ways that please other people (Robins et al. 1994). Sociotropic individuals are described as being very invested in their social relationships and highly motivated to avoid disapproval from people about whom they care (Gorski and Young 2002). Individuals with high levels of sociotropy dislike being alone, worry about criticism from others, feel that they need to be especially nice to others, and are overly apologetic (Beck et al. 1983). Recent studies have shown that a characteristic of sociotropy stemming from this excessive care about relationships is self-esteem that is highly contingent on the feedback received from others (Cikara and Girgus 2010; Dasch et al. 2008). When people who are more sociotropic receive positive feedback, they feel good about themselves. In the absence of positive feedback, however, people who are more sociotropic experience decreased self-esteem, whereas the self-esteem of people who are less sociotropic does not decrease (Cikara and Girgus 2010).

In his initial formulation, Beck (1983) proposed that sociotropy is a vulnerability factor for depression. In particular, Beck and others have theorized that sociotropy confers vulnerability through a diathesis-stress model in which sociotropy is a personality diathesis that interacts with negative life events to lead to depression. Studies have consistently supported the idea that sociotropy is a personality vulnerability for depression. A consistent moderate correlation exists between sociotropy and depression (Robins et al. 1994), and people who are more sociotropic report higher levels of depressive symptoms when they experience negative life events as compared to people who are less sociotropic (Clark et al. 1992; Coyne and Whiffen 1995; Mongrain and Zuroff 1994).

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Over the more than 30 years since Beck (1983) first proposed sociotropy as a personality diathesis for depression, many have assumed or suggested that women are more sociotropic than men are (Girgus and Nolen-Hoeksema 2006; Gorski and Young 2002; Nolen-Hoeksema 1987). Subsequent theorizing has proposed not only that women are more likely to be sociotropic than men, but also that this could, at least in part, account for the well-known gender difference in depression (Girgus and Nolen-Hoeksema 2006). Adult women are about twice as likely as adult men are to develop clinical depression (Parker and Brotchie 2010) and experience greater severity of depressive symptoms (Nolen-Hoeksema 1990). This gender asymmetry arises in adolescence, continues through adulthood and old age, and is hypothesized to be linked to gender differences in risk factors for depression (Nolen-Hoeksema and Girgus 1994; for reviews see Girgus and Yang 2015; Girgus et al. 2017; Piccinelli and Wilkinson 2000). Empirical research has shown that gender differences in vulnerabilities such as sociotropy, ruminatory response style, and social evaluative concerns explain or mediate the gender gap in depression (Calvete 2011; Rudolph and Conley 2005; Trives et al. 2016).

Despite some evidence that sociotropy is a personality vulnerability for depression that differs by gender and may help explain the gender difference in depression, the data about a gender difference in sociotropy appear to be quite mixed. Whereas some findings support the hypothesized gender difference in sociotropy (Clark et al. 1995; Sato and McCann 1998; Scheibe et al. 2003), other studies have found no difference between men and women (Gorski and Young 2002; Hammen et al. 1989, 1992; Zuroff 1994

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The initial conceptualization of sociotropy arose from observation of clinically depressed participants (Beck 1983). It is possible, therefore, that the hypothesized gender difference in sociotropy reflects something particular to clinical depression. Participants drawn from clinical populations differ from nonclinical participants in various ways. Clinically depressed participants are more likely to report greater numbers of life stressors and are more sensitive to the effects of negative life events (Kessler 1997). Clients, especially women, with clinically diagnosed depression tend to have experienced early emotional stress and abuse in childhood (Frodl et al. 2010; Kendler et al. 2004; Whiffen et al. 2000). These experiences can lead to different consequences for social adjustment and interpersonal relationships in women and men (Whiffen et al. 2000). Nonclinical samples may have greater variance in life

did not comprise highly specialized participant groups (e.g., ex-cult members) or clinical participants with dementia or symptoms of psychosis.

In the second stage of the screening process, articles and dissertations were obtained by downloading the pdf files from PsycINFO, PubMed, Web of Science, Google Scholar, and

Table 1 Study information and unweighted Cohen's effect sizes for the articles included in the present meta-analysis

Study	Year	Scale type	Age[a]	Country[b]	Sample type[c]	-males	-females	
Allen et al.	1996	PSI	2	15	1	50	50	.47
Alloy et al.	2009	SAS	2	1	2	182	268	.01
Altay et al.	2012	SAS	2	9	1	39	244	.36
Anastasio	2010	PSI	2	1	1	97	296	.50
Bagby et al.	1998	PSI	3	2	1	379	490	.49
Bagby et al.	1998	PSI	3	2	2	31	70	.64
Baker et al.	1997	SAS	3	1	2	13	50	.92
Baron & Peixoto	1991	SAS	1	2	1	60	74	.47
Beck et al.	2003	PSI	2	1	1	50	117	.54
Bershad	2001	PSI	3	1	1	32	57	.36
Beshai et al.	2015	SAS	2	2	1	87	110	.60
Birgenheir et al.	2010	PSI	2	1	1	30	80	.44
Brenning et al.	2011	PSI	1	8	1	145	162	.73
Bruch	2002	PSI	2	1	1	118	114	.33
Bruch	2002	PSI	2	1	1	95	94	.33
Calvete	2011	SAS	1	6	1	407	446	.42
Campbell & Kwon	2001	PSI	2	1	1	87	145	.42
Campbell et al.	2003	PSI	2	1	1	60	105	.36
Cardilla	2008	PSI	2	1	1	48	61	.68
Cikara & Girgus	2010	PSI	2	1	1	25	42	.67
Clark & Beck	1991	SAS	2	2	1	148	273	.53
Clark et al.	1995	SAS	2	2	1	397	618	.33
Connor-Smith & Compas	2002	PSI	2	1	1	123	260	.42
Dasch et al.	2008	PSI	2	1	1	78	92	.39
Davila	2001	PSI	2	1	1	70	150	.50
Desmet et al.	2010	PSI	3	8	2	87	176	.41
Desmet et al.	2010	PSI	2	8	1	132	660	.28
Dunkley et al.	1997	SAS	2	2	1	102	131	−.04
Dunkley et al.	2006	SAS	2	2	1	167	299	.51
Exline & Zell	2012	PSI	2	1	1	80	70	.54
Exline & Zell	2012	PSI	2	1	1	59	77	.61
Exline et al.	2004	PSI	2	1	1	54	40	.43
Exline et al.	2012	PSI	2	1	1	41	60	.22
Exline et al.	2012	PSI	2	1	1	30	107	.33
Flett et al.	1997	PSI	2	2	1	83	93	.72
Freiheit	1998	PSI	3	1	2	25	39	.42
Frewen & Dozois	2006	PSI	2	2	1	77	98	.57
Gencoz et al.	2006	SAS	2	9	1	89	104	−.23
Goff	1998	PSI	2	1	1	88	138	.40
Gorski & Young	2002	PSI	1	1	1	50	71	.22
Gray	1998	SAS	2	1	1	308	385	.22
Hammen et al.	1989	SAS	N/A	1	2	10	26	.14
Hong & Lee	2001	PSI	2	4	1	140	119	.22
Hong et al.	2003	PSI	2	4	1	294	214	.07
Horowitz et al.	2007	SAS	1	1	1	166	204	.42
Iacoviello et al.	2009	SAS	2	1	2	111	231	.21
Jolly et al.	1996	PSI	3	1	2	13	47	.81
Kwon et al.	2001	PSI	2	1	1	19	31	.02
Laurent & Powers	2006	SAS	2	1	1	125	125	.40
Lynch et al.	2001	PSI	3	1	2	23	50	.46
Mak et al.	2011	PSI	2	1	1	137	277	.25
Malkina-Pykh & Pykh	2013	PSI	3	14	1	28	108	.32
McBride et al.	2005	PSI	3	2	2	118	202	.24
Mongrain & Blackburn	2005	PSI	3	2	2	20	77	.02
Morse et al.	2002	PSI	3	1	2	58	130	.33
Oates-Johnson & DeCourville	1999	SAS	2	2	1	61	159	.54
O'Garro-Moore et al.	2015	SAS	N/A	1	1	17	43	−.07
O'Garro-Moore et al.	2015	SAS	N/A	1	2	18	32	−.19
O'Garro-Moore et al.	2015	SAS	N/A	1	2	17	44	.07
O'Neill	1998	PSI	2	1	1	30	63	−.03
O'Neill	1998	PSI	2	1	1	42	61	.33
Otani et al.	2012	SAS	3	3	1	260	156	.30
Ouimette et al.	1996	PSI	N/A	1	1	86	162	.30
Prenoveaet et al.								

from Cohen (1988). Positive values indicated that women scored higher on sociotropy than did men, whereas negative values indicated that men scored higher than women did.

Homogeneity statistics and confidence intervals for aggregated bias-corrected effect sizes were calculated using Comprehensive Meta Analysis (CMA). The homogeneity analysis calculates a test statistic ( ) to examine the assumption that the effect sizes estimate a common population mean. A nonsignificant indicates that the variance in the effect size distribution is due to random sampling error. A rejection of the null hypothesis suggests that the variance cannot be accounted for by random sampling error alone. This suggests that the variance in the sample of effect sizes could be explained by systematic between-study differences and that moderator analyses should be carried out to test theoretical explanations of the variance in effect sizes.

Larger samples provide more accurate estimates of the underlying population effect size. Analyzing effect sizes in their raw forms gives more weight to small sample sizes. To correct for this sample size bias, we weighted effect sizes using Hedges and Becker's (1986) statistic. Effect sizes were corrected for bias before aggregation and inclusion in moderator analyses.

Random-Effects Model and Moderator Analyses

We selected a random-effects model for data analysis. Fixed-effect models assign effect size variance to subject-level

random sampling error alone and should only be used when all possible moderators of effect size variance can be tested (Cooper

Age

Three age groups were represented in the sample: adolescents (12–17 years of age), college-aged adults (18–22 years of age), and mixed-age adults ($_{age}$ plus two standard deviations ≤65, or, in the absence of reported mean and standard deviation, an age range of 18–65). There were seven studies in the adolescent group, 70 studies in the college-aged group, and 22 studies in the mixed-age adult group. Of the 22 studies included in the mixed-age adult group, 16 reported mean ages and standard deviations and six reported an age range of 18–65. Due to the absence of studies comprised of young children (< 12 years) or older participants (65+ years), we were unable to construct categories for these age groups. Eight studies from five articles did not report sufficient data on age to apply the age group criteria (Hammen et al. 1989; Whiffen et al. 2000; O'Garro-Moore et al. 2015; Raeisei et al. 2015; Yuksel-Sahin 2012). One study reported an average age plus two standard deviations that exceeded the age criteria for the mixed-age adult group (Ouimette et al. 1996).

The mean weighted effect size for the gender difference in each age group was significant, with females scoring higher on sociotropy than males in the pre-adolescent/adolescent, college-aged young adults, and mixed-age adult groups. The analog to the ANOVA was conducted with the three age groups as categorical variables. The results for effect sizes by group are shown in Table 2. The effect size for the gender difference was significant for each age group, with women scoring higher than men on sociotropy. However, the difference in effect size variance grouped by age was not significant, (3) = 7.54, = .06. Follow-up pairwise analyses of age groups showed that there was no significant difference between the adolescent and college-aged groups, (2) = 4.33, = .12, or between college-aged and mixed adult groups, (2) = .75, = .69. There also was no significant difference in effect size between the adolescent and mixed age adult groups, (2) = 5.16, = .08.

A majority of studies reported the mean age of their samples. For the = 85 studies that reported mean age, we entered mean sample age as a continuous moderator in a meta-regression. The random effects model was not significant (^{2} analog < .01), (1) = .01, = .94. Mean age of participants did not predict the effect size of the gender difference in sociotropy, standardized coefficient = .0003, = .004, 95% CI [−.007, .007], = .94.

Clinical Versus Non-Clinical Samples

Sample type was coded as clinical or nonclinical to test the prediction that the gender difference in sociotropy would be observed in clinical samples but not in nonclinical samples. The aggregated effect sizes were significant in the female

effect size variance was not accounted for by type of report, (1) = .35 = .56. The possibility of publication bias in the present meta-analysis was further examined using classic bias-probing analyses. The fail-safe N calculation revealed that there would need to be 7757 missing studies with a null effect of gender on sociotropy in order to bring the value of the omnibus effect size to greater than $\alpha = .05$.

In order to further probe for publication bias in our sample, we used the nonparametric trim-and-fill procedure (Duval and Tweedie 2000). Trim-and-fill estimates the number of studies missing in the asymmetric portion of the funnel plot. It then removes the outlying asymmetric portions of the funnel plot and "fills" in the plot symmetrically about the center. The adjusted mean effect size is then recalculated from this funnel plot. In this sample, zero studies were filled above the estimated effect size, and 14 studies were filled below the estimated effect size. The recalculated mean effect size using the random effects model was = .30 (95% CI [.25, .34]). Based on these analyses and the fact that about 13% of the effect sizes in our meta-analysis were drawn from unpublished research, it is unlikely that publication bias was a strong influence on the results.

D

In the present study we examined whether the hypothesized gender difference in sociotropy (Beck 1983) exists, at what

young adults, and mixed-aged adults. The results from the meta-analysis showed that the gender gap in sociotropy was significant in all three age groups. The gender difference in sociotropy was larger among adolescents than among college-aged adults and mixed-age adults, and larger among mixed-age adults than among college-aged adults, but there was not a significant dif-

unknown whether a gender difference in sociotropy existed and to what extent. The present meta-analytic review confirms that a small-to-moderate (= .34) gender difference in sociotropy does indeed exist for sociotropy, with women scoring higher on sociotropy than men. This gender difference is moderated by participants' cultural context. These findings should provide grounding for future studies to examine why cultural contexts heighten or attenuate this effect, how sociotropy changes over the lifespan, and what implications the gender difference in sociotropy has for understanding processes leading to the gender difference in depression.

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Compliance with Ethical Standards

In conducting this meta-analysis, we have complied with APA ethical

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