

The Efficacy of Self-Care for Graduate Students in Professional Psychology: A Meta-Analysis

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Many have argued that self-care should play a critical role in graduate training in professional psychology (Bamonti et al., 2014; Barnett & Cooper, 2009; Elman & Forrest, 2007; Norcross & Guy, 2007); however, the existing research on the effectiveness of self-care activities for graduate students has produced somewhat mixed results. The purpose of this review was to use meta-analytic techniques to synthesize the findings from studies examining the relationship between self-care use and positive outcomes for professional psychology graduate students. A systematic search of the literature resulted in 17 studies (containing data from 1,890 participants and 52 different effect sizes) that could be included in the meta-analysis. Using a random effects model, a weighted average effect size of $d = 0.77$, 95% confidence interval [0.46, 1.08] was found, indicating that those who practiced self-care experienced more benefits than those who did not. Although the overall effect size was found to be robust and stable, a significant degree of heterogeneity between study effect sizes was found, $I^2 = 87.98\%$. The weighted average effect size was moderated by the type of outcome that was assessed, $Q(5) = 15.78$, $p < .01$, with larger improvements being observed in the areas of gains (e.g., self-compassion), decreased psychological distress, and life satisfaction, compared to ratings of stress. The weighted average effect size was not found to be moderated by the type of self-care, study design/quality characteristics, or participant characteristics. The results of this meta-analysis have important implications for self-care practice and training in professional psychology.

Keywords: self-care, professional psychology, training, graduate students

Graduate training programs in professional psychology frequently require students to juggle multiple responsibilities and obligations, including coursework, clinical experiences, research activities, and other professional commitments (e.g., teaching assistantships, service opportunities). Managing the onerous workload associated with graduate school often begets high levels of stress for many students (Pakenham & Stafford-Brown, 2012). In fact, based on the results from one large-scale national survey, over 70% of graduate students report a level of stress that inter-

feres with their functioning (El-Ghoroury, Galper, Sawaqdeh, & Bufka, 2012). Additional studies have found that the stress associated with attending a graduate program in professional psychology can impact multiple domains, including life satisfaction (Alleyne, Alleyne, & Greenidge, 2010), physical health (Lacey et al., 2000), psychological well-being (DeBerard & Masters, 2014), academic success (Lovitts, 2001), and professional burnout (Barnett, Baker, Elman, & Schoener, 2007). Given the high level of stress that is experienced by many students in professional psy-

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chology graduate programs and the potential for that stress to have an impact on several areas of a student's life, evidence-based methods for lessening or alleviating the stress associated with graduate school are needed (El-Ghoroury et al., 2012; Tompkins, Brecht, Tucker, Neander, & Swift, 2016).

Self-care has been identified as one potential method for alleviating or minimizing the stress associated with graduate training in professional psychology (Barnett & Cooper, 2009). Broadly defined, self-care is the process of actively initiating a method to promote holistic well-being (Bressi & Vaden, 2016; Godfrey et al., 2011; Lee & Miller, 2013; Newell & Nelson-Gardell, 2014). This definition implies an array of potential activities that fall under the category of self-care, such as healthy eating, exercise, mindfulness, engaging in hobbies or leisurely activities, maintaining a sufficient sleep schedule, and using adaptive coping strategies (Carroll, Gilroy, & Murra, 1999). This definition also implies a purposeful effort to engage in these activities to maintain wellness in multiple domains. For example, although it may be associated with positive outcomes, having a social support system would not count as self-care; however, taking time to seek and maintain a social support system would.

Developing a habit of self-care has been suggested to be a critical component to graduate training in professional psychology (Bamonti et al., 2014; Barnett & Cooper, 2009; Elman & Forrest, 2007; Norcross & Guy, 2007). In addition to possibly being an effective method for coping with stressors from graduate school, learning how to consistently implement self-care strategies may be beneficial to clinical and counseling psychology students in their future professional careers. Research has indicated that the work of professional psychologists is associated with high levels of stress, psychological distress, and burnout (Barnett et al., 2007; Smith & Moss, 2009). Research has also indicated that it is the novice members of the professional psychology field that are most vulnerable to experiencing work-related stress (Ronnestad & Skovholt, 2003). Given these reasons, some consider it an ethical imperative that clinical and counseling psychology students begin to practice self-care while in graduate school (Barnett & Cooper, 2009).

Despite the strong call for professional psychology graduate students to engage in self-care activities, research documenting the efficacy of self-care activities for graduate students has been mixed. For example, in one study, Shapiro, Brown, and Biegel (2007) tested the efficacy of a mindfulness-based self-care program in a sample of 54 counseling students. Compared to the control group, those who attended the mindfulness course showed significantly greater improvements in state and trait anxiety, mood, perceived stress, rumination, and self-compassion. In contrast, McKinzie, Altamura, Burgoon, and Bishop (2006) conducted a correlational study with 65 psychology graduate student participants from two universities, examining the relationship between several different self-care behaviors and ratings of stress. Surprisingly, they found that engagement in exercise as a self-care activity was related to significantly higher levels of stress for participants, while self-care efforts in the area of eating habits was not associated with stress, and sleeping related self-care behaviors was associated with significantly lower levels of stress. Based on the results of these two studies, as well as several other similar studies (Cohen & Miller, 2009; Goncher, Sherman, Barnett, & Haskins, 2013; Wolf, Thompson, Thompson, & Smith-Adcock, 2014), it is

not immediately clear if self-care produces positive outcomes for professional psychology graduate students.

Aims of the Current Review

The purpose of the current meta-analysis was to test, based on the existing research evidence, whether self-care strategies are associated with positive outcomes (e.g., lower levels of depression, anxiety, or other psychological distress; lower ratings of stress; higher levels of self-compassion and self-efficacy beliefs; higher grade point average (GPA); higher ratings of satisfaction with life and their educational programs) for professional psychology graduate students. Although several researchers and educators have argued for the inclusion of self-care in training programs (Bamonti et al., 2014; Barnett & Cooper, 2009; Elman & Forrest, 2007; Norcross & Guy, 2007), the existing research on the efficacy of self-care has been mixed. By systematically searching the literature and pooling the results using meta-analytic methods, this review aimed to provide a statistical test for self-care, as well as an estimate of the size of the impact that self-care activities can have on various outcomes. Although the results of the existing research on self-care for psychology graduate students is mixed, based on our review of the literature, we hypothesized that a significant relationship between self-care practice and positive outcomes would be found. However, it is possible that differences in the findings from existing studies may be due to differences in the types of self-care strategies that were tested, the outcomes that were measured, and in the study designs that were used. The second aim of this review was to test several potential moderators of the relationship between self-care and positive outcomes. The results of this meta-analysis have the potential to provide evidence supporting the call to include self-care training and practice in professional psychology graduate programs. In addition, the results may help to identify which types of self-care are most effective for trainees, and under what situations students would expect the most benefits.

Method

Literature Search Procedures

Based on the aims of the current review, a search was conducted to identify empirical studies examining the outcomes associated with self-care use for professional psychology graduate students. Figure 1 provides a flowchart for the identification of studies that were included in the review. First, a keyword search was conducted on February 18, 2016 using the PsycINFO database with the terms (*self care* or *self-care* or *selfcare* or *exercise* or *mindfulness* or *hobbies*) and (*graduate stud*^{*} or *doctoral stud*^{*} or *master's stud*^{*} or *train*^{*}). This search yielded 10,203 potential articles. Each of these articles were reviewed at the title and abstract level by trained coders (seven students from two doctoral psychology programs) to see if they potentially met the broad inclusion criteria (quantitative data, written in English, psychology graduate students as participants, tested a self-care strategy). To be more inclusive, unpublished dissertations were retained for this meta-analysis; however, if a peer-reviewed published article was identified that was based on a dissertation study, only the published article was included. First, 1,050 of the 10,203 articles were

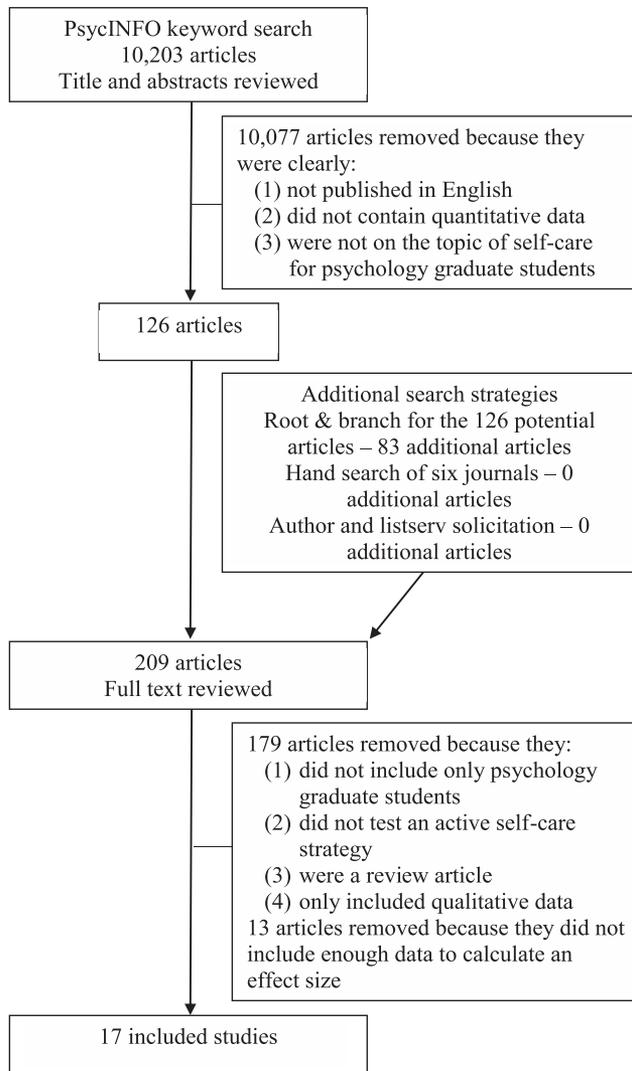


Figure 1. Flow chart of the search results.

double coded independently to ensure consistency across the seven coders (300 articles each). Discrepancies were discussed between the coders and the project supervisor (a doctoral level faculty member with experience and expertise in conducting meta-analyses and research on self-care). Once consistency was demonstrated, the remaining of the 10,203 articles were split evenly between the seven graduate student coders. The review of the 10,203 articles resulted in 126 potential articles.

Second, a root and branch search was conducted by examining the titles and abstracts of all of the studies cited by the 126 potentially relevant articles (roots) and all of the studies that cited any of the 126 potential articles (branch). This resulted in 83 additional potential articles for inclusion in the meta-analysis. Third, a hand search was conducted of all of the journals that had published at least five articles from the list of 126 potentially relevant articles. These journals included *Clinical Psychology and Psychotherapy*; *Counselor Education and Supervision*; *Journal of Humanistic Psychology*; *Mindfulness*; *Professional Psychology*;

Research and Practice; and *Training and Education in Professional Psychology*. The hand search included all articles published in these journals (dating back to the first volume for each journal); however, it did not reveal any additional potential articles that were not already identified from the other search strategies. We also contacted all of the corresponding authors from the 126 potentially relevant articles (when current/accurate e-mail addresses were available), solicited articles on the topic from organizational Listservs (e.g., Association of Directors of Psychology Training Clinics), and reviewed the references of several books on self-care. No additional potentially relevant articles were identified through these strategies.

The full text of each of the 209 potential articles was then reviewed independently by the seven graduate student coders previously mentioned (the studies were assigned so that each one was coded by two of the seven graduate students) based on the more detailed inclusion/exclusion criteria. To be included, the study's participants had to be enrolled in a graduate-level professional psychology program (studies were excluded if psychology graduate students were included among a group of graduate students from other disciplines, unless separate data were reported for the psychology graduate students), the article had to include enough quantitative data examining a relationship between an active self-care strategy (e.g., seeking social support, not social support) and some outcome (e.g., life satisfaction, GPA, psychological distress) to calculate an effect size, and it had to be available in English. There was a 92.82% match rate on the inclusion/exclusion decisions between the independent coders. The project supervisor reviewed the 15 studies where there was a disagreement to determine eligibility. Of the 209 potential studies, 179 were removed because they did not include only psychology graduate students as participants, they did not test an active self-care strategy, or because they were a qualitative study or review article. An additional 13 studies were removed because although they had a quantitative design, they did not include enough data to calculate an effect size for the variables of interest.

Coding Procedures

The 17 studies that were included in this meta-analysis were then coded by the same seven independent coders (each study was coded by two of the seven) for several moderators that would be tested. These moderators included the design/quality variables of publication status (peer-reviewed publication or dissertation), study design (correlational, pre/post, or controlled), whether or not there were clearly stated hypotheses (no or yes), whether or not the included self-care intervention was manualized (no or yes), and the quality of the measures based on reliability and validity statistics (poor, adequate, or good). Participant characteristics were also coded as moderators, including average age, % female, race/ethnicity (coded as % European American/White, % African American, % Latino[a] American, % Asian American, % American Indian or Alaska Native, and % bi/multiracial), geographic region (a specific location in the United States, a nationwide U.S. sample, or an international sample), type of training program (clinical, counseling, or mixed), and degree level of program (doctoral, master's, or mixed). The type of self-care strategy was coded as mindfulness, seeking social support, or mixed/other (originally several other strategies were coded; however, given the

small number of studies, these were collapsed into a mixed/other category). In addition, if a specific self-care intervention was used, the duration of that intervention was coded. The type of outcome was coded as psychological distress (e.g., anxiety, depression), gains (e.g., self-compassion), GPA, satisfaction (e.g., satisfaction with life, satisfaction with program), stress (e.g., academic stress, general life stress as measured by the Perceived Stress Scale; Cohen, Kamarck, & Mermelstein, 1983), or other. There was a 95.50% agreement rate between the independent coders for the moderator variables. The project supervisor reviewed the article and made a decision when there was a disagreement. The coding results and study descriptives can be found in Table 1.

Data Analysis Procedures

Based on the data presented by the authors, a standard difference in means (d) was calculated to represent the relationship between participation in the self-care activity and the identified outcome variable. Several studies reported more than one outcome variable (ranging from 1 to 9), yielding a total of 52 effect sizes. In these cases, an effect size d was calculated for each outcome; however, when pooling across studies for the calculation of the weighted average effect or study level moderators, only an average d (pooled across outcomes within the study) was used for the study. In the studies where the calculation of a standard difference in means was not applicable (i.e., correlational designs), an r effect size was calculated, and then a d effect size was computed from the r value based on the formulas provided by Card (2012). Across all studies and analyses, a positive d value indicates a positive relationship between engaging in self-care activities and positive outcomes (e.g., GPA) or a negative relationship between engaging in self-care activities and negative outcomes (e.g., anxiety).

An overall weighted average effect size was calculated across the 17 included studies using a random effects model. A random effects model was chosen over a fixed effects model given that the studies varied significantly in their designs, participant characteristics, self-care techniques, and outcomes. After calculating the weighted average effect size, heterogeneity was examined using Q and I^2 statistics. For heterogeneity, the I^2 value represents the percent of variance in effect sizes between the studies and the Q statistic provides a statistical test for the heterogeneity. Moderators (categorical and continuous) were then tested using mixed effects models, allowing for studies to vary within groups. For the categorical moderators, a Q statistic was used to examine the variability in effect sizes between the categorical groups compared to the variability in study effect sizes within the groups. For the continuous moderators, a Q statistic was used to examine the variability in study effect sizes explained by the model (the continuous predictor). All calculations were completed using Comprehensive Meta-Analysis (Version 2), developed by Borenstein, Hedges, Higgins, and Rothstein (2005).

Results

A total of 1,890 psychology graduate students participated in the 17 included studies. Fifty-two effect sizes were calculated across all studies. Of those 52 effect sizes, 24 indicated a significant positive relationship between self-care and the measured benefits, 27 indicated a nonsignificant relationship, and one indicated a

significant negative relationship. Based on Cohen's conventions, 16 of the effect sizes were large, 15 were medium, 14 were small, and four were negligible all in the positive direction (self-care use was associated with benefits), while one effect size was medium and two were negligible in the negative direction (self-care use was associated with harmful impacts). Of the 17 study average effect sizes, 10 indicated a significant positive relationship between self-care and the measured benefits and seven indicated a nonsignificant relationship. Seven of these effect sizes were large, four were medium, four were small, and two were negligible, all in the positive direction. Figure 2 is a forest plot of the study average effect sizes.

Weighted Average Effect Size

A significant weighted average effect was found, $d = 0.77$, 95% confidence interval (CI) [0.46, 1.08], $z = 4.92$, $p < .001$, indicating a positive relationship between engaging in self-care activities and positive outcomes. Using a one-study-removed method, the weighted average effect size ranged from $d = 0.63$ to $d = 0.82$, suggesting a high degree of stability with the effect size that was found. Although the weighted average effect size was stable, as hypothesized, significant variance between study effect sizes (heterogeneity) was found, $Q(16) = 133.13$, $p < .001$. The I^2 value indicated that 87.98% of the variability in effect sizes is likely due to true heterogeneity in the included studies.

Publication Bias

Several methods were used to test the overall weighted effect size against publication bias. Both published and unpublished studies were included in this meta-analysis and so there may be less worry about publication bias having an impact on the results. Still, we conducted these publication bias tests to check the robustness of the weighted average effect size against missing studies that might have nonsignificant results. Calculation of a fail-safe N indicated that 867 missing studies with null results would need to exist to move the weighted effect size to a nonsignificant value; however, based on conservative estimates (Card, 2012), it is likely that a maximum of 95 missing studies exist. An examination of the funnel plot indicated slight asymmetry to the results; however, using Duval and Tweedie's (2000) trim-and-fill method, the adjusted weighted average effect size, $d = 0.73$, 95% CI [0.43, 1.04], was still very similar with the original value, $d = 0.77$. Using meta-regression procedures, sample size was also tested as a covariate with the study effect sizes. One would hypothesize that if publication bias exists, the included studies with smaller sample sizes would report larger effect sizes compared to the large sample size studies—studies with a small sample size would have had to find larger effects in order for them to be significant and more likely included in the literature. A significant relationship between sample size and effect size was not found, $\beta = 0.04$, $Q(1) = 0.00$, $z = 0.03$, $p = .98$. Taken together, the results of these tests indicate that the weighted average effect size likely represents the entire literature on the effectiveness of self-care for graduate students in professional psychology.

Table 1
Description of Included Studies

Study	N	Self-care type	Outcome(s)	Program type	Degree level	Publication status	Study design	Clear hypotheses	Measure quality
Burkhart (2014)	5	Mixed/other	Distress, gains (2), stress (4)	Clinical	Mixed	Peer-reviewed	Pre/post	No	Good
Cohen and Miller (2009)	21	Mindfulness	Distress (2), gains (4), other, satisfaction, stress	Clinical	Mixed	Peer-reviewed	Pre/post	Yes	Poor
Furlonger and Gencic (2014)	292	Seeking social support	Stress	Counseling	Master's	Peer-reviewed	Correlational	Yes	Adequate
Goncher et al. (2013)	262	Mixed/other	Gains	Clinical	Doctoral	Peer-reviewed	Correlational	Yes	Good
McKinzie et al. (2006)	65	Mixed/other	Stress (3)	Mixed	Mixed	Peer-reviewed	Correlational	Yes	Poor
Miller (2006)	83	Seeking social support	Stress	Clinical	Doctoral	Dissertation	Correlational	Yes	Adequate
Montgomery (2009)	533	Mixed/other	Satisfaction, stress	Mixed	Doctoral	Dissertation	Correlational	Yes	Good
Moore (2008)	10	Mindfulness	Gains (2)	Clinical	Doctoral	Peer-reviewed	Pre/post	Yes	Good
Nelson et al. (2001)	52	Seeking social support	GPA (3)	Clinical	Doctoral	Peer-reviewed	Correlational	Yes	Adequate
Rimes and Wingrove (2011)	20	Mindfulness	Distress, gains (2)	Clinical	Doctoral	Peer-reviewed	Pre/post	No	Poor
Shapiro et al. (2007)	54	Mindfulness	Distress (5), gains, stress	Counseling	Master's	Peer-reviewed	Controlled	No	Good
Shotwell (2011)	81	Mixed/other	Stress (2)	Clinical	Doctoral	Dissertation	Correlational	Yes	Good
Smith et al. (2007)	195	Mixed/other	Distress	Counseling	Master's	Peer-reviewed	Correlational	Yes	Good
Spragg (2011)	8	Mindfulness	Gains	Mixed	Mixed	Dissertation	Controlled	Yes	Good
Stafford-Brown and Pakenham (2012)	56	Mixed/other	Gains (2), other, satisfaction, stress (2)	Clinical	Mixed	Peer-reviewed	Controlled	Yes	Good
Wolf et al. (2014)	38	Mixed/other	Gains	Counseling	Mixed	Peer-reviewed	Pre/post	No	Poor
Wulf (2007)	115	Mixed/other	GPA, stress	Clinical	Doctoral	Dissertation	Correlational	Yes	Good

Note. GPA = grade point average. The numbers in parentheses in the Outcomes column indicate the number of different ways the outcome was included in the primary stud, that is., "stress (2)" indicates that the primary study measured stress for two different domains.

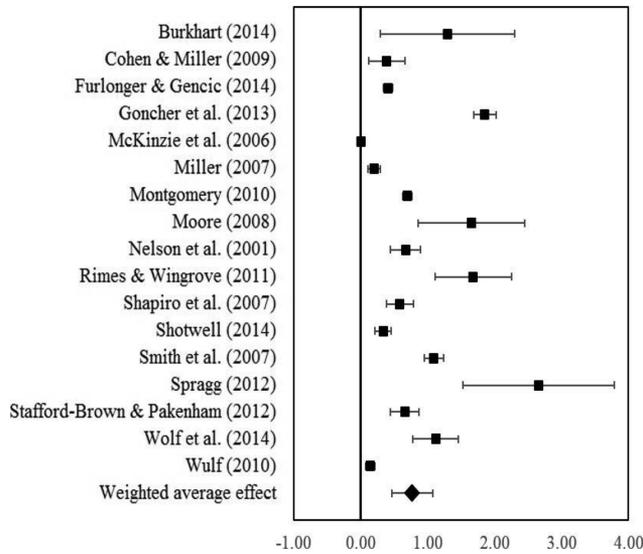


Figure 2. Forest plot of the study effect sizes with 95% confidence interval error bars.

Moderators

Given our broad definition of self-care and the wide range of outcomes considered in the current meta-analysis, the significant degree of heterogeneity that was found between the study effect sizes matched the a priori hypotheses. In an attempt to explain the heterogeneity in the study effect sizes, several categorical and continuous moderators were evaluated, including moderators related to the type of self-care activity, the type of outcome, characteristics of the study participants, and characteristics of the study design.

Type of self-care. The method of self-care in which psychology graduate students engaged was hypothesized to moderate the relation between self-care and outcomes. Three main categories of self-care activities were identified in the included studies, including mindfulness ($k = 5$), seeking social support ($k = 3$), and mixed ($k = 9$) which included several different types of self-care activities that were used jointly in a single study (e.g., a holistic wellness intervention) or activities that were only tested in one study (e.g., exercise). Contrary to our hypothesis, type of self-care was not a significant moderator, $Q(2) = 5.67, p = .06$: mindfulness, $d = 1.18, 95\% \text{ CI } [0.44, 1.91]$; seeking social support, $d =$

0.40, 95% CI [0.21, 0.59]; and mixed, $d = 0.76, 95\% \text{ CI } [0.32, 1.20]$.

For those studies ($k = 8$) that tested a self-care intervention (e.g., pre/post, controlled trials), the duration of engagement in self-care activities was tested as a continuous moderator. Specifically, a longer duration of engagement in self-care activities was hypothesized to be related to more positive outcomes. The duration of activities ranged from three weeks to 16 weeks of participation. The covariate analysis, using a mixed-effects model, indicated a nonsignificant relationship, $Q(1) = 0.41, \beta = 0.03, z = 0.64, p = .52$.

Type of outcome. Six categories of outcomes were identified in the included effect sizes, including psychological distress ($k = 10$), gains ($k = 16$), GPA ($k = 4$), satisfaction with some aspect of life ($k = 3$), stress ($k = 17$), and other ($k = 2$). The mean effect sizes for each of these categories can be found in Table 2. The moderator analyses indicated a significant difference in effect sizes between these groups, $Q(5) = 15.78, p < .01$. Post hoc pairwise comparisons (also reported in Table 2), indicated that the self-care activities had the greatest impact on reported gains (e.g., self-compassion, a sense of overall personal accomplishment) and the smallest impact on reported levels of stress. Specifically, the benefits seen in the area of gains were significantly higher than the benefits in the area of GPA and stress, and the benefits in the areas of psychological distress and life satisfaction were significantly higher than the benefits in the area of stress.

Participant characteristics. Several participant characteristics were also tested as potential moderators. Among the included studies, all participants were graduate students in a professional psychology degree program; however, some of the studies were conducted with students in a master's level program ($k = 3$), some were with students in a doctoral level program ($k = 8$), and others included a mixture of students from both master's level and doctoral level programs ($k = 6$). The average effect size for studies conducted with doctoral level students only was $d = 0.84, 95\% \text{ CI } [0.31, 1.36]$, with master's level students only was $d = 0.70, 95\% \text{ CI } [0.22, 1.18]$, and a mixture of students was $d = 0.69, 95\% \text{ CI } [0.17, 1.21]$. The moderator analyses indicated that these differences were not significant, $Q(2) = 0.19, p = .91$. The type of professional program was also tested as a potential moderator. The average effect size for studies conducted within clinical psychology programs ($k = 10$) was $d = 0.81, 95\% \text{ CI } [0.26, 1.36]$, the average effect size for studies conducted within counseling psychology programs ($k = 4$) was $d = 0.78, 95\% \text{ CI } [0.35,$

Table 2
Post Hoc Pairwise Comparison Results (*Q* Values) Comparing Effect Sizes Between the Outcome Categories

Outcome domain	<i>k</i>	Average <i>d</i> [95% CI]	Psychological distress	Gains	GPA	Satisfaction	Stress
Psychological distress	10	.78 [.46, 1.10]					
Gains	16	1.07 [.70, 1.43]	1.29				
GPA	4	.52 [.27, .76]	1.63	5.87*			
Satisfaction	3	.67 [.45, .88]	.34	3.34	.78		
Stress	17	.33 [.15, .52]	5.56*	12.09**	1.37	5.17*	
Other	2	.57 [.22, .92]	.75	3.63	.06	.20	1.37

Note. CI = confidence interval; GPA = grade point average.
* $p < .05$. ** $p < .001$.

1.20], and for studies that collected data from students enrolled in more than one type of professional psychology program ($k = 3$) the average effect size was $d = 0.66$, 95% CI $[-0.10, 1.41]$. There was not a significant difference between these group effect sizes, $Q(2) = 0.11$, $p = .95$. Some of the included studies were conducted with participants from one specific program or location within the United States ($k = 8$), others were conducted with a nationwide U.S. sample ($k = 4$), and others were conducted with an international sample of participants ($k = 3$). Two of the included studies did not report enough information to determine the sample location. The average effect size for those conducted in a specific program or location in the United States was $d = 0.41$, 95% CI $[0.19, 0.64]$, with a nationwide U.S. sample was $d = 0.98$, 95% CI $[0.86, 1.10]$, and internationally was $d = 0.49$, 95% CI $[0.29, 0.70]$. Using a mixed-effects model, these between group differences were not significant, $Q(2) = 1.54$, $p = .46$.

Participant demographics of age, gender, and race/ethnicity were also tested as potential moderators. A mixed-effect metaregression analysis indicated that average participant age was not a significant covariate with study effect sizes, $\beta = -0.06$, $Q(1) = 1.24$, $z = 1.11$, $p = .26$. A mixed-effect metaregression analysis also indicated that the percentage of female participants was not a significant covariate with study effect sizes, $\beta = 2.19$, $Q(1) = 2.47$, $z = 1.57$, $p = .12$. Last, metaregression analyses indicated that the study effect sizes were not significantly associated with the percent of European American, $\beta = -2.38$, $Q(1) = 0.78$, $z = 0.88$, $p = .38$, African American, $\beta = 5.30$, $Q(1) = 1.76$, $z = 1.33$, $p = .19$, Latino(a) American, $\beta = 0.46$, $Q(1) = 0.01$, $z = 0.12$, $p = .91$, Asian American, $\beta = 0.17$, $Q(1) = 0.00$, $z = 0.03$, $p = .98$, American Indian, $\beta = 0.00$, $Q(1) = 0.00$, $z = 0.00$, $p = 1.00$, or bi/multiracial participants, $\beta = 3.21$, $Q(1) = 0.09$, $z = 0.30$, $p = .76$.

Study design/quality. Rather than assign a quality rating to each study, several design characteristics were coded and tested as moderators. Nine of the included studies used a correlational design, five used a pre/post self-care activity comparison, and three compared a self-care group to a control group of participants. The average effect size for the correlational studies was $d = 0.62$, 95% CI $[0.04, 1.02]$, for pre/post studies was $d = 1.23$, 95% CI $[0.76, 1.70]$, and for controlled studies was $d = 0.78$, 95% CI $[0.22, 1.35]$. The differences between these types of studies was not significant, $Q(2) = 3.79$, $p = .15$. Included studies that were published in a peer-reviewed journal ($k = 12$) had an average effect size of $d = 0.89$, 95% CI $[0.48, 1.31]$ and unpublished dissertations had an average effect size of $d = 0.45$, 95% CI $[0.07, 0.82]$. This difference was also not significant, $Q(1) = 2.43$, $p = .12$. Studies that included clearly stated hypotheses ($k = 13$) had an average effect size of $d = 0.69$, 95% CI $[0.34, 1.04]$, and studies without clearly stated hypotheses ($k = 4$) had an average effect size of $d = 1.10$, 95% CI $[0.53, 1.68]$, which were not significantly different from each other, $Q(1) = 1.49$, $p = .22$. Studies with measures that were coded as good ($k = 10$) had an average effect size of $d = 0.90$, 95% CI $[0.46, 1.33]$, as adequate ($k = 3$) of $d = 0.40$, 95% CI $[0.21, 0.59]$, and poor ($k = 4$) of $d = 0.80$, 95% CI $[-0.02, 1.63]$. The differences that were observed between groups were not significant, $Q(2) = 4.77$, $p = .09$.

Discussion

The purpose of this meta-analysis was to test, based on the existing literature, whether engagement in self-care activities could produce benefits or positive outcomes for professional psychology graduate students. Across studies ($k = 17$), using a random effects model, a weighted average effect size of $d = 0.77$ was found. The observed effect indicates that, broadly speaking, engagement in self-care activities has positive benefits for professional psychology graduate students. More specifically, this effect indicates that about 80% of those graduate students in professional psychology programs who engage in self-care activities would show better outcomes than the average graduate student who does not engage in self-care. This finding supports the arguments that have long been made regarding the importance of self-care while in training (Bamonti et al., 2014; Barnett & Cooper, 2009; Elman & Forrest, 2007; Norcross & Guy, 2007). That is, this meta-analysis provides empirical support indicating that self-care is associated with a number of positive benefits for graduate students in professional psychology.

Although the results of this meta-analysis support the overall efficacy of self-care activities for professional psychology graduate students, a significant degree of variance in the effect sizes between the included studies was observed. Several moderators were tested in an attempt to explain the between study heterogeneity. First, self-care activities were found to have different benefits depending on the type of outcome that was assessed. Specifically, the benefits were the greatest when measured in terms of gains (e.g., self-compassion), decreased psychological distress (e.g., anxiety), or satisfaction (e.g., satisfaction with life, satisfaction with one's graduate program), and were the smallest when measured in terms of stress. It should be noted that the results of the meta-analysis did still indicate that self-care activities can significantly reduce levels of stress; however, the effects on stress may be smaller than the observed benefits in other areas (i.e., gains, psychological distress, and life satisfaction). This finding may provide a possible clue into how self-care works for graduate students. Specifically, self-care might help students change their outlook (more positive views of themselves or the situations they are in), rather than change the actual situation. For example, some level of stress may be unavoidable in graduate school given the multiple demands and expectations for students in professional psychology programs. Although self-care may alleviate the stress to some degree, it may do a better job at providing students with the tools to adaptively handle the stress.

The results from the moderator analyses also indicated that the benefits did not differ depending on the type of self-care activity that the professional psychology graduate students engaged in, such as mindfulness, seeking social support, or some other type of self-care activity (e.g., exercise). This may be because there is no one-size-fits-all self-care plan (Bressi & Vaden, 2016; Carroll et al., 1999; Derthick, Ivanovic, & Swift, 2015). While some students may benefit by engaging in mindfulness, others might notice more benefits while maintaining an exercise routine. Perhaps it is most important that professional psychology graduate students plan and participate in some type of meaningful activity that provides them with a break from their school demands and promotes a holistic wellness (Bressi & Vaden, 2016; Godfrey et al., 2011; Lee & Miller, 2013; Newell & Nelson-Gardell, 2014). This finding sug-

gests that programs may want to teach students about several different types of self-care early on in their training, and then focus on helping students identify the self-care activities that work best for them and encouraging them to regularly participate in those activities throughout their educational and professional careers.

The moderator analyses also indicated that the benefits of engaging in self-care did not differ depending on the characteristics of the graduate students, such as the type of program that they were in or their age, gender, and race/ethnicity. These nonsignificant results suggest that the value of participating self-care activities may be consistent across individuals and settings. Although certain demographic characteristics did not moderate the findings, results from the correlational studies may suggest that there are certain types of graduate students who engage in self-care who are also less likely to experience psychological distress or who are more likely to have self-compassion. Thus, programs may want to consider honing in on these types of characteristics when making admissions decisions. Indeed, research has shown that preexisting conditions do predict later success in graduate school and clinical work (Anderson, McClintock, Himawan, Song, & Patterson, 2016). However, results from the controlled studies suggest that when graduate students are encouraged to engage in self-care activities, there may be a benefit across student types.

Limitations With the Meta-Analysis

Several limitations with this meta-analysis as well as the broader literature on self-care for professional psychology graduate students should be considered. First, although meta-analyses typically have greater generalizability than individual studies, the findings are still limited based on the inclusion and exclusion criteria. Specifically, this meta-analysis focused on self-care in professional psychology graduate students, and different results may be observed in more experienced professionals or with graduate students in other areas of psychology (e.g., social, industrial/organizational) or other disciplines (e.g., law, mathematics). Second, the findings for this meta-analysis are limited based on the total number of studies that were included. Meta-analyses typically exhibit more power than primary studies (Card, 2012); however, power problems may still be present, particularly for moderator analyses. In this meta-analysis a large and significant overall effect was found, and so power may not have been an issue. However, a couple of the moderator analyses indicated nonsignificant differences even though the average effect sizes were very different between groups. Specifically, when considering self-care type, the effect size for the studies of mindfulness ($d = 1.18$) was almost three times the effect size for seeking social support ($d = 0.40$). Thus, one would want to be careful about concluding that these two types of self-care are equivalent in their effects, and future research is needed to clarify whether a difference actually exists. Third, the results from a meta-analysis are often limited by the quality of the studies that are included in it. Unpublished dissertations were included in this meta-analysis to be as inclusive as possible; however, these studies in particular may have been of lower quality. Study design characteristics were tested, including whether or not the article was published, the type of design, whether the hypotheses were clearly stated, and the reliability and validity of the measures that were used. None of these design/quality characteristics were significant. Fourth, meta-analyses are

frequently limited when studies are missed in the literature search process. We attempted to be comprehensive in our search; however, it is likely that we missed some studies and other studies were excluded because they did not include enough data to calculate an effect size. In addition, we only used one database (PsycINFO) to perform our search. Researchers have found that using only one database for systematic reviews can result in missed studies (Wu, Aylward, Roberts, & Evans, 2012). We believed PsycINFO alone would be adequate given that we were only interested in psychology graduate students as participants; however, additional studies may have been found if other databases had also been searched. Calculation of the fail-safe N as well as other tests and corrections that were made due to publication bias, did indicate that the results were relatively robust against missing studies. Last, some specificity was lost in the moderator analyses based on the categories that were coded. For example, we originally desired to compare the efficacy of additional types of self-care (e.g., exercise, psychotherapy); however, given the small number of studies and lower level of power, we were only able to compare mindfulness, seeking social support, and an "other" category.

Limitations With the Self-Care Literature and Future Research Directions

In our review, we also noted several limitations with the existing literature on self-care for professional psychology graduate students. First, as mentioned above, additional studies on self-care with this population are needed. In particular, controlled trials examining some of the lesser studied strategies are needed. Second, although several important outcomes of self-care have been studied in the existing literature, several others are missing. For example, little is known about whether self-care actually reduces burnout, dropout rates, academic performance, or physical health in professional psychology graduate students. Further, research has yet to fully investigate the impact of self-care on students' efficacy as clinicians. In addition, studies are needed examining whether program efforts to encourage self-care can result in increased self-care practice by graduate students and whether developing a culture of self-care as a graduate student does indeed carry over into one's professional career. This type of longitudinal design is needed to more fully examine the long-term effects of self-care in graduate school on outcomes in clinical, professional, and academic careers as well as the likelihood of continuing self-care after graduation. Additionally, although this meta-analysis focused on students in professional psychology programs, while reviewing the literature we noticed very few studies that had been conducted with other types of psychology graduate programs. One would assume that self-care would be valuable for graduate students regardless of the specific area of study; however, further research is needed to test this hypothesis. Last, future studies are needed that allow students to tailor their self-care practices to their individual likes and needs, rather than simply testing a standard self-care protocol. This type of research may more closely match how self-care looks in actual practice for students.

Conclusions and Training Implications

The purpose of this meta-analysis was to examine the effectiveness of self-care activities for professional psychology graduate

students. Overall, a large effect in favor of engaging in self-care practice was found. The effects of self-care were largest for gains (e.g., increased self-compassion), followed by decreased psychological distress, and increased life satisfaction. Although smaller, students who engaged in self-care also showed gains in the areas of higher grades and less total experience of stress. These results were consistent across self-care types, training programs, and participant characteristics. Although limitations with this meta-analysis and the existing literature on self-care are present, the results of this review have important implications for graduate training in professional psychology.

Based on the large effect in favor of self-care that was found in this meta-analysis, we strongly encourage graduate programs to increase their efforts to help all of their students develop a culture of self-care. This effort begins with including language about self-care in program handbooks and other materials (Bamonti et al., 2014). It should also include early discussions of the value of self-care during students' orientation meetings when they first start their degree program (Barnett & Cooper, 2009). Then, advisors can work closely with students to develop specific self-care plans and monitor their engagement in those plans throughout their time in graduate school. Students can further be introduced to different methods for self-care in their courses, either as a topic that is covered in an existing course (e.g., a course on basic therapy skills or a course on ethics and professional practice), as a regular practice in particularly stressful courses (e.g., starting each statistics class with a brief self-care activity), and/or as an entire course devoted to self-care. Rather than just encouraging students to take breaks from their academic work, students should be encouraged to participate in meaningful activities that promote holistic wellness (Bressi & Vaden, 2016; Carroll et al., 1999; Derthick et al., 2015). Additionally, faculty members should seek to model self-care practices by sharing with their students their own efforts to achieve a work/life balance (Barnett & Cooper, 2009).

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