), 37–54. <https://doi.org/10.3109/09540269609037816>
- *Okun, M. A., & Lockwood, C. M. (2003). Does level of assessment moderate the relation between social support and social negativity? A meta-analysis. *Basic and Applied Social Psychology*, 25(1), 15–35. https://doi.org/10.1207/S15324834BASP2501_2
- *Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, 129(1), 52–73. <https://doi.org/10.1037/0033-2909.129.1.52>
- *Pinquart, M. (2018). Parenting stress in caregivers of children with chronic physical condition-A meta-analysis. *Stress and Health*, 34(2), 197–207. <https://doi.org/10.1002/smi.2780>
- *Prati, G., & Pietrantonio, L. (2009). Optimism, social support, and coping strategies as factors contributing to posttraumatic growth: A meta-analysis. *Journal of Loss and Trauma*, 14(5), 364–388. <https://doi.org/10.1080/15325020902724271>
- *Prati, G., & Pietrantonio, L. (2010). The relation of perceived and received social support to mental health among first responders: A meta-analytic review. *Journal of Community Psychology*, 38(3), 403–417. <https://doi.org/10.1002/jcop.20371>
- *Roehrl, B., & Strouse, J. (2008). Influence of social support on success of therapeutic interventions: A meta-analytic review. *Psychotherapy*, 45(4), 464–476. <https://doi.org/10.1037/a0014333>
- *Rueda, S., Mitra, S., Chen, S., Gogolishvili, D., Globerman, J., Chambers, L., Wilson, M., Logie, C. H., Shi, Q., Morassaei, S., & Rourke, S. B. (2016). Examining the associations between HIV-related stigma and health outcomes in people living with HIV/AIDS: A series of meta-analyses. *BMJ Open*, 6(7), Article e011453. <https://doi.org/10.1136/bmjopen-2016-011453>
- *Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support

- and depression in childhood and adolescence. *Psychological Bulletin*, 142(10), 1017–1067. <https://doi.org/10.1037/bul0000058>
- *Schiller, V. F., Dorstyn, D. S., & Taylor, A. M. (2021). The protective role of social support sources and types against depression in caregivers: A meta-analysis. *Journal of Autism and Developmental Disorders*, 51(4), 1304–1315. <https://doi.org/10.1007/s10803-020-04601-5>
- *Shand, L. K., Cowlshaw, S., Brooker, J. E., Burney, S., & Ricciardelli, L. A. (2015). Correlates of post-traumatic stress symptoms and growth in cancer patients: A systematic review and meta-analysis. *Psycho-Oncology*, 24(6), 624–634. <https://doi.org/10.1002/pon.3719>
- *Smerglia, V. L., Miller, N. B., Sotnak, D. L., & Geiss, C. A. (2007). Social support and adjustment to caring for elder family members: A multi-study analysis. *Aging & Mental Health*, 11(2), 205–217. <https://doi.org/10.1080/13607860600844515>
- *Smith, C. E., Fernengel, K., Holcroft, C., & Gerald, K. (1994). Meta-analysis of the associations between social support and health outcomes. *Annals of Behavioral Medicine*, 16(4), 352–362.
- Strickhouser, J. E., Zell, E., & Krizan, Z. (2017). Does personality predict health and well-being? A metasynthesis. *Health Psychology*, 36(8), 797–810. <https://doi.org/10.1037/hea0000475>
- Taylor, S. E. (2012). Social support: A review. In H. S. Friedman (Ed.), *The Oxford handbook of health psychology* (pp. 190–214). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195342819.013.0009>
- Thoits, P. A. (1986). Social support as coping assistance. *Journal of Consulting and Clinical Psychology*, 54(4), 416–423. <https://doi.org/10.1037/0022-006X.54.4.416>
- *Tirone, V., Orlowska, D., Lofgreen, A. M., Blais, R. K., Stevens, N. R., Klassen, B., Held, P., & Zalta, A. K. (2021). The association between social support and posttraumatic stress symptoms among survivors of betrayal trauma: A meta-analysis. *European Journal of Psychotraumatology*, 12(1), Article 1883925. <https://doi.org/10.1080/20008198.2021.1883925>
- Uchino, B. N. (2009). Understanding the links between social support and physical health: A life-span perspective with emphasis on the separability of perceived and received support. *Perspectives on Psychological Science*, 4(3), 236–255. <https://doi.org/10.1111/j.1745-6924.2009.01122.x>
- Uchino, B. N., Bowen, K., & Kent, R. (2016). Social support and mental health. In H. S. Friedman (Ed.), *Encyclopedia of mental health* (2nd ed., pp. 189–195). Academic Press. <https://doi.org/10.1016/B978-0-12-397045-9.00117-8>
- Uchino, B. N., Trettenvik, R., Kent de Grey, R. G., Cronan, S., Hogan, J., & Baucum, B. R. W. (2018). Social support, social integration, and inflammatory cytokines: A meta-analysis. *Health Psychology*, 37(5), 462–471. <https://doi.org/10.1037/hea0000594>
- Villacura-Herrera, C., & Kenner, N. (2020, September 12). *rEScMA: A brief summary on effect size conversion for meta-analysis*. PsyArXiv. <https://doi.org/10.31219/osf.io/8np9d>
- *Viswesvaran, C., Sanchez, J. I., & Fisher, J. (1999). The role of social support in the process of work stress: A meta-analysis. *Journal of Vocational Behavior*, 54(2), 314–334. <https://doi.org/10.1006/jvbe.1998.1661>
- *Wang, H. H. (1998). A meta-analysis of the relationship between social support and well-being. *The Kaohsiung Journal of Medical Sciences*, 14(11), 717–726.
- *Wang, Y., Chung, M. C., Wang, N., Yu, X., & Kenardy, J. (2021). Social support and posttraumatic stress disorder: A meta-analysis of longitudinal studies. *Clinical Psychology Review*, 85, Article 101998. <https://doi.org/10.1016/j.cpr.2021.101998>
- Wills, T. A. (1991). Social support and interpersonal relationships. In M. S. Clark (Ed.), *Prosocial behavior* (pp. 265–289). Sage Publications.
- Wilmot, M. P., Wanberg, C. R., Kammeyer-Mueller, J. D., & Ones, D. S. (2019). Extraversion advantages at work: A quantitative review and synthesis of the meta-analytic evidence. *Journal of Applied Psychology*, 104(12), 1447–1470. <https://doi.org/10.1037/apl0000415>
- *Xiong, T., Milios, A., McGrath, P. J., & Kaltenbach, E. (2022). The influence of social support on posttraumatic stress symptoms among children and adolescents: A scoping review and meta-analysis. *European Journal of Psychotraumatology*, 13(1), Article 2011601. <https://doi.org/10.1080/20008198.2021.2011601>
- *Yalçın, İ. (2015). Relationships between well-being and social support: A meta analysis of studies conducted in Turkey. *Turkish Journal of Psychiatry*, 26(1), 21–32. <https://doi.org/10.5080/u7769>
- *Yu, L., Chiu, C.-H., Lin, Y.-S., Wang, H.-H., & Chen, J.-W. (2007). Testing a model of stress and health using meta-analytic path analysis. *The Journal of Nursing Research*, 15(3), 202–214. <https://doi.org/10.1097/01.JNR.0000387616.64812.60>
- *Zalta, A. K., Tirone, V., Orlowska, D., Blais, R. K., Lofgreen, A., Klassen, B., Held, P., Stevens, N. R., Adkins, E., & Dent, A. L. (2021). Examining moderators of the relationship between social support and self-reported PTSD symptoms: A meta-analysis. *Psychological Bulletin*, 147(1), 33–54. <https://doi.org/10.1037/bul0000316>
- Zell, E., & Krizan, Z. (2014). Do people have insight into their abilities? A metasynthesis. *Perspectives on Psychological Science*, 9(2), 111–125. <https://doi.org/10.1177/1745691613518075>
- Zell, E., & Lesick, T. L. (2022). Big five personality traits and performance: A quantitative synthesis of 50+ meta-analyses. *Journal of Personality*, 90(4), 559–573. <https://doi.org/10.1111/jopy.12683>
- *Zewudie, B. T., Geze, S., Mesfin, Y., Argaw, M., Abebe, H., Mekonnen, Z., Tesfa, S., Chekole, B., Tadesse, B., Aynalem, A., & Lankrew, T. (2021). A systematic review and meta-analysis on depression and associated factors among adult HIV/AIDS-positive patients attending ART clinics of Ethiopia: 2021. *Depression Research and Treatment*, 2021, Article 8545934. <https://doi.org/10.1155/2021/8545934>
- *Zhang, X., & Dong, S. (2022). The relationships between social support and loneliness: A meta-analysis and review. *Acta Psychologica*, 227, Article 103616. <https://doi.org/10.1016/j.actpsy.2022.103616>
- *Zhou, Z., & Cheng, Q. (2022). Relationship between online social support and adolescents' mental health: A systematic review and meta-analysis. *Journal of Adolescence*, 94(3), 281–292. <https://doi.org/10.1002/jad.12031>

Received March 6, 2023

Revision received January 6, 2024

Accepted January 11, 2024 ■