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Relation between self-esteem and socially desirable responding and the role of socially desirable responding in the relation between self-esteem and performance

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Abstract This investigation examines the relation between self-esteem and socially desirable responding by integrating previous findings via a meta-analysis. In 55 studies containing 73 independent samples (N=11,901), the correlation between self-esteem and Impression Management was weak, that between self-esteem and Self-Deceptive Enhancement was from moderate to strong, and that between self-esteem and omnibus socially desirable responding was moderate based on Cohen's guidelines (1988). The effects of all moderators, including the measures of self-esteem and socially desirable responding, and mean sample age and sample gender, on the relation between self-esteem and socially desirable responding were non-significant. Socially desirable responding did not function as a useful suppressor or spurious variable in the relation between self-esteem and performance.

Keywords Self-esteem · Socially desirable responding · Meta-analysis

Socially desirable responding, which describes the tendency of an individual to present him/herself in a socially favorable light (Paulhus 2002; Zerbe and Paulhus 1987), has garnered considerable attention in personality assessment research (Crowne and Marlowe 1960; Edwards 1957; Fordyce 1956). One motivation for presenting oneself in a socially desirable manner is to maintain positive self-esteem, which is called Self-Deceptive Enhancement. Another motivation is to deceive others, called other deception by Sackeim and Gur (1978, 1979). In adopting this two-factor theory, Paulhus (1986) suggested that socially desirable responding comprises Self-Deceptive Enhancement and Impression Management. Self-Deceptive Enhancement describes the tendency of an individual to provide socially favorable responses unconsciously, whereas Impression Management describes the inclination to offer unrealistic positive responses deliberately to deceive others.

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Edwards (1953, 1990) provided two different explanations for socially desirable responding. The first hypothesis is that virtue is common. Common personality characteristics are deemed socially desirable while uncommon personality traits are considered socially undesirable. The second hypothesis is that virtue is over-reported, in that individuals tend to over-report their socially desirable traits to portray themselves in an overly positive light. Pedregon et al. (2012) sampled 286 undergraduates assigned to four conditions: (a) participants were asked to rate how well each item describes themselves, (b) participants were asked to rate how well each item describes their family and friends, (c) participants were asked to rate how well each item describes other people in general, and (d) participants were asked to rate each item in a socially desirable way. Pedregon et al. (2012) found that mean socially desirable ratings were strongly correlated with mean self-ratings and mean ratings of family and friends, while the correlation between mean socially desirable ratings and mean ratings of people in general was low. As individuals typically describe themselves and their families and friends in a positive light, Pedregon et al. (2012) concluded that the over-reported hypothesis was supported.

Uziel (2010) provided two possible explanations for Impression Management. First, the defensive hypothesis states that socially desirable responding is motivated by need for approval. To win social approval, individuals may bias their responses to portray themselves in an exaggerated positive light. The second hypothesis is the adjustment hypothesis, stating that Impression Management is a basis for personal characteristics, and it is related to emotional stability, friendliness, and psychological well-being.

Self-esteem, a personality trait, has been investigated extensively, as a key objective of education and psychology is to generate positive self-esteem, which itself is a variable that mediates other desirable outcomes (Shavelson and Bolus 1982). Self-esteem is generally assessed using a self-reported inventory. One central concern in using self-reported data is the potential of socially desirable responding effects. This study uses a meta-analysis to determine the strength and direction of the relation between self-esteem and socially desirable responding. Correlations between self-esteem and socially desirable responding indicate that the self-esteem measure is susceptible to socially desirable responses, or that socially desirable responding inventories measure a substantive construct. Hence, the most important issue is that the role of socially desirable responding affects the relation between self-esteem and criterion variables such as academic achievement and job performance.

Socially desirable responding and self-esteem

The relation between self-esteem and socially desirable responding has garnered considerable research attention. A positive relation between self-esteem and socially desirable responding is both logical and intuitive. Logically, self-esteem benefits when individuals ignore their faults and exaggerate their strengths. Further, individual self-perceptions should vary according to whether individuals present themselves in a socially desirable manner. Individuals who claim to have high expectations of success also have a high degree of pride, whereas individuals who do not faking good likely have low self-esteem. This difference in degrees of self-esteem should enhance the attractiveness of socially desirable responses.

In addition to logical appeal, numerous studies have demonstrated that self-esteem and socially desirable responding are related. Research investigating socially desirable responding in measurements of self-esteem has demonstrated that these two variables are positively correlated (Arlin 1976; Francis et al. 1995; Johnson 1983; Kawash and Scherf 1975; Riketta 2004). For example, to investigate the relation between self-esteem and socially desirable responding, Astra (2000) sampled 517 undergraduate students and found that the correlation

between self-esteem measured by Rosenberg Self-Esteem scale and socially desirable responding measured by Marlowe–Crowne Social Desirability scale (MCSD 1964) was .37. The cross-cultural generalizability of the positive relation between self-esteem and socially desirable responding was supported by a sample of 61 German students (Riketta 2004) and a sample of 42 Finnish students (Lindeman and Verkasalo 1995). Although several investigations identified a positive relation between self-esteem and socially desirable responding, the magnitudes of this relation vary markedly. For example, Raskin et al. (1991), who examined this relation across four independent participant groups, found that correlation coefficients were in the range of .12–.56. Differing findings are likely due to the different settings used in these primary studies. Although previous investigations have provided a useful database for the relation between self-esteem and socially desirable responding, several questions remain unanswered. This study conducts a meta-analytical review of literature addressing the relation between self-esteem and socially desirable responding.

Hypothesis 1 A positive relation exists between self-esteem and socially desirable responding.

Moderators

A key advantage such a meta-analysis is its ability to identify the potential effects of moderators on the relation between self-esteem and socially desirable responding. This study tests the following four moderators, each of which may influence the relation between self-esteem and socially desirable responding: the measure of socially desirable responding, the self-esteem measure, participant gender, and participant age.

Measure of socially desirable responding

The different theoretical bases of the measure of socially desirable responding may affect the relation between self-esteem and socially desirable responding. The study by Crowne and Marlowe (1960) was motivated by the desire to develop a scale for measuring socially desirable responding and to assess "behaviors that are culturally sanctioned and approved but unlikely to occurrence" (p. 350). Compared to the MCSD, the Balanced Inventory of Desirable Responding (BIDR; Paulhus 1984) was created using a two-factor model. That is, the BIDR was created based on the Self-Deceptive Enhancement Questionnaire and Other-Deception Questionnaire designed by Sackeim and Gur (1978, 1979). Leite and Beretvas (2005), who investigated the construct validity of responses to the MCSD and the BIDR for a sample of 394 undergraduate and graduate students via confirmatory factor analysis, found that the one-factor model did not represent empirical data, and they concluded that the MCSD was multidimensional. For the BIDR, the Self-Deceptive Enhancement subscale fit to the one-factor model, while the Impression Management subscale is multidimensional. Given the various theoretical underpinnings and factor structure of socially desirable responding measures, examining the effect of the socially desirable responding measures on the relation between self-esteem and socially desirable responding is worthwhile.

Measure of self-esteem

The second factor examined in this study is the self-esteem measure. Several measures are widely applied to measure global self-esteem, including the Rosenberg Self-Esteem scale (Rosenberg 1979, 1989), Global Self-Worth subscale of the Harter Self-Perception Profile

(Harter 1982, 1985), and the General Self subscale on the Marsh Self-Description Questionnaire (SDQ; Marsh 1992a, b, c). Although these scales focus on overall self-evaluation, they have slightly different measurement emphases. If all of these scales measure the same construct, no difference should exist in their respective relations with socially desirable responding. Hagborg (1993), who examined the equivalence between the Rosenberg Self-Esteem scale and the Global Self-Worth subscale of the Harter Self-Perception Profile for 150 adolescents, identified a high correlation coefficient of 0.76 for the relations between the two scales. The corresponding correlation coefficient was also high at .72 for a sample of 120 middle school students (Hagborg 1996). Furthermore, Hymel et al. (1999) compared the psychometric properties between the Harter Self-Perception Profile and Marsh SDQ for 217 grade 5 and 6 students. They found that the two measures had a comparable internal consistency and the correlation coefficient for the relation between the two scales was .57. Since the correlation between self-esteem measures is imperfect, the measure varies according to the aspect of self-esteem under examination. To determine whether socially desirable responding depends on the instruments used, a meta-analysis is needed to elucidate the inconsistency in these measures that varies based on measurement emphasis.

Participant gender

Examining whether gender moderates the relation between self-esteem and socially desirable responding is important. Ones and Viswesvaran (1998) reviewed 66 studies (N=17,906) published between 1945 and 1995 to examine gender differences in socially desirable responses in personality assessments. Inclusion was limited to studies that focused on the general population; studies that sampled children also were excluded. Their results demonstrated that the sample size weighted observed mean d value was −.19, indicating that males outscored females slightly. Whether the gender effect on the relation between self-esteem and socially desirable responding is small warrants further investigation.

Participant age

The relation between self-esteem and socially desirable responding may vary with the age of a sample. Ones and Viswesvaran (1998), who assessed the age effect on personality assessment by examining 19 studies (N=4,594), found that the mean correlation between age and socially desirable responding was weak at .10, concluding that age only weakly affected socially desirable responding. However, given that they reviewed only 19 studies, their findings should be considered suggestive.

Hypothesis 2 The measures of socially desirable responding, self-esteem, gender, and age significantly predict variation in the relation between self-esteem and socially desirable responding.

Role of socially desirable responding

Despite the existence of extensive literature addressing the relation between socially desirable responding and personality traits, the role of socially desirable responding in self-reported measures remains uncertain. Studies of socially desirable responses typically support one of two positions. The first position asserts that socially desirable responding contaminates self-report accuracy. For instance, Ganster et al. (1983) suggested that socially desirable responding can exert a spurious, suppressive, or moderating effect on the relation between two measures. On

the other hand, Zerbe and Paulhus (1987) asserted that socially desirable responding may be a substantive construct, and that the correlation between socially desirable responding and personality traits may indicate convergent validity. The meta-analysis by Ones et al. (1996) did not support the former position, as they determined that socially desirable responding did not act as a predictor, useful suppressor, or mediator of job performance. Nevertheless, the evidence for socially desirable responding as a substantive construct was mixed, as the correlation coefficients for the relation between socially desirability and self-reporting of the big five personality dimensions was in the range of .00–.27 in the study by Ones et al. (1996). Li and Bagger (2006) found that the mean correlation coefficients for the relation between Impression Management and the big five personality dimensions were .02–.33, and those for the correlation coefficients between Self-Deceptive Enhancement and the big five personality dimensions were .14–.41. As partialing out socially desirable responding has little effect on the criterion-related validity of personality traits, Li and Bagger (2006) therefore concluded that socially desirable responding cannot detect biased responses.

This study investigates the role of socially desirable responding in the relation between self-esteem and criterion variables. When socially desirable responding is correlated with both self-esteem and a criterion variable, the observed correlation between self-esteem and the criterion variable can change by partialing out the effect of socially desirable responding. In this case, socially desirable responding functions as a spurious variable; that is, the strength of the zero-order correlation between self-esteem and a criterion variable exceeds that of the partial correlation between self-esteem and a criterion variable, holding socially desirable responding constant. When socially desirable responding is strongly correlated with self-esteem (predictor variable) and weakly or negatively correlated with the criterion variable, socially desirable responding functions as a suppressor variable. In this case, the strength of the zero-order correlation between self-esteem and the criterion variable is less than that of the partial correlation between self-esteem and the criterion variable, holding socially desirable responding constant.

Self-esteem has long been utilized to predict academic and job performance. To determine whether socially desirable responding influences the criterion-related validity of self-esteem, this study uses academic achievement and job performance as criterion variables. To investigate the role of socially desirable responding in the relation between self-esteem and academic achievement, three correlations were required, namely, that between socially desirable responding and self-esteem; that between self-esteem and academic achievement; and that between socially desirable responding and academic achievement. This study meta-analyzes the correlation between socially desirable responding and self-esteem. The estimated coefficient for the correlation between self-esteem and academic achievement is "borrowed" from the meta-analysis by Hansford and Hattie (1982). Hansford and Hattie investigated the relation between various self measures, including self-concept, self-esteem, self-assessment of ability, self-acceptance, and self-perceptions, and measures of academic achievement, including reading performance, mathematics performance, IQ, and GPA. In total, 702 studies were identified; however, data collection stopped when the number of studies exceeded 100 and the number of correlations exceeded 1,000, yielding 128 studies. The results of these included studies (N=202,823) indicated that the observed mean correlation coefficient of .21 was used as an estimate of the mean strength of the correlation between self-esteem and academic achievement. Moreover, the correlation between socially desirable responding and academic achievement was based on the estimate derived by the meta-analysis by Ones, Viswesvaran, and Reiss, who meta-analyzed 16 (N=3,125) effect sizes, and found that the mean observed correlation coefficient was −.09. This weak negative correlation between socially desirable responding and academic achievement indicates that a relation exists

between high socially desirable responding scores and low academic achievement. This partial correlation was derived using the following formula:

$$r_{xy.z} = \frac{r_{xy} - r_{xz}r_{yz}}{\sqrt{\left(1 - r_{xz}^2\right)\left(1 - r_{yz}^2\right)}} \quad (1)$$

where X is self-esteem, Y is academic achievement, and Z is socially desirable responding.

To assess the role of socially desirable responding in the relation between self-esteem and job performance, this study once again requires three correlations: that between self-esteem and socially desirable responding; that between self-esteem and job performance; and, that between socially desirable responding and job performance. The estimated coefficient for the correlation between self-esteem and job performance is "borrowed" from the meta-analysis by Judge and Bono (2001), who analyzed 40 effect sizes (N=5,145) and found that the mean coefficient for the correlation between self-esteem and job performance was .18. The correlation between socially desirable responding and job performance was "borrowed" from the meta-analysis by Ones et al. (1996), who analyzed 14 (N=9,966) effect sizes and found that the mean observed correlation coefficient was .01. Furthermore, Li and Bagger (2006) determined that the correlation coefficient between Impression Management and performance was .10 and that for the correlation between Self-Deceptive Enhancement and performance was .08 based on 8 effect sizes. These two correlations were used to test the effects of Impression Management and Self-Deceptive Enhancement on the relation between self-esteem and performance.

Hypothesis 3 Socially desirable responding moderates the criterion-related validity of self-esteem scales.

Method

Literature search

To identify potential studies, this study searched the ERIC and PsycINFO databases. The combination of self-related terms (i.e., self-concept, self-esteem, self-image, and self-worth) with socially desirable responding terms (i.e., social desirability, response set, socially desirable responding, impression management, self-deceptive, self-deception, and response bias) were applied to search for studies published through 2007. This search yielded 862 PsycINFO hits and 135 ERIC hits. The author reviewed the titles, abstracts, and keywords of these studies for possible inclusion by applying the selection criteria described above. When abstracts lacked sufficient information to determine inclusion or exclusion, the study's full text was obtained. Of the 997 potential studies, 301 studies were retrieved for further review based on their title, keywords, and abstract. The inclusion criteria for studies were as follows. The literature review was limited to studies examining the relation between self-esteem and socially desirable responding. Studies examining other self-related terms, such as self-efficacy, were excluded. Studies involving measures of domain-specific self-concepts, such as social self-concept and academic self-concept, were excluded. Studies involving young children (aged <8), who may lack a clear self-esteem, were also excluded. Finally, studies using preselected samples (e.g., physically-ill or HIV-positive participants) were excluded. In total, 55 relevant studies involving 73 independent effect sizes and a total

sample size of 11,901 were identified. The included studies are indicated by asterisks in the reference list.

Coding

The following variables were coded for each study: publication status, sample size, mean participant age, instruments for measuring self-esteem and socially desirable responding, reported reliability coefficients, and the reported correlation between socially desirable responding and self-esteem.

Measure of socially desirable responding The following measures were classified: (a) the MCSD scale and modified MCSD scale, (b) the BIDR and modified BIDR scale, (c) the Lie Scale of the Eysenck Personality Inventory, and (d) others. When "others" was selected, the measure of socially desirable responding was specified.

Reliability estimate for socially desirable responding and self-esteem The internal consistency of the reliability estimate, generally represented by Cronbach's α, was coded.

Self-esteem measure The following measures were classified: (a) the Rosenberg Self-Esteem scale and modified versions of the Rosenberg Self-Esteem scale; (b) the Global Self-Worth subscale of the Harter Self-Perception Profile for Children, Adolescents, and Adults scales; (c) the General Self subscale of the Marsh Self-Description Questionnaire; and (d) others. When the category "others" was chosen, the self-esteem measure was specified.

Mean sample age The mean age of each sample was recorded. For studies reporting an age range, the midpoint of the range provided an estimate. Five years was added to the reported grade level of participant to obtain an age estimate.

Participant gender Participant gender was coded as 0 for males only, 1 for females only, and 2 for both females and males.

Analysis strategy

This meta-analysis uses Pearson's r for effect size. To determine the influence of a measurement scale on the relation between self-esteem and socially desirable responding, multiple effect sizes were coded when a study employed multiple self-esteem or socially desirable responding scales. For instance, if two self-esteem measures, such as the Rosenberg Self-Esteem scale and Harter scale, and two measures of socially desirable responding, such as the MCSD and BIDR, were examined for a single sample, four correlation coefficients were coded, namely, the coefficient for the correlation between the Rosenberg Self-Esteem scale and MCSD, that for the correlation between the Harter scale and MCSD, that for the correlation between the Rosenberg Self-Esteem scale and BIDR, and that for the correlation between the Harter scale and BIDR. The dependence issue arises when multiple measures of self-esteem and socially desirable responding are derived from a single participant sample. When multiple measures of self-esteem and socially desirable responding are used for a single sample, mean effect size is calculated to address the dependence issue. To analyze the effects of self-esteem and socially desirable responding measures, effect sizes for various self-esteem and socially desirable responding measures were disaggregated and estimated independently.

As the distribution of correlation coefficients was skewed, the correlation coefficient between self-esteem and socially desirable responding, r, was converted into a normalized correlation coefficient using Fisher's r to Z_r transformation equation:

$$Z_r = \frac{1}{2}\log_e\left(\frac{1+r}{1-r}\right) \tag{2}$$

The mean and confidence intervals of Z_r values were computed and then transformed back into reliability estimates via the following formula:

$$r = \frac{e^{2z_r} - 1}{e^{2z_r} + 1} \tag{3}$$

Results

Description of included studies

Table 1 lists the country in which each study was conducted, mean age, sample size, sample gender, the measure of self-esteem, reliability of self-esteem, measure of socially desirable responding, reliability of socially desirable responding, and effect sizes. In total, 55 studies yielded 73 independent samples. Of these 55 studies, 12 studies yielded multiple independent samples. Ten studies contained 2 datasets, 1 contained 4 datasets, and 1 contained 6 datasets. Furthermore, 32 studies were journal articles, 21 were doctoral dissertations, and 2 were conference papers. Most studies were conducted in the USA (N=46), 3 were conducted in Canada, and Australia, the United Kingdom, Finland, Germany, Hong Kong, and the Netherlands each accounted for 1 study.

Of the 73 independent samples, which involved 11,901 participants, mean ages were unavailable for six samples. Of the remaining 67 samples, mean sample age was 21.29 (range, 9–45 years old), while mean sample size was 163.03 (range, 28–802 participants). Fifteen samples were male only, 17 were female only, and 41 were mixed.

Coding multiple effect sizes for various self-esteem and socially desirable responding measures from the same participant sample yielded 79 effect sizes. Of these, 62 data points used the Rosenberg Self-Esteem scale, 7 used the Global Self-Worth subscale of the Harter scale, 1 used the General Self subscale of the Marsh SDQ, and 9 employed various self-esteem measures. To measure socially desirable responding, 52 data points used the MCSD, 13 used the BIDR, 7 used the Children Social Desirability Scale, 1 used the Lie Scale of the Eysenck Personality Inventory, and 67 used various socially desirable responding measures. Seven of these 79 effect sizes were negative; effect sizes were in the range of −.26–.87.

For the 73 independent effect sizes, the meta-analytical model-fit statistic for the fixed effects model was Q=418.11, p<.0001. This finding indicates that correlations between self-esteem and socially desirable responding are heterogeneous. The presence of significant heterogeneity indicates the need for caution when generalizing analytical results of the fixed-effects model beyond the studies meta-analyzed. Hence, the random-effects model was adopted for subsequent analyses. Mean effect size was .26 with a 95 % confidence interval of .22–.31. Overall, these findings indicate a weak to moderate correlation between self-esteem and socially desirable responding. Based on the random-effects model, homogeneity of effect sizes was supported with Q=73.34, p=.43. As the homogeneity test may have low power due to the small number of data points, moderator analyses were conducted.

Of these 73 effect sizes, 63 data points indicate a correlation between omnibus socially desirable responding and self-esteem, and the remaining 10 samples reported correlations

Table 1 Studies of relationship between self-esteem and social desirability

Study	Country	Mean ages	Sample size	Gender	Self-esteem	The value of reliability	Social desirability	Value of reliability	Effect size
Astra (2000)	USA	22.95	221	Mixed	Rosenberg	NA	MCSD	0.88	0.37
Bernard (1996)	USA	27.66	264	Mixed	Miscellaneous	0.9	MCSD	NA	0.42
Biberman (1985)	USA	NA	42	Mixed	Rosenberg	NA	MCSD	NA	0.15
Breckler and Greenwald (1982)	USA	NA	41	Mixed	Rosenberg	NA	MCSD	NA	0.35
Brumfitt and Sheeran (1999)	USA	NA	243	Mixed	Rosenberg, Miscellaneous	0.87	MCSD	0.81	0.176
Callahan (1998)	USA	15.9	190	Mixed	Rosenberg	0.83	MCSD	NA	0.31
Cowan (1978)	Canada	9	96	Female	Miscellaneous	0.47, .53	CSDS	0.77	0.1535
Cowan (1978)	Canada	9	79	Male	Miscellaneous	0.47, .53	CSDS	0.77	0.173
Dekker and Barling (1998)	Canada	45	278	Male	Rosenberg	0.8	BIDR	SD=.71 IM=.83	SDE=.5 IM=.2
Dragnet-Eckert (2001)	USA	19.5	73	Mixed	Rosenberg	NA	MCSD	NA	0.361
Emery (1991)	USA	37.5	81	Male	Rosenberg	NA	MCSD	NA	0.2
Emery (1991)	USA	37.5	110	Female	Rosenberg	NA	MCSD	NA	0.27
Farran (2004)	USA	19.31	186	Mixed	Rosenberg	0.87	BIDR	SD=.67 IM=.68	SDE=.54 IM=.18
Francis (1995)	British	16	802	Mixed	Miscellaneous	NA	Eysenck	NA	0.1422
Gotwals and Wayment (2002)	USA	18.7	103	Mixed	Rosenberg	0.84	MCSD	.67	0.18
Harber (2005)	USA	19.5	57	Female	Rosenberg	NA	BIDR	NA	0.35
Hollabaugh (1995)	USA	19.5	33	Female	Rosenberg	NA	MCSD	NA	0.26
Hoover (2005)	USA	12	285	Mixed	Harter	NA	Miscellaneous	0.59	0.1851
Jacobson (2006)	USA	20.13	121	Mixed	Rosenberg	0.88	MCSD	0.67	0.35
Kao (2000)	USA	18.78	30	Mixed	Rosenberg	NA	MCSD	NA	0.38
Kao (2000)	USA	18.78	30	Mixed	Rosenberg	NA	MCSD	NA	0.59
Kao (2000)	USA	18.78	30	Mixed	Rosenberg	NA	MCSD	NA	0.53
Kao (2000)	USA	19.61	34	Mixed	Rosenberg	NA	MCSD	NA	0.27
Kao (2000)	USA	19.61	34	Mixed	Rosenberg	NA	MCSD	NA	0.33
Kao (2000)	USA	19.61	34	Mixed	Rosenberg	NA	MCSD	NA	0.56

Table 1 (continued)

Study	Country	Mean ages	Sample size	Gender	Self-esteem	The value of reliability	Social desirability	Value of reliability	Effect size
Kolotkin and Crosby (2002)	USA	37.91	494	Mixed	Rosenberg	NA	MCSD	NA	−0.217
Kuelker (1992)	Canada	19.5	402	Mixed	Rosenberg	NA	BIDR	NA	SDE=.23 IM=.08
Lakey (1992)	USA	19.5	37	Mixed	Rosenberg	NA	MCSD	NA	0.39
Lefcourt (1995)	USA	32.4	278	Female	Rosenberg	NA	MCSD	NA	0.238
Lindeman (1995)	Finland	20.7	177	Male	Rosenberg	NA	BIDR	NA	SDE=.44 IM=.17
Lindeman and Verkasalo (1995)	Finland	22.4	165	Male	Rosenberg	NA	BIDR	NA	SDE=.39 IM=.215
Mar (2006)	USA	23.5	82	Mixed	Rosenberg	0.89	BIDR	SD=0.72	SDE=.57
Mckinney (2003)	USA	19.5	314	Mixed	Rosenberg	NA	MCSD	NA	0.09
Mearns (1989)	USA	20.5	41	Male	Rosenberg	NA	MCSD, BIDR	NA	0.23
Mearns (1989)	USA	20.5	38	Female	Rosenberg	NA	MCSD, BIDR	NA	0.315
Mesmer-Magnus (2006)	USA	24	198	Mixed	Rosenberg	0.87	MCSD	0.74	0.2
Moradi and Subich (2002)	USA	30.24	240	Female	Rosenberg	0.87	BIDR	SD=.63 IM=.70	SDE=.29 IM=.21
Moss (2000)	USA	19.5	44	Mixed	Rosenberg	0.885	MCSD	0.72	−0.05
Nass (1991)	USA	37.9	111	Female	Rosenberg	NA	MCSD	NA	0.03
Nass (1991)	USA	40.25	93	Male	Rosenberg	NA	MCSD	NA	0.22
Nass (1991)	USA	9.5	60	Male	Harter	NA	CSDS	NA	0.42
Nass (1991)	USA	9.5	60	Female	Harter	NA	CSDS	NA	0.52
Norrington-Sands (2002)	USA	27	217	Mixed	Rosenberg	0.84	MCSD	0.69	0.37
Ohan and Johnston (2002)	USA	9.5	43	Male	Harter	NA	CSDS	NA	0.25
Parisi (1997)	USA	22.9	252	Mixed	Rosenberg	0.9	MCSD	0.76	−0.26
Pollack and Brown (1981)	USA	19.1	78	Female	Rosenberg	NA	MCSD	NA	0.38
Raben et al. (1978)	USA	19.5	78	Male	Rosenberg	NA	MCSD	NA	0.25
Reynolds (1988)	USA	19.5	589	Mixed	Rosenberg	0.83	MCSD	0.79	0.1
Riketta (2004)	Germany	21.9	61	Mixed	Rosenberg	0.78	MCSD	0.65	0.38
Rindskopf (1995)	USA	NA	185	Mixed	Rosenberg	0.7969	MCSD	0.727	0.3157

Table 1 (continued)

Study	Country	Mean ages	Sample size	Gender	Self-esteem	The value of reliability	Social desirability	Value of reliability	Effect size
Robinson (1992)	USA	32.7	79	Male	Rosenberg	0.74	MCSD	0.81	0.49
Robinson (1992)	USA	27.3	119	Female	Rosenberg	0.82	MCSD	0.71	0.42
Rosario (2001)	USA	18.3	156	Mixed	Rosenberg	0.86	MCSD	0.74	0.25
Rubio (2007)	USA	NA	338	Female	Rosenberg	0.86	Miscellaneous	0.65	0.18
Sonstroem and Potts (1996)	USA	19.5	119	Female	Rosenberg	0.87	BIDR	SD=.68 IM=.73	SDE=.33 IM=.2
Sonstroem and Potts (1996)	USA	19.5	126	Male	Rosenberg	0.84	BIDR	SD=.73 IM=.71	SDE=.27 IM=.1
Tait (2003)	Australia	13	186	Female	Rosenberg	NA	MCSD	NA	−0.011
Tait (2003)	Australia	13	150	Male	Rosenberg	NA	MCSD	NA	−0.224
Tetzloff (1988)	USA	19.5	316	Female	Rosenberg	0.84	MCSD	0.61	0.33
Thorpe (1999)	USA	21.62	310	Mixed	Rosenberg	NA	MCSD	NA	0.397
Toyama (2005)	USA	40.45	145	Female	Rosenberg	0.77	MCSD	0.68	0.14
Verkuyten (1998)	The Netherlands	13.7	92	Mixed	Harter	0.67	MCSD	NA	0.15
Verkuyten (1998)	The Netherlands	13.7	78	Mixed	Harter	0.6	MCSD	NA	0.03
Vispoel and Forte Fast (2000)	USA	24	390	Mixed	SDQ-III	NA	BIDR	NA	SDE=.45 IM=.16
Waters (1985)	USA	NA	28	Mixed	Miscellaneous	0.95	Miscellaneous	0.95	0.87
Watkins (1995)	Hong Kong	12.5	79	Male	Rosenberg	NA	NA	NA	0.24
Watkins (1995)	Hong Kong	12.5	81	Female	Rosenberg	NA	NA	NA	−0.04
Watson et al. (1995)	USA	19.3	304	Mixed	Rosenberg	NA	Miscellaneous	NA	0.53
Watson (1995)	USA	19.4	298	Mixed	Rosenberg	NA	MCSD	NA	0.24
Weiner and Thompson (1997)	USA	23.6	140	Mixed	Rosenberg	NA	MCSD	NA	0.11
Woods (2001)	USA	10.26	42	Mixed	Harter	0.78	MCSD	NA	−0.02
Young (2004)	USA	20.78	127	Mixed	Rosenberg	0.89	MCSD	0.76	0.42
Zorich and Reynolds (1988)	USA	21	364	Mixed	Rosenberg	0.87	MCSD	0.67	0.2

SDE Self-Deceptive Enhancement, *IM* Impression Management

based on subscales of socially desirable responding. The mean correlation coefficient for 63 independent samples that reported correlations based on omnibus socially desirable responding was r=.26, with a 95 % confidence interval of .21–.31. Ten data points used the subscale of Self-Deceptive Enhancement of the BIDR, and the mean correlation coefficient between Self-Deceptive Enhancement and self-esteem was r=.40, with a 95 % confidence interval of .31–.49. Nine data points involved the Impression Management subscale of the BIDR. The mean correlation coefficient between Impression Management and self-esteem was r=.16, with a 95 % confidence interval of .11–.21.

Exploration of publication bias

To test for publication bias, four statistical tests were applied. Table 2 presents publication bias results for the correlation between self-esteem and socially desirable responding. The correlation between ranks of standardized effect sizes and sample size were computed. Kendall's rank correlations (τ) and Spearman rank correlation (r_s) were not statistically significant (p>.05; Table 2). These findings indicate that publication bias did not exist.

Rosenthal's (1991) fail-safe number was estimated to determine the number of missing studies with a mean correlation of zero that is needed to reduce the pooled correlation from statistical significance to non-significance. In total, 17,330 additional unpublished studies would be required to reduce the significance of the correlation between self-esteem and socially desirable responding to the .05 level. Orwin's (1983) fail-safe number was used to estimate the number of missing studies needed to diminish the correlation in the present study. A minimum correlation coefficient of r=.01 was used as a criterion level. Orwin's fail-safe number was 1,611, indicating that 1,611 missing studies would be needed to bring the mean correlation (r=.26) in this meta-analysis to r=.01. This number exceeded the criterion number ($5k$+10=375, where k=73 correlations were used to estimate the mean correlation between self-deception and self-esteem; Rosenthal 1991). For the correlation between Impression Management and self-esteem and that between Self-Deceptive Enhancement and self-esteem, Rosenthal's and Orwin's fail-safe number also exceeded the criterion number. Hence, publication bias does not threaten the validity of study findings.

Moderator analyses

For categorical moderators (self-esteem measure, measure of socially desirable responding, and gender), the analogue to Analysis of Variance was applied to explain excess correlation variability. In other words, total variation was partitioned into within- and between-group

Table 2 Effects of Publication bias

Variables	k	τ	r_s	Rosenthal	Orwin	$5k$+10
SDR	73	.13	.19	17,330	1,611	375
SD	10	.07	.10	1,323	405	60
IM	9	.17	.23	173	137	55

SD self-deception, *IM* Impression Management, *SDR* Social Desirable Responding, τ Kendall's rank correlations, r_s Spearman's rank correlation, k number of samples

variations. The between-group variation represents variation between group means, while within-group variation reveals variability within a group. Weighted regression analysis was adopted for the continuous moderator (i.e., mean sample age).

Self-esteem measure Table 3 lists sample number, the mean correlation coefficient, confidence interval, and homogeneity statistics for moderators of the self-esteem measure, measure of socially desirable responding, and sample gender. The self-esteem measure had several categories, some of which contained only a few data points. Since the number of independent samples was insufficient for analytical comparison, moderator analyses for the self-esteem measure focused only on major categories, including the Rosenberg Self-Esteem scale and the Harter scale. The conditions compared did not differ in the self-esteem measure with Q_B=.10, p>.05. The lack of a self-esteem measure effect may result from the small number of studies included in this meta-analysis. Caution is thus necessary when interpreting the influence of the self-esteem measure on relations between self-esteem and socially desirable responding, as the Harter scale involved only 7 data points. Consequently, findings for the effect of the self-esteem measure should be considered suggestive, not definitive.

Measure of socially desirable responding Similarly, the measure of socially desirable responding contained several categories, some of which contained only a few data points. Moderator analyses for the measure of socially desirable responding focused on key categories, including the MCSD, BIDR, and Children's Social Desirability Scale (CSDC). The measure of socially desirable responding did not significantly impact effect sizes with Q_B=2.47, p>.05 (Table 3).

Gender Fifteen samples were only female, 11 were only male, and 37 were mixed. As Q_B=.44 (p<.05), sample gender did not significantly influence the relation between self-esteem and socially desirable responding.

Mean sample age Weighted regression analysis was used to test the age effect on the relation between self-esteem and socially desirable responding. The influence of age on the relation between self-esteem and socially desirable responding was non-significant (b=−.00). The effect of participant age was therefore not supported.

Table 3 Moderator analyses

Moderator	k	Mean r	95 % CI		
			Lower	Upper	Q_B
Self-Esteem Measure					.10
Rosenberg	62	.25	.23	.30	
Harter	7	.23	.03	.41	
SD Measure					2.47
MCSD	52	.23	.17	.28	
BIDR	13	.31	.21	.42	
CSDS	7	.26	.08	.43	
Gender					.44
Mixed	37	.26	.19	.32	
Female	15	.23	.12	.34	
Male	11	.29	.15	.42	

***p<.001

Role socially desirable responding

In the meta-analysis by Ones et al. (1996), socially desirable responding was weakly and negatively correlated with academic achievement (−.09), while socially desirable responding and self-esteem were positively correlated. When a predictor is negatively correlated with the criterion variable and positively correlated with the other predictor, it is a suppressor variable. Specifically, a zero-order correlation of .21 was reported by Hansford and Hattie (1982), and the partial correlation between academic achievement and self-esteem while holding socially desirable responding constant was .24. Thus, socially desirable responding suppressed the relation between self-esteem and academic achievement.

The relation between socially desirable responding and job performance identified by Ones et al. (1996) was near zero (.01), while self-esteem was positively correlated with job performance (.18). Socially desirable responding acted as a suppressor variable in the relation between self-esteem and job performance. The partial correlation between self-esteem and job performance while holding socially desirable responding constant was .1837. However, the effect of socially desirable responding was small, as the partial correlation between self-esteem and job performance while holding socially desirable responding constant was .0037 larger than that of the zero-order correlation.

A weak positive correlation between Impression Management and performance was reported by Li and Bagger (2006), and that between Impression Management and self-esteem was identified by this meta-analysis. Consequently, Impression Management was a spurious variable in the relation between self-esteem and performance. The coefficient of the partial correlation (.17) was smaller than that of the zero-order correlation (.18) by about .01. Again, the correlation between Self-Deceptive Enhancement and performance was positive and weak. The partial correlation (.16) was smaller than zero-order correlation (.18). Hence, Self-Deceptive Enhancement has minor spurious effect on the relation between self-esteem and performance.

Conclusions and discussion

This meta-analysis summarizes research on the relation between self-esteem and socially desirable responding. Analytical results obtained by examining 55 studies containing 73 independent samples (N=11,901) indicate that the mean coefficient for the correlation between self-esteem and socially desirable responding was r=.26. Of these, 63 data points indicate that the mean correlation between omnibus socially desirable responding and self-esteem was r=.26. For the ten data points involved in the subscale of Self-Deceptive Enhancement of the BIDR, the mean correlation between Self-Deceptive Enhancement and self-esteem was r=.40. Furthermore, the mean correlation between Impression Management and self-esteem was r=.16. These findings demonstrate that the correlation between self-esteem and Impression Management was weak, that between self-esteem and omnibus socially desirable responding was moderate, and that between self-esteem and Self-Deceptive Enhancement was moderate to strong when assessed using the guidelines developed by Cohen (1988). Ones et al. (1996) examined the relations between socially desirable responding and the big five personality dimensions, cognitive ability, and external criteria, including school success, task performance, training performance, counterproductive behaviors, and job performance. They suggested that these relations are independent of socially desirable responding. Furthermore, Ones et al. (1996) argued that the relations between Self-Deception Enhancement and personality traits variables are similar to those between

Impression Management and personality traits. Findings obtained by this study do not support their argument, as the magnitudes of relations between self-esteem and Self-Deceptive Enhancement and those between self-esteem and Impression Management were not comparable.

Given that self-esteem is a component of personality, the relation between self-esteem and socially desirable responding should be compared with that between social desirable responding and other personality traits. Compared with the magnitude of correlations between socially desirable responding and other personality measures identified via another meta-analysis Ones et al. (1996), magnitudes found in the present study exceeded that for the relations between socially desirable responding and self-reported extroversion (r=.04), openness to experience (r=.00), agreeableness (r=.11), and conscientiousness (r=.15). Effect sizes were comparable to that between socially desirable responding and self-reported emotional stability (r=.27). For the components of socially desirable responding, mean effect size in this study exceeded the strength of the correlation between Impression Management and extroversion (.02), that between Impression Management and openness (.07), that between Self-Deceptive Enhancement and agreeableness (.14), and that between Self-Deceptive Enhancement and openness (.14) (Li and Bagger 2006). The mean correlation coefficient between Impression Management and self-esteem of .16 in this study was smaller than that of the correlation between Impression Management and emotional stability (.27), that between Impression Management and conscientiousness (.33), and that between Impression Management and agreeableness (.33; Li and Bagger 2006). The correlation between Self-Deceptive Enhancement and self-esteem was stronger than that between Self-Deceptive Enhancement and extroversion (.23) and was comparable in strength to that between Self-Deceptive Enhancement and emotional stability (.41) and that between Self-Deceptive Enhancement and conscientiousness (.32; Li and Bagger 2006).

The effects of all moderators, including the self-esteem measure, measure of socially desirable responding, participant age, and gender, were non-significant. The absence of significant moderator effects may result from the small number of data points in certain moderator categories. For example, the Rosenberg Self-Esteem scale and the Harter scale are commonly used to assess self-esteem. Sixty-two data points were available for the Rosenberg scale, while only seven data points were available for the Harter scale. To examine the potential effect of the self-esteem measure, future empirical investigations should compare the relation between self-esteem and socially desirable responding across the self-esteem measure. Additionally, since moderators failed to explain variations in the relation between self-esteem and socially desirable responding, identifying the reasons for these differences is necessary.

Self-esteem is a central construct in educational and psychological research, and its relation to academic achievement has attracted considerable academic attention. Numerous empirical studies and meta-analyses (Hansford and Hattie 1982; Valentine 2001; Valentine et al. 2004 have examined this construct, suggesting that self-esteem predicts academic performance. Nevertheless, noncognitive assessments, such as that of self-esteem, have been criticized for being potentially vulnerable to socially desirable responding. This meta-analysis examined the effect of socially desirable responding on the relation between self-esteem and academic achievement. Due to the negative correlation (−.09) between socially desirable responding and academic achievement, as well as the positive correlation between socially desirable responding and self-esteem, socially desirable responding suppresses the relation between self-esteem and academic achievement. However, socially desirable responding exerted only a small influence on the relation between self-esteem and academic achievement. Compared with a zero-order correlation coefficient of .21, the partial correlation between self-esteem and academic achievement increased to .24. Thus,

the tendency to provide socially favorable responses consciously or unconsciously decreased the strength of the correlation between self-esteem and academic achievement, and partialing out socially desirable responding from self-esteem and academic achievement increases the correlation coefficient by .03. Socially desirable responding was again a suppressor variable in the relation between socially desirable responding and job performance. However, the increase in the strength of the correlation between self-esteem and job performance after removing the effect of socially desirable responding on self-esteem and job performance is too small to be important; this finding is consistent with those acquired by Ones et al. (1996) and Li and Bagger (2006). To test the effects of Impression Management and Self-Deceptive Enhancement on the relation between self-esteem and performance, correlation estimates were "borrowed" from the work by Li and Bagger (2006). As the correlation between Impression Management and performance and that between Self-Deceptive enhancement and performance were weak and positive, Impression Management and Self-Deceptive Enhancement again were spurious variables. However, the effects of Impression Management and Social-Deceptive Enhancement were small. In summary, these analytical findings indicate that socially desirable responding did not function as a useful suppressor or spurious variable in the relation between self-esteem and performance.

This investigation indicates that the effect of socially desirable responding on the criterion-related validity of self-esteem was small. However, this study used only global self-esteem and two criterion variables. The influence of socially desirable responding may change the use of different domains of self-esteem and criterion variables. For example, the magnitude of the correlation between academic self-concept and socially desirable responding may differ from that identified in this investigation, and the effect of socially desirable responding may change accordingly. To explore this possibility, future work should determine whether the relation between socially desirable responding and self-esteem depends on the self-esteem domain. In terms of criterion variables, this study used academic and job performance as criterion variables. Future investigations should consider the role of socially desirable responding in the relation between self-esteem and other non-performance criterion variables such as psychological well-being and health.

The primary contribution of this study to literature is that it examines the effects of socially desirable responding on the relation between self-esteem and performance; these relations have not been examined previously. Despite its contributions, this study has certain limitations. This study examines the role of socially desirable responding by "borrowing" correlation coefficient estimates from previous meta-analyses. Four correlation coefficients—that for the correlation between omnibus socially desirable responding and academic performance; that for the correlation between omnibus socially desirable responding and job performance; that for the correlation between Impression Management and performance; and that for the correlation between Self-Deceptive Enhancement and performance—suffered, as they were based on an insufficiently large number of data points. Future research should examine the magnitude of these four relations to assess the robustness of findings acquired by Ones et al. (1996) and Li and Bagger (2006). The robustness of these correlation coefficients is crucial in interpreting the criterion-related validity of self-esteem in the prediction of performance.

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Current themes of research:

Meta-analysis. Internet use

Most relevant publications in the field of Psychology of Education:

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