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Abstract

A meta-analysis of 35 studies found that social class (socioeconomic status) is related to social integration among students in higher education: Working-class students are less integrated than middle-class students. This relation generalized across students' gender and year of study, as well as type of social class measure (parental education and parental income). However, type of social integration measure was a significant moderator. In particular, the social subscale of the Student Adaptation to College Questionnaire obtained the largest effect ($r = .18, p < .001$). Significant effects were also found using measures of the sense of belonging and participation in formal and informal social activities. Future research in this area should use multidimensional measures of social integration and investigate potential mediators of the social class-social integration relation.

KEYWORDS: social class, socioeconomic status, first-generation students, social integration, sense of belonging

Social Class Differences in Social Integration Among Students in Higher Education:
A Meta-Analysis and Recommendations for Future Research

Working-class students experience a number of disadvantages in higher education. In particular, they feel less prepared for higher education than middle-class students (Bui, 2002; Inmann & Mayes, 1999; Shields, 2002), and they are less likely to be academically engaged after enrolment (e.g., Martinez, Sher, Krull, & Wood, 2009; Pike & Kuh, 2005). Working-class students are also less likely to obtain good grades and develop intellectually (e.g., Pittman & Richmond, 2007; for a meta-analysis of 13 tests, see Robbins, Le, Davis, Lauver, Langley, & Carlstrom, 2004). In addition, they are less likely to stay enrolled in their courses (Inman & Mayes, 1999) and complete their degrees (for a meta-analysis of six tests, see Robbins et al., 2004; for an earlier review, see Tinto, 1975, p. 99).

Social class differences in social integration may help to explain some of these disadvantages that working-class students experience in higher education institutions. In the context of higher education, social integration refers to the quantity and quality of social interactions that students have with faculty and other students. Social integration is related to better academic performance (for a meta-analysis of 33 tests, see Robbins et al., 2004) and greater persistence and retention (for a meta-analysis of 36 tests, see Robbins et al., 2004; for narrative reviews, see McConnell, 2000; Pascarella & Terenzini, 1991, 2005; Tinto, 1975, p. 109).

Social integration appears to be beneficial for all students. However, there are reasons to believe that it may be particularly beneficial for working-class students. First, working-class students are less likely to receive social support for their higher education studies from their family and hometown friends (Billson & Terry, 1982; Elkins, Braxton, & James, 2000; for null findings, see Hertel, 2002). Consequently, they are more likely than middle-class students to benefit from the social support offered by peers and faculty within their institution (Malecki & Demaray, 2006).

Second, working-class students are less likely to receive informational support from their parents because their parents do not usually have any personal experience of the higher education system (Bryan & Simmons, 2009, p. 398; Collier & Morgan, 2008, p. 442; Lehman, 2009, p. 638; Lynch & O'Riordan, 1998, p. 461; York-Anderson & Bowman, 1991). Hence, working-class students are more likely to benefit from the *college knowledge* (York-Anderson & Bowman, 1991, p. 116) that is provided by other students in their institution. This knowledge includes information about higher education terminology, study skills, where to go for help, how to manage one's study time, and how to withdraw from a course rather than fail (Bryan & Simmons, 2009, p. 398; Bui, 2002; Collier & Morgan, 2008, p. 436-437; Tinto, 1975, p. 107; York-Anderson & Bowman, 1991, p. 119).

Third, working-class students are less likely to have access to higher education norms and role models within their family (Oliver, Rodriguez, & Mickelson, 1985, p. 9). Instead, it is role models within the higher education institution that may help to increase working-class students' academic motivation and set an example about how to succeed (Astin, 1993, p. 403; Lockwood, Jordan, & Kunda, 2002).

Consistent with the idea that social integration is particularly beneficial for working-class students, Pascarella, Pierson, Wolniak, and Terenzini (2004) found that participation in social activities had a significantly stronger positive influence on several aspects of intellectual growth for working-class students than it did for middle-class students. Similar results have been obtained in school settings (Malecki & Demaray, 2006; Marsh, 1992; Marsh & Kleitman, 2002),

although unresponsive evidence has also been found (e.g., Pittman & Richmond, 2007).

In summary, social integration appears to be particularly beneficial for working-class students, and it may help to reduce some of the disadvantages that working-class students experience in higher education institutions. Consequently, it is important to ensure that working-class students are at least as integrated as middle-class students in their institutions, if not more integrated. In the present research, I address this issue by providing a comprehensive and up-to-date review of the empirical evidence for social class differences in social integration among students in higher education.

Previous Reviews in this Area

The relation between social class and social integration in higher education contexts has not received much focused attention in the empirical literature (for notable exceptions, see Langhout, Drake, & Rosselli, 2009; Ostrove, 2003; Ostrove & Long, 2007; Stuber, 2009). Instead, researchers have tended to address this relation relatively indirectly and coincidentally in studies that have included measures of social class and social integration as part of wider exploratory investigations of students' experiences, academic outcomes, and persistence.

A meta-analytic review provides an ideal method of collating and interpreting the scattered findings in this area. To date, Robbins et al. (2004) have conducted the only relevant meta-analysis in this area. These researchers investigated the relation between psychosocial and study skill factors and college outcomes (academic performance and persistence). Social integration (social involvement) was included in the meta-analysis as one of the psychosocial factors, and social class (socioeconomic status) was included as a covariate. The mean observed correlation between social class and social integration was .10 (Table 6, p. 272). Hence, working-class students were less integrated than middle-class students.

However, Robbins et al.'s (2004) assessment has two important limitations that warrant a further meta-analysis in this area. First, although their meta-analysis included 109 studies, only 12 of these studies ($N = 12,708$), published during 1983-2000, provided an assessment of the relation between social class and social integration. A more comprehensive meta-analysis of this relation is now possible. In the present meta-analysis, I included 35 studies ($N = 62,848$), two of which were published prior to 1983, 21 during 1983-2000, and 12 after 2000. Hence, the present meta-analysis provided a substantially larger and more up-to-date assessment of the relation between social class and social integration among students in higher education.

Second, Robbins et al. (2004) did not investigate the influence of potential moderators. It is possible that the size of the relation between social class and social integration varies significantly as a function of one or more moderator variables. Consistent with this possibility, Robbins et al. found substantial variability in the effect sizes that they obtained in their main analyses (pp. 270, 271), and they attributed this variability to the existence of moderators such as type of measure, gender, ethnicity, and year of study (p. 277). However, they did not investigate the influence of these moderators in their analyses. To address this issue, I tested for moderators in the present meta-analysis. I discuss the rationale for these moderator tests in the next section.

Moderators of the Relation Between Social Class and Social Integration

An acculturation model would predict that social class differences in social integration become smaller as working-class students spend more time in their higher education institution and learn the social norms and values of a primarily middle-class system. Consistent with this model, Milem and Berger (1997, p. 395) found a medium-sized relation between social class and social integration among first-year students who were in their first semester of study ($\beta = .26$) but a much smaller (although still significant) relation among first-year students who were in their

second semester of study ($\beta = .06$). Similarly, Bean (1985) found that the relation between social class and social integration was significant among first-year students but nonsignificant among second- and third-year students. Hence, I investigated year of study as a potential moderator of the relation between social class and social integration.

Male students are often less integrated than female students in higher education institutions (Hurtado, Han, Sáenz, Espinosa, Cabrera, & Cerna, 2007; Lounsbury & DeNeui, 1995; Napoli & Wortman, 1998; Pike & Kuh, 2005). Consequently, gender may interact with social class to exacerbate integration deficiencies among male working-class students. Hence, I also tested gender as a potential moderator.

In a meta-analysis of the relation between social class and academic achievement among school children, Sirin (2005) found that social class measures that were based on the possession of certain household items obtained a significantly larger effect than measures that were based on parental education, occupation, and income, which did not differ significantly from one another. Hence, I tested type of social class measure as a potential moderator.

Finally, the diversity of social integration measures in this area is notable (Hurtado & Carter, 1997, p. 326). Hence, I also tested type of social integration measure as a potential moderator.

Method

Literature Search

I performed automated searches for research articles using three literature databases: PsycINFO, the Educational Resources Information Center (ERIC), and the psychology and social sciences collections of SCOPUS. In order to achieve a comprehensive search, I searched for articles between the earliest entry for each database and June 2011.

I restricted my search to peer-reviewed journal articles and online research reports. This restriction decreased the quantity of potential studies that could be included in the meta-analysis. However, it increased the quality of the studies that were included and, consequently, the quality of the meta-analysis.

I used three sets of search terms to search each database. The first set of search terms included words and phrases that are related to social class: *“family background”*, *disadvantaged*, *first-generation*, *“low* income”*, *lower-class*, *middle-class*, *“parent* education*”*, *“parent* income”*, *“parent* occupation*”*, *privilege**, *“social class”*, *SES*, *socio-economic*, *socioeconomic*, *working-class*. The second set of search terms included words that are related to social integration: *adapt**, *adjust**, *alienat**, *assimilat**, *belong**, *communit**, *connect**, *engage**, *exclu**, *inclu**, *integrat**, *involve**, *isolat**, *lonel**, *separat**, *support**. The third set included words and phrases that are related to higher education: *“higher education”*, *“tertiary education”*, *“further education”*, *“post-secondary education”*, *“postsecondary education”*, *“continuing education”*, *college**, *universit**.

I also conducted two manual searches. The first was a backward search in which I checked relevant articles that appeared in the reference lists of key literature reviews in the area (e.g., Feldman & Newcomb, 1969, pp. 278-280; Pascarella & Terenzini, 1991, 2005; Robbins et al., 2004). The second was a forward search in which I checked articles that cited seminal articles in the area (e.g., Baker & Siryk, 1989; Hurtado & Carter, 1997; Ostrove, 2003; Pascarella et al., 2004; Pascarella & Terenzini, 1980; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996).

Inclusion and Exclusion Criteria

During the literature search, I examined studies that reported the relation between at least

one measure of social class and one measure of social integration at a higher education institution. I then excluded tests that were based on measures that did not provide valid assessments of either social class or social integration (for a similar approach, see Robbins et al., 2004, p. 265). This literature search and initial screening resulted in a total of 73 studies. I applied three further exclusion criteria to these studies.

First, I excluded studies that did not provide sufficient information to calculate effect sizes and/or sample sizes ($k = 17$; for the same approach, see Robbins et al., 2004; Sirin, 2005). Second, following Hunter and Schmidt (2004, p. 475), I excluded effects that were derived from multiple regression analyses and applications of this approach (e.g., path analysis and structural equation modeling; $k = 11$). Third, I excluded papers that reported effects that were based on the same sample of participants and, in some cases, the same measures ($k = 10$).

Description of Studies, Samples, and Tests

The final data set consisted of 35 studies, 48 independent samples, and 115 tests. The Appendix provides details about these studies and samples.

The mean date of article publication was 1996 ($SD = 9.03$) and ranged from 1976 to 2009. Only one of the 35 studies recruited participants from an institution that was based outside of the USA, and this was a Canadian study (Grayson, 1997).

The total sample size was 62,848 ($M = 1,796$, $SD = 2,140$) and ranged from 30 to 6,872. The mean age of participants was 19.29 years ($SD = 1.35$, $k = 11$). On average, 44.90% of participants were men ($SD = 30.61$, $k = 31$) and 62.83% were White ($SD = 35.08$, $k = 28$). Of the 48 independent samples, 43.75% included only first-year students and 47.92% included students who were not in their first year or who were from all years of study.

Zero-order correlations accounted for 84.35% of all tests. Mean differences tests and a chi-square test accounted for the remaining 15.65% of tests.

Coding Scheme

I coded social class measures into three categories: parental education ($k = 16$, 45.71% of studies), parental income ($k = 9$, 25.71% of studies), and any combination of parental education, income, occupation, household items, etc ($k = 13$, 37.14% of studies).

I coded the measures of social integration into five categories. The first two categories distinguished between participation in formal and informal social activities (Eaton & Bean, 1995; Fischer, 2007, p. 136; Hurtado et al., 2007; Tinto, 1975, p. 107). Ten studies (28.57% of studies) used measures of formal activities, and seven studies (20.00% of studies) used measures of informal activities.

The third category of social integration measure was the social subscale of Baker and Siryk's (1989) Student Adaptation to College Questionnaire (SACQ-social). This 20-item scale measures "a student's success in coping with the interpersonal-societal demands inherent in the college experience" (Baker & Siryk, 1989, p. 15). The scale provides a relatively multidimensional assessment of social integration, assessing both the quantity and quality of formal and informal social activities, loneliness, and sense of belonging. Example items are "I am very involved with social activities at college" (formal activities) and "I feel that I fit in well as part of the college environment" (sense of belonging). Six studies (17.14% of studies) used measures that contained a majority of items from this scale.

The fourth category referred to subjective perceptions of belonging, social acceptance, and/or exclusion at the higher education institution (e.g., Hurtado & Carter, 1997; Hurtado et al., 2007; Langhout et al., 2009). Example items include "I see myself as a part of the campus community" and "overall, I feel accepted at UCLA." Seven studies (20.00%) used this type of

measure.

The fifth category included Pascarella and Terenzini's (1980) social integration scales. The 7-item Peer-Group Interactions scale measures the quality of social interactions with fellow students, and the 5-item Interactions with Faculty scale measures the quality of social interactions with faculty members. Example items include "since coming to this university I have developed close personal relationships with other students" and "my nonclassroom interactions with faculty have had a positive influence on my personal growth, values and attitudes." Items from one or both of these scales were used by nine studies (25.71% of studies).

Data Analysis

To conduct the meta-analysis, I used Version 2.2 of the Comprehensive Meta-Analysis software (for details, see Borenstein, Hedges, Higgins, & Rothstein, 2009). I used a random-effects model (Borenstein et al., 2009, p. 61; Hunter & Schmidt, 2004, pp. 394-395), rather than a fixed-effect model, because the fixed-effect model can lead to erroneously narrow confidence intervals around the mean effect size estimate (Cafri, Kromrey, & Brannick, 2010). I used studies as the unit of analysis rather than independent samples because I expected variation to be greater between studies than between samples (Borenstein et al., 2009, p. 221; Hunter & Schmidt, 2004, p. 443).

Some of the studies that were included in the meta-analysis reported multiple effects based on either (a) multiple measures of social class and/or social integration ($k = 19$), (b) multiple samples (e.g., men and women; $k = 6$), or (c) multiple assessments across time (e.g., spring semester, fall semester; $k = 2$). In order to maintain the assumption of independent effects, I combined multiple effects within studies to form a single, average, synthetic effect for each study (Borenstein et al., 2009, Chapter 24; Hunter & Schmidt, 2004, p. 443).

Results

Overall Effect

The overall mean effect size estimate (r) of the relation between social class and social integration was .08 with a 95% confidence interval of .06 to .10. This effect was significantly different from zero, $k = 35$, $Z = 6.72$, $p < .001$. In addition, 31 of the 35 studies (88.57%) showed a positive, rather than negative, relation between social class and social integration.

Single Study Sensitivity and Publication Bias

I checked for the disproportionate influence of single studies on the overall effect by reconducting the meta-analysis 35 times with a different study removed on each occasion. The mean effect size estimate in these recomputed meta-analyses ranged from .07 to .08. The fact that these values were not substantially different from the overall effect size of .08 indicates that no single study was making a disproportionate contribution to the overall effect.

I also investigated the possibility of publication bias in my analysis. I plotted a funnel plot that included study precision ($1/\text{standard error}$) on the y-axis and Fisher's Z on the x-axis. In this plot, larger, more precise studies typically cluster closer around the mean effect than smaller, less precise studies, which tend to spread out towards the bottom of the plot (for details, see Borenstein et al., 2009, p. 283). Publication bias is likely if less precise studies with smaller than average effects are missing from the bottom left of the plot. In the present case, one or two studies appeared to be missing from this area. To investigate further, I used Duval and Tweedie's (2000) trim-and-fill method to remove extreme low precision studies from the bottom right of the funnel plot and to obtain an estimate of the mean effect in the absence of a publication bias. Consistent with my subjective assessment of the funnel plot, the trim-and-fill algorithm identified two extreme low precision studies to be trimmed. However, the recalculated

effect size estimate remained at .08. Hence, although there was some evidence of a minor publication bias in the present meta-analysis, the effect of this bias on the overall effect size was inconsequential.

Moderation Effects

A Q test of homogeneity of variance indicated significant heterogeneity among correlations, $Q_W(34) = 210.68, p < .001$. Consistent with this result, the I^2 value (Higgins & Thompson, 2002) indicated that a relative large percentage (83.86%) of the variation in effect sizes between studies was due to systematic variation rather than random sampling error. Consequently, I investigated whether some of this variability could be explained by moderator variables.

Year of study. I compared studies that had restricted their sample to first-year students with studies that had included students from other years or all years of study.¹ This comparison revealed no significant difference, $Q_B(1) = 1.34, p = .247$. Indeed, contrary to an acculturation model, social class differences in social integration were slightly smaller among studies that had sampled students from their first-year ($k = 17, r = .07, Z = 5.54, p < .001, 95\% \text{ CI } [.04, .09]$) rather than from other years or all years ($k = 15, r = .10, Z = 4.47, p < .001, 95\% \text{ CI } [.05, .14]$). Notably, the confidence intervals for the two groups overlapped substantially, suggesting that this null result did not represent a Type II error.

Students' gender. I conducted a meta-regression analysis in order to investigate whether students' gender moderated the size of the relation between social class and social integration. There was no significant relation between the percentage of male students in each sample and the size of the relation, $B = -.0003, Z = -1.48, p = .139, \tau^2 = .0032, 95\% \text{ CI } [-.0006, .0001]$.

Type of social class measure. There was also no significant effect of social class measure, $Q_B(2) = 1.54, p = .463$. As shown in Table 1, a significant relation between social class and social integration was observed using measures of parental education and parental income as well as combined measures ($ps \leq .001$).

---Insert Table 1 here---

Type of social integration measure. There was a significant moderating effect of type of social integration measure, $Q_B(4) = 57.01, p < .001$. The results for each of the five types of measure are provided in Table 1.

To follow up on the significant Q test, I undertook a series of pairwise comparisons in order to identify which measures of social integration obtained significantly larger or smaller effects than the others. In order to protect against Type I errors during these comparisons, I used a Bonferroni correction to adjust my alpha level to .005 (i.e., .05/10 tests; for a discussion, see Cafri et al., 2010, p. 261; for the same approach, see Sirin, 2005, p. 434).

The SACQ-social obtained the largest effect among the five measures ($k = 6, r = .18, p < .001$). This effect was significantly larger than that obtained using measures of formal social activities, $Q_B(1) = 8.23, p = .004$, and measures of informal social activities, $Q_B(1) = 22.29, p < .001$. The SACQ-social also obtained a marginally significantly larger effect than that obtained using Pascarella and Terenzini's (1980) measures, $Q_B(1) = 7.52, p = .006$. There was no significant difference between the effects obtained using the SACQ-social and sense of belonging measures, $Q_B(1) = 3.16, p = .076$.

Pascarella and Terenzini's (1980) measures obtained the smallest effect among the five measures ($k = 9, r = .03$). Notably, this effect was the only effect to be nonsignificant ($Z = 1.46, p = .144$). Aside from the marginally significant difference with the SACQ-social, Pascarella and Terenzini's measures obtained a significantly smaller effect than that obtained using sense of

belonging measures, $Q_B(1) = 13.48$, $p < .001$, and a marginally significantly smaller effect than that obtained using measures of formal social activities, $Q_B(1) = 6.94$, $p = .008$. However, Pascarella and Terenzini's measures did not obtain a significantly smaller effect than that obtained using measures of informal social activities, $Q_B(1) = .41$, $p = .524$.

Sense of belonging measures obtained the second largest effect ($k = 7$, $r = .14$, $Z = 5.50$, $p < .001$). Aside from the significant difference with Pascarella and Terenzini's (1980) measures, sense of belonging measures obtained a significantly larger effect than that obtained using measures of informal social activities, $Q_B(1) = 9.50$, $p = .002$. As indicated previously, the difference with the effect obtained using the SACQ-social was nonsignificant ($p = .076$). In addition, the difference with the effect obtained using measures of formal social activities was nonsignificant ($p = .142$).

Finally, there was no significant difference between the effect that was obtained using measures of informal and formal social activities, $Q_B(1) = 6.64$, $p = .010$. Notably, this comparison lacked power because only three studies that used measures of informal activities were included in the analysis. (Four studies included measures of both formal and informal activities, and I excluded these studies from the comparison in order to maintain the assumption of independent effects.) Nonetheless, Table 1 shows a substantial degree of overlap between the confidence intervals for these two types of measure, indicating that this null finding is unlikely to represent a Type II error.

Discussion

Interpreting the Overall Effect

Consistent with Robbins et al. (2004), the present meta-analysis found a significant positive relation between social class and social integration among students in higher education. Compared to middle-class students, working-class students participated in fewer formal and informal social activities and felt less integrated in their institutions.

The mean r value for the relation between social class and social integration was .08. One way to interpret the size of this effect is to consider it in relation to Cohen's (1988) effect size benchmarks. Cohen proposed that r values around the .10, .30, and .50 marks should be considered to be small, medium, and large respectively. Hence, the overall effect in the present meta-analysis can be classified as small according to Cohen's criteria. Given this interpretation, it is pertinent to consider whether administrators and policy-makers should be concerned about this effect or whether it can be dismissed as being "too small to worry about." Two points should be taken into consideration when making this judgement.

First, Cohen (1992) determined .10 to be an appropriate benchmark for a small effect specifically because it was "not so small as to be trivial" (p. 156). Indeed, even effects as small as .03 can have important real-world implications (McCartney & Rosenthal, 2000). Hence, the word *small* does not necessarily imply that an effect is either insignificant or unimportant.

The second point to consider is that the size of the relation between social class and social integration varied significantly as a function of the type of social integration measure that was used. Consequently, it is inappropriate to focus on the size of the overall relation (Borenstein et al., 2009, p. 184; Hunter & Schmidt, 2004, p. 425). Instead, it is more appropriate to consider the size of the relation that was obtained on each measure of social integration. I discuss these measure-specific effects in the next section.

Moderation Effects

The moderator analysis found that the size of the relation between social class and social integration did not vary significantly as a function of students' year of study or gender. The

confidence intervals associated with these analyses suggest that these null findings represent genuine null effects rather than Type II errors. Hence, although the relation between social class and social integration is small, it is also a relatively pervasive effect: Working-class students are less integrated than middle-class students regardless of whether or not they are in their first-year of study and regardless of whether they are men or women.

Type of social class measure was also a nonsignificant moderator: Consistent with previous meta-analyses in this area (Sirin, 2005, p. 434), the effect generalized equally well across measures of parental education and parental income.

The present research makes a significant advance in this area by establishing type of social integration measure as a significant moderator of the social class-social integration relation. In particular, the effect obtained using the SACQ-social ($r = .18$) was significantly or marginally significantly larger than that obtained using measures of formal social activities, informal social activities, and Pascarella and Terenzini's (1980) measures. Again, it is helpful to place the SACQ-social's effect size of .18 in context. A recent survey of 77 meta-analyses that were published in *Psychological Bulletin* during 1995-2005 found a median effect size of .16 (Cafri et al., 2010). Hence, although an effect of .18 may be classified as small-to-medium according to Cohen's (1988) benchmarks, it represents an average-sized effect in the field of psychology.

What explains the superior performance of the SACQ-social in detecting social class differences? One likely possibility is that its multidimensional nature provides a more valid and powerful assessment of social integration. As noted previously, the SACQ-social assesses the quantity and quality of formal social activities (4 items), informal social activities (8 items), loneliness (2 items), and sense of belonging (1 item). Hence, the SACQ-social provides a more comprehensive and multidimensional assessment of social integration than the other measures that have been used. It is this multidimensionality that appears to have made the SACQ-social particularly sensitive to social class differences in social integration.

Limitations of the Meta-Analysis

An important limitation of the present meta-analysis regards students' ethnicity. Ethnic minority students tend to be less integrated than White students in higher education institutions (e.g., Eimers & Pike, 1997; Fischer, 2007; for a brief review, see Pascarella & Terenzini, 1991, p. 380). Consequently, ethnicity may interact with social class to exacerbate integration deficiencies among working-class students who belong to ethnic minorities. It was not possible to provide a valid test of this moderation hypothesis in the present meta-analysis because of paucity of studies that sampled from nonWhite populations and the heterogeneity of nonWhite ethnicities that have been studied. Future research might profit from providing more focused investigations of the relations between social class, ethnicity, and social integration in higher education institutions that have different ethnic compositions.

A second limitation of the present meta-analysis is that it did not correct for study artifacts such as measurement error and imperfect construct validity (Schmidt & Hunter, 2004; for an example of a corrected approach, see Robbins et al., 2004). Consequently, the true size of the relation between social class and social integration is likely to be somewhat higher than the observed effect sizes that I have reported. However, it is important to note that the practice of correcting for measurement error and imperfect construct validity would eliminate these sources of variation between different measures of social class and social integration and, consequently, undermine the investigation of type of measure as a potential moderating variable. Hence, although my uncorrected approach underestimated the true relation between social class and

social integration, it had the advantage of providing a more sensitive assessment of the moderating effect of type of measure.

Recommendations for Future Research

A relatively large number of articles ($k = 73$) have reported the relation between social class and social integration in higher education. However, as discussed previously, this relation has tended to be considered as a side issue in studies rather than as a primary focus. In the final part of this review, I provide some recommendations for more focused, powerful, and explanatory research effort in this area.

Sampling a suitable number of participants. Future researchers need to sample an appropriate number of participants in order to obtain sufficient statistical power to detect social class differences in social integration. To provide some guidance on this issue, I conducted an a priori power analysis in which I calculated the sample size for a two-tailed bivariate correlation test with an alpha level of .05 and a power value of .95 (Faul, Erdfelder, Lang, & Buchner, 2007). The Recommended Study N column of Table 1 provides the recommended sample size for detecting the social class-social integration effect using each measure that obtained a significant effect.

Using multidimensional measures of social integration. The above power calculations are based on the assumption that researchers continue to use the measures of social integration that have been used in previous research. However, a key finding of the present meta-analysis is that different measures of social integration differ in their ability to detect social class effects. In particular, multidimensional measures such as the SACQ-social appear to be better at detecting social class effects than unidimensional measures. Hence, future researchers may attempt to increase the power of their tests by constructing measures of social integration that provide multidimensional assessments social integration that assess the quantity (number, duration, frequency) and quality (satisfaction, closeness) of formal social activities (e.g., clubs, organizations, societies, etc.) and informal social activities (e.g., friendships, drinks and meals with others, parties, conversations, etc) with both faculty and other students.

Today's students integrate themselves at their institutions using e-mail, text-messaging, and social networking websites such as Facebook (e.g., Gatz & Hirt, 2000; Harley, Winn, Pemberton, & Wilcox, 2007; Madge, Meek, Wellens, & Hooley, 2009). Hence, researchers should also assess these electronic forms of social interaction in their measures of social integration.

Finally, researchers should assess global domains of social integration in their measures. These include the sense of belonging, loneliness, exclusion, and alienation.

Investigating mediation effects. The present meta-analysis provides the strongest evidence to date that working-class students tend to be less integrated than middle-class students in higher education institutions. Future research now needs to move beyond the question of *whether* there is a social class difference in social integration to investigate *why* there is a social class difference in social integration. To address this issue, future researchers should investigate potential mediators of the social class-social integration relation. The identification of significant mediator variables will advance our understanding in this area by allowing us to infer the processes by which social class is negatively related to social integration. As a result, we will be in a better position to make recommendations to administrators and policy-makers about the most effective methods of reducing social class differences in social integration. Below, I consider nine potentially important mediating variables.

(1) **Accommodation arrangements.** People who live near one another are more likely to

become friends. Consequently, students who live on campus are likely to have more friends at their institution than students who live off campus (for reviews, see Bean & Metzner, 1985, p. 508; Pascarella & Terenzini, 1991, p. 399-402). Working-class students are less likely to live on campus than middle-class students (e.g., Billson & Terry, 1982; Pascarella et al., 2004; Pike & Kuh, 2005). Hence, working-class students may be less integrated than middle-class students because they live at home with their family rather than in shared accommodation with other students, and this situation limits their opportunity for social integration (e.g., McConnell, 2000, p. 80).

(2) *Campus attendance.* Working-class students may be less integrated because they spend less time on campus than middle-class students, and this reduced campus attendance limits their opportunity for social integration. Working-class students may spend less time on campus because (a) they are enrolled in fewer courses (i.e., part-time students; Inman & Mayes, 1999; Pascarella et al., 2004), (b) they find the financial cost of travel to campus to be a deterrent, (c) they spend more time working for pay in off-campus jobs (Astin, 1993; Billson & Terry, 1982; Inman & Mayes, 1999; Martinez et al., 2009; Pascarella et al., 2004; Shields, 2002; Terenzini et al., 1996; Stuber, 2009), and/or (d) they spend more time looking after their siblings, children, or other people's children (Hurtado et al., 2007).

(3) *Finances for socializing.* Working-class students may be less integrated because they have less money to spend on social activities (e.g., society membership fees, social events, on-campus drinks and meals; Bean, 1985; Cabrera, Nora, & Castñeda, 1992; Lehman, 2009, p. 637; Stuber, 2009, p. 895). Consistent with this possibility, students' concerns about finances are negatively related to their sense of belonging and contact with other students (Bean, 1985; Hurtado et al., 2007) and the receipt of financial aid is positively associated with social integration (Bean, 1985).

(4) *Time spent studying.* Compared to middle-class families, working-class families usually invest a larger proportion of their financial capital into their children's higher education (Lehman, 2009, p. 638). In addition, working-class students are usually the first in their families to undertake higher education. As a result, working-class students may feel a greater pressure from their family to study and succeed academically (Bryan & Simmons, 2009; Bui, 2002). This perceived pressure may lead to guilt about engaging in social activities (Lucey, Melody, & Walkerdine, 2003, p. 291) and, consequently, a greater tendency to spend time studying rather than socializing.

(5) *Gender.* Gender may be considered as both a moderator and a mediator variable. If the size of the relation between social class and social integration varies as a function of gender, then gender acts as a moderator variable. If the size of the relation between social class and social integration becomes significantly smaller after controlling for gender, then gender acts as a mediator variable.

Male students report a weaker sense of belonging and community than female students in higher education institutions (Hurtado et al., 2007; Lounsbury & DeNeui, 1995) as well as worse social adjustment and engagement (Napoli & Wortman, 1998; Pike & Kuh, 2005). However, it is women, rather than men, who tend to be overrepresented among working-class students (Inman & Mayes, 1999; McConnell, 2000; Terenzini et al., 1996; for opposite findings, see Pike & Kuh, 2005). Consequently, gender differences are unlikely to explain social class differences in social integration. Nonetheless, researchers should include gender in their analyses in order to control for this source of covariation.

(6) *Ethnicity.* Again, ethnicity has the potential to play a role as a mediator as well as a

moderator. Ethnic minority students tend to be less integrated at university and overrepresented among working-class students (e.g., Bui, 2002; Martinez et al., 2009). Consequently, ethnicity may account for social class differences in social integration.

(7) **Age.** In general, older people have less time than young people to engage in social activities due to their other commitments (for a brief review, see Bean & Metzner, 1985, p. 508). Consistent with this general trend, university students' age is negatively related to their level of social integration (e.g., Bean & Metzner, 1985; Brooks & DuBois, 1995; Napoli & Wortman, 1998). Given that working-class students tend to be older than middle-class students (Inman & Mayes, 1999; Shields, 2002; Terenzini et al., 1996), age differences may also account for social class differences in social integration.

(8) **Minority group status.** Working-class students may be less integrated because they constitute a numerical minority group at a majority middle-class institution. Following distinctiveness theory (McGuire, 1984), this minority group status may increase the salience of their working-class identity (Aries & Seider, 2005; Orbe, 2004, p. 144) and lead to increased anxiety during interactions between middle-class and working-class students. This intergroup anxiety may then act as a deterrent against future contact between members of these two groups (e.g., Van Zomeren, Fischer, & Spears, 2007).

(9) **Perceived interpersonal similarity.** In general, perceived interpersonal similarity is a positive predictor of interpersonal attraction (for a meta-analysis, see Montoya, Horton, & Kirchner, 2008). More particularly, at university, similarity in socioeconomic status predicts friendships among students (Mayer & Puller, 2008; for a brief review, see Feldman & Newcomb, 1969; pp. 271-272). Hence, working-class students may not integrate well with middle-class students because they feel that they do not have much in common with this majority group (Lynch & O'Riordan, 1998, pp. 461-462).

Summary and Conclusions

The present meta-analysis provides the clearest evidence to date that working-class students tend to be less integrated than middle-class students in higher education institutions. This social class difference is relatively pervasive, generalizing across students' gender and year of study, as well as across different measures of social class. A key finding is that type of social integration measure moderates the size of the social class-social integration relation. In particular, the SACQ-social obtained the largest effect size ($r = .18$), suggesting that multidimensional measures of social integration are more sensitive to social class differences.

Future researchers in this area should use multidimensional measures of social integration in order to increase the power of their studies, and they should progress to investigate *why*, rather than *whether*, there are social class differences in social integration among students in higher education. This more powerful and explanatory research approach will inform recommendations to policy-makers and administrators about the best methods of reducing social class differences in social integration and, potentially, related differences in academic outcomes and retention. In particular, this approach should inform discussions about whether the integration of working-class students should occur by assimilating individuals, transforming institutions, or both (e.g., Zepke & Leach, 2005).

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Footnotes

¹ Very few studies restricted their sample to non-first-year students ($k = 4$). Hence, I compared studies that had recruited only first-year students ($k = 17$) with studies that had recruited students from either (a) other years (e.g., second-year, third-year) or (b) all years, including the first-year (total $k = 15$).

Table 1
Meta-Analysis Results for Each Measure of Social Class and Social Integration

	<i>k</i>	<i>N</i>	<i>r</i>	CI _{LL}	CI _{UL}	<i>z</i>	<i>p</i>	SSS _{Smallest}	SSS _{Largest}	Recommended Study <i>N</i>
Overall effect	35	62,848	.08	.06	.10	6.72	< .001	.07	.08	2,024
Social class measures										
Parental income	9	19,275	.11	.04	.17	3.22	= .001	.07	.12	1,068
Parental education	16	34,117	.09	.06	.13	5.32	< .001	.09	.10	1,598
Combined measures	13	35,228	.06	.03	.09	3.73	< .001	.05	.07	3,604
Social integration measures										
SACQ-social	6	1,908	.18	.13	.22	7.86	< .001	.17	.19	395
Sense of belonging	7	6,777	.14	.09	.19	5.50	< .001	.11	.16	657
Formal social activities	10	30,390	.10	.06	.13	5.05	< .001	.09	.11	1,293
Informal social activities	7	20,940	.05	.02	.08	3.09	= .002	.04	.06	5,192
Pascarella & Terenzini (1980)	9	7,496	.03	-.01	.06	1.46	= .144	.01	.04	N/A

Note. *k* = number of studies; *N* = total sample size; *r* = mean correlation coefficient; CI_{LL} and CI_{UL} = lower limit and upper limit of the 95% confidence interval; SSS_{Smallest} and SSS_{Largest} = the smallest and largest mean correlation coefficients that are obtained when single studies are removed iteratively from repeated runs of the meta-analysis; Recommended Study *N* = the sample size that is required in order to detect the effect in that row using a two-tailed bivariate correlation test with an alpha level of .05 and a power value of .95.

Appendix
Information for Studies Included in the Meta-Analysis

Study	Sample Characteristics	Type of Social Class Measure(s)	Type of Social Integration Measure(s)
Allen (1992)	Black American	Combined	Formal, Uncoded
Allen et al. (2008)	44% male; 69% White; 3 rd year	Combined	Uncoded
Berger & Milem (1999)	49% male; 84% White; 1 st year; spring and fall semester	Income	P & T, uncoded, informal
Billson & Terry (1982)	All years	Education	Formal
Braxton et al. (1988)	34% male; 46% White; 1 st year	Combined	P & T
Braxton et al. (1995)	43% male; 94% White; 1 st year	Combined	P & T
Bray et al. (1999)	49% male; 84% White; 1 st year	Income	P & T
Brooks & DuBois (1995)	18.69 years; 45% male; 96% White; 1 st year; second semester	Income	SACQ
Bui (2002)	18.60 years; 47% male; 21% White; 1 st year; working-class recruited from a counselling and tutoring program; middle-class recruited from an introductory psychology participant pool	Education	SoB, uncoded
Dennis et al. (2005)	19.02 years; 30% male; 0% White; 2 nd year; Latino, Chinese, and Chinese/Vietnamese first-generation	Combined	SACQ
Ethington & Smart (1986)	Separate tests for male and female	Education, income	Formal, informal
Fischer (2007)	58% male; 26% White; 1 st year	Education, income	Formal, informal
Grayson (1997)	35% male; 72% White; 1 st year; Canadian	Education	Formal, informal
Hahs-Vaughn (2004)	48% male; 82% White; all years; undergraduates and graduates	Education	Uncoded
Hanks & Eckland (1976)	Separate tests for male and female; 1 st year	Education, household, occupation	Formal
Hertel (2002)	18.36 years; 33% male; 86% White; 1 st year; 93% in second semester; 94% residential	Education, income	SACQ
Hurtado et al. (2007)	Separate tests for male and female and White and Asian; 1 st year; underrepresented minority studies; studying nonscience and science subjects	Combined	SoB
Kuh & Hu (2001)	39% male; 82% White; all years	Combined	Informal
Langhout et al. (2009)	20 years; 34% male; 73% White; all years	Combined	SoB

Martinez et al. (2009)	17.96 years; 46% male; 90% White; all years; time points 1 and 2	Education	Uncoded
Napoli & Wortman (1998)	49% male; 90% White; 1 st year	Uncoded	SACQ, P & T
Nora et al. (1990)	45% male; 84% White; 1 st year; studying developmental education	Uncoded	P & T
Oliver et al. (1985)	0% White; graduates; Chicano	Education, occupation	SoB
Olszewski-Kubilius & Laubscher (1996, Study 2)	40% male; all years	Income	SACQ, uncoded
Ostrove & Long (2007)	20.02 years; 27% male; 83% White; all years	Combined, subjective	SoB, SACQ, SoB
Pascarella (1985)	47% male; 3 rd year	Education	Formal, informal
Pascarella et al. (1987)	32% male; 76% White; students who aspired to be physicians	Combined	Informal
Pascarella et al. (1986)	47% male; 91% White; 1 st year	Combined	P & T
Pike & Askew (1990)	22.4 years; 53% male; 93% White; seniors	Education, income	Formal
Pittman & Richmond (2007)	18.5 years; 49% male; 60% White; 1 st year; second semester; studying psychology	Education	SoB
Sandler (2000)	24 years or older; 29% male; 51% White; all years	Education, income	Uncoded
Stage (1989)	18.01 years; separate tests for male and female; 90% White; 1 st year; enrolled in freshman composition courses	Education	P & T, formal
Terenzini et al. (1996)	20.6 years; 57% male; 1 st year	Education	P & T
Weidman (1984)	Separate tests for male and female; all years; English majors, History majors, Maths majors, Political science majors	Combined	Formal, informal
White (1988)	Separate tests for White and nonWhite; 1 st and 2 nd year	Combined	SoB

Note. Sample characteristics are described in the following order: mean age of participants, percentage of male participants and percentage of white participants or whether tests were conducted separately for male and female participants and White and nonWhite participants, year of study (e.g., 1st year, 2nd year, all years), other relevant details (e.g., semester of study, specific ethnicity, degree program). Type of social class measure: Combined = measures based on a combination of several different aspects of social class (e.g., parental education and parental income); Education = measures based on parental education; Household = measures based on the possession of certain items in the household; Income = measures based on parental income; Occupation = measures based on parental occupation; Subjective = measures based on a subjective self-identification of social class. Type of social integration measure: Formal = measures of participation in formal social activities; Informal = measures of participation in informal social activities; P & T = measures containing a majority of items from Pascarella and Terenzini (1980)'s Peer-Group Interactions and/or Interactions with Faculty scales; SACQ-social = measures containing a majority of items from the social subscale of the Student Adaptation to College Questionnaire; SoB = measures containing a majority of items relating to a sense of belonging. Uncoded = measures of social class or social integration that were not coded into a particular category because either (a) insufficient information was provided in the source article or (b) there was no clear majority of items that could be categorized as a specific type of measure.

