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EMPIRICAL RESEARCH

Locus of Control and Peer Relationships Among Caucasian, Hispanic, Asian, and African American Adolescents

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Abstract Past research has shown that locus of control plays an important role in a wide range of behaviors, such as academic achievement and positive social behaviors. However, little is known about whether locus of control plays the same role in minority adolescents' peer relationships. The current study examined ethnic differences in the associations between locus of control and peer relationships in early adolescence using samples from the Early Childhood Longitudinal Study (ECLS-K: 5,612 Caucasian, 1,562 Hispanic, 507 Asian, and 908 African-American adolescents) and the National Education Longitudinal Study (NELS: 8,484 Caucasian, 1,604 Hispanic, and 860 Asian, and 1,228 African American adolescents). Gender was approximately evenly split in both samples. The results from the two datasets were highly consistent. Significant interactions between ethnicity and locus of control indicated that having a more internal locus of control was particularly important for Caucasian students' peer relationships (ECLS-K) and social status (NELS), but less so for Asian, Hispanic, and African American students. Our findings suggest that the role of locus of control in peer relationship is contingent upon culture.

Keywords Culture · Ethnicity · Peer relationships · Locus of control · Adolescence

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Introduction

Locus of control, a concept developed by Rotter (1954), focuses on the degree to which individuals generally believe that they, rather than other people or uncontrollable factors such as "fate," are responsible for the outcomes of events in their lives. Rotter (1954) conceptualized locus of control as occurring on a continuum from internal to external control, rather than as a dichotomous variable. Among the most replicable findings, internal locus of control has been associated with better academic performance (e.g., Chang et al. 2007; Strayhorn 2010), health-related outcomes (e.g., Jose and Weir 2013; Sturmer et al. 2006), job performance (see review by Ng et al. 2006), and athletic performance (e.g., Denny and Steiner 2009), whereas lacking a sense of control has been associated with negative outcomes, such as anxiety (Weems et al. 2003) and depression (Muris et al. 2004). In short, decades of research have shown that locus of control plays an important role in a wide range of behaviors.

Most relevant to the current study, several studies also have shown that locus of control is associated with social relationships. Specifically, studies with adult subjects demonstrated that those individuals who reported greater internal locus of control were more willing to communicate with out-groups (Lam and Mizerski 2005) and characterized themselves as being more sociable and open to new experiences (Mühlig-Versen et al. 2012; Rubin 1993). Similarly, research has shown that children and adolescents with a more internal locus of control are more engaged in their classrooms (You and Sharkey 2009), are less shy (Crozier 2011), and display greater social maturity (Nelson and Mathia 1995). It also appears that having an external locus of control orientation is associated with aggressive tendencies and bullying behaviors (Osterman et al. 1999),

which can contribute to difficulties developing or maintaining friendships. For example, in a study of 5–7 year-old Australian elementary school children, Slee (1993) found that children who were identified as bullies through self and teacher reports showed a more external locus of control. Students who were identified as victims did not differ in locus of control and students who were not identified as either bullies or victims reported a more internal locus of control. In sum, there is considerable evidence for a significant role of locus of control in peer relationships. The above conclusion, however, is based on studies of mostly Caucasian participants. Little is known about whether locus of control plays the same role in minority adolescents' peer relationships.

Thus far, cross-cultural and cross-ethnic research on locus of control has focused mostly on either general locus of control or in the domain of academic achievement and the results have been inconsistent. A few earlier studies documented that Asians, Asian Americans, and Mexican–Americans had a more internal locus of control than their Caucasian counterparts (Brown et al. 2007; Hamilton et al. 1989; Si et al. 1995). A number of studies, however, showed that ethnic minority groups such as African, Asian, and Mexican–Americans tended to hold a more external locus of control (Leung 2001; O'Hea et al. 2009; Okeke et al. 1999; Ramirez 1988) than European Americans. An orientation towards external locus of control seems consistent with fatalistic beliefs that prevail in many Asian cultures (Norenzayan and Lee 2010; Yeh et al. 2006) and in Mexican and other cultures with a strong Catholic tradition (McCabe et al. 2008). In African-American cultures, having a more external locus of control orientation may be a way to deal with the disadvantages of poverty, unemployment, and racial discrimination (Threlfall et al. 2013). In the domain of academic achievement, Asians and Asian Americans report greater internal control than Caucasian Americans regarding their academic performance. Asians and Asian Americans have been found to exceed Caucasian Americans in linking their successes and failures to their own efforts rather than to external circumstances (e.g., Si et al. 1995; Stevenson and Stigler 1992). Bartal et al. (1980) found that perceived locus of control was positively associated with academic achievement, but more so for students of Asian or African origin than for students of European, American, or Israeli origin. However, Gardner (2007) found that African American students tended to blame poor academic performance on external factors. In sum, previous research has shown cross-cultural differences (although not always consistently) in general locus of control orientation as well as in the domain of academic achievement.

Cultural values can also influence locus of control in the domain of peer relationships, although little research has been conducted in this area. European American culture is characterized by an emphasis on the personal responsibility of individuals (or "agency") to enter and to maintain relationships (Shweder et al. 2006). Children are encouraged to retain their sense of autonomy and freedom, even when interacting with peers (Rubin et al. 2002). In contrast, Asian and Latino cultures emphasize cooperation and interdependence in the establishment and maintenance of peer relationships (Chen 2000; Shweder et al. 2006; Way 2006). For example, one must be flexible when interacting with others to avoid embarrassing or hurting others' feelings. As a result, these groups' cultural emphasis on interdependence and maintenance of social harmony may lead them to see peers' agentic attitudes and behavior as a threat to positive relationships in the peer group. To put it succinctly, an internal locus of control in peer relationships may conflict with their cultural value of collectivism. Given these differing cultural values in peer relationships, internal locus of control should be more congruent with European American children's peer relationships than with those of ethnic minority children.

The Current Study

The current study addresses ethnic differences in the associations between locus of control and peer relationships in early adolescence. We focused on early adolescence because it is a time when peers and peer relationships play an increasingly important role in youths' sense of self, psychological well-being, and social and academic development (Steinberg 2002). Ethnic minority youth may face special challenges in their peer interactions due to social class differences from "majority" youth, discrimination, and social segregation (Fisher et al. 2000). Furthermore, because parents of minority children may not be as acculturated as their children (Birman 2006; Lau et al. 2005), peer relationships may be especially important avenues through which minority youth learn about the larger social world and become integrated into mainstream society (Min and Kim 2000; Phinney et al. 2001).

Two aspects of peer relationships, peer acceptance and social status within the peer group, were examined as important indicators of adolescent social outcomes. Peer acceptance and status in the peer group, although highly correlated, are conceptualized as distinct dimensions of the social domain and assessed with different measures (Cillessen and Mayeux 2004). Peer acceptance at school is usually indexed by likeability among peers (Wentzel 2003) and has been related to a variety of positive outcomes. For example, among mostly middle-class, middle school students, peer acceptance is related to higher academic achievement, more prosocial behaviors, and less emotional

distress (Wentzel et al. 2004). Research also suggests that students who are liked or accepted by peers report higher levels of well-being and self-esteem and fewer antisocial behaviors (Pellegrini and Long 2002). Conversely, bullies or victims, who tend to be disliked and rejected or neglected by peers, are more likely to display maladjusted behaviors (Prinstein and Cillessen 2003). Longitudinal studies have shown that early peer acceptance is associated with later adjustment. Children with early peer problems were at increased risk for educational and employment opportunities 9 years later (Woodward and Ferguson 2000). Therefore, it is important to explore this avenue of peer relationships as it serves to play a pertinent role in adolescent's longer-term trajectory.

The other aspect of peer relationships, social status, focuses on popularity at school. Popularity among peers is more closely linked to power and position within a peer group than to likability (Lease et al. 2002). Social status in the peer group is a complex matter, as "status" may be achieved through both positive and negative means. For example, children who are perceived to be popular by their classmates are also more likely to be described with desirable qualities such as sociability, leadership, and academic success (Gest et al. 2001). However, students who display negative behaviors such as aggression, gossiping, teasing, and rejection, are also sometimes seen as being high in status (Parker et al. 2006). On the other side of the spectrum, low-income middle school children who are not perceived as popular among peers are socially excluded from groups (Juvonen et al. 2003). As a result, adolescents who have difficulty developing and maintaining positive peer relationships may experience adverse psychological and academic consequences that can persist long-term, such as loneliness and depression (Prinstein et al. 2005), aggression (Dodge et al. 2003), and low academic achievement motivation (Nelson and DeBacker 2008). In sum, like peer acceptance, social status is an important indicator of peer relationships and it can influence the outcomes of adolescents. It is important to explore how locus of control may contribute to both aspects of peer relationships and, especially, how this may differ across various ethnic groups.

In the current study, we examined the association between locus of control and peer relationships among Caucasian, Hispanic, Asian, and African American adolescents using two large-scale, nationally representative data sets, the *Early Childhood Longitudinal Study* (ECLS-K, eight graders 2007) and the *National Education Longitudinal Study* [NELS, Waves 1 (eight graders 1988) and 2 (tenth graders 1990)]. This study extended previous research by using two nationally-representative samples of early adolescents to examine ethnic differences in the role of locus of control in peer relationships. In addition, we also investigated whether socioeconomic statuses (SES) and ethnic composition (percent minority) at the students' school as well as generational status (for Asians and Hispanics only) would account for ethnic differences in the role of locus of control in peer relationships.

Several hypotheses guided our analyses of the two datasets. In Study 1 with the ELCS-K dataset, peer relationships were examined in terms of peer acceptance. Based on the literature summarized above, we hypothesized that students with a more internal locus of control would report being more accepted by peers compared to students with a more external locus of control. Additionally, we examined the interaction of locus of control and ethnicity. We expected that a more internal locus of control would be particularly significant for Caucasian children due to their more strongly individualistic culture's emphasis on agency, as discussed above. In Study 2 with the NELS dataset, peer relationships were examined in terms of social status within the peer group. We expected that students with a more internal locus of control would report having higher social status compared to students with a more external locus of control. For the interaction effect of locus of control and ethnicity, we again expected the association to be stronger for Caucasian adolescents than for Hispanic, Asian and African American youth. Finally, we investigated whether observed ethnicity-by-locus of control interactions would be accounted for by potential covariates such as the percent minority at school, family SES, and adolescents' generational status. We expected that cultural differences would remain significant after controlling for these covariates.

Study 1: The ECLS-K Dataset

The ECLS-K, a dataset comprising 21,260 children, used a complex, multistage probability design in which 24 children from approximately 1,000 public and private kindergarten programs in different US counties were selected and followed through the first, third, fifth, and eighth grade. Data were collected from parents, teachers, and school administrators at each time point. In kindergarten, 1st, and 3rd grade, parents and teachers both reported on children's behavioral and social outcomes. However, starting in 3rd grade, children provided information about themselves by completing a short questionnaire (Self Description Questionnaire I; Marsh 1992a) regarding their academic interests and peer relations. In 8th grade, a revised, age-appropriate version of the questionnaire (Self Description Questionnaire II; Marsh 1992b) was used, which included items regarding students' locus of control and peer relationships. Although teacher and parental reports of child outcomes were available, the current study used only child

self-reports from 8th grade, for which data on both locus of control and peer relations had been collected. Using the same grade across the two datasets ensures that study participants are at the same developmental level.

Method

Participants

The present study was based on a subsample of adolescents drawn from the eighth-grade data collection time point (Spring 2007) in the ECLS-K dataset. Although baseline data were collected from over 21,000 children, the total number of respondents at eighth grade was 9,296 because children who moved out of the schools were not followed up. Missing data in the ELCS-K study reduced our analysis samples to between 9,203 and 9,252 cases (.5–1.0 % cases missing).

The final sample consisted of 5,612 Caucasian, 1,562 Hispanic, 507 Asian, and 908 African-American adolescents in the ECLS-K dataset. Gender was evenly split (females = 50 %). Longitudinal analyses using the ECLS-K data typically use statistical weights to adjust for differential sample selection and for non-response rates over time. However, Asian American adolescents were oversampled in the dataset, and using the child-level weights would have restricted the sample to a smaller subgroup. Additionally, there were no special weights in the dataset that allowed for the inclusion of the oversampled group for analyses without deleting cases. Thus, to retain the larger sample of Asian American participants, our analyses did not include the sampling weights.

Measures

Demographics Gender and ethnicity were self-reported. Children identified as Asian had family origins from Southeast Asia (e.g., Malaysian, Vietnam), East Asia (e.g., Korea, China, Japan), South Asia (e.g., India), or the Pacific Islands (e.g., Hawaii, Guam). Children identified as Hispanic had family origins from Central America, South America, or the Caribbean (e.g., Puerto Rico, Cuba). To assess generational status, we used a variable that indicated whether or not students were born in the United States. First generation students were identified as being born outside of the United States whereas the second generation students were identified as being born in the United States. A continuous measure of socioeconomic status (SES) was created based on a composite of household income and parents' educational attainment and occupation. Finally, a composite for the percent minority in the school was created by determining percentage of students who were Hispanic, Black, Asian or Pacific Islander, American Indian, or Native Alaskan.

Locus of Control The locus of control measure, adopted from the National Education Longitudinal Study, assessed students' general perceptions of how much control they have over their lives. The measure consisted of six items that were rated on a scale of 1 (*strongly disagree*) to 4 (*strongly agree*). Examples of the items are: "good luck is more important than hard work" and "chance and luck are very important for what happens in my life" (reverse-scored). Coefficient alpha for the locus of control scale in 8th grade was .75 for the total sample, ranging from .63 to .69 for the four ethnic groups. See Table 1 for descriptive statistics for this measure.

Peer Acceptance (ECLS-K) Peer acceptance was assessed through self-reports of how respondents thought their classmates viewed them. Data were not collected from teachers and parents about eighth-graders' peer relationships. Five items from the school experiences questionnaire, developed by ECLS-K researchers, were rated on a scale of 1 (*never*) to 5 (*always*), with higher scores being indicative of greater perceived peer acceptance. Examples of the items are: "classmates think I am important," "classmates like me as I am," and "classmates care about me." Coefficient alpha for the scale in 8th grade was .89 for the total sample, ranging from .86 to .90 for the four ethnic groups. See Table 1 for descriptive statistics for this measure.

Analytic Strategy

Ethnicity was dummy-coded with Caucasians as the reference group. We conducted regression analyses in STATA to test the relations between locus of control and peer relationships. In the first block, the dependent variable was peer acceptance and the independent variable was locus of control and ethnicity (dummy-coded), with gender as a control variable. In the second block, ethnicity was examined as a moderator by including interaction terms comprised of locus of control and ethnicity (which were first centered) in the analyses. In a separate analysis, SES, percent minority in the school, and generational status were included as additional control variables to see if they would account for ethnic differences in the role of locus of control in peer relationships.

Results

To test our hypothesis that locus of control is related to peer acceptance, peer acceptance was regressed on locus of control, gender, and ethnicity (see Table 2). As expected, students with a more internal locus of control orientation reported feeling more accepted than those with an external locus of control orientation ($b = .43$, $p < .001$). There was

Table 1 Descriptive statistics for Early Childhood Longitudinal Study and National Education Longitudinal Study samples

Variable	Caucasian	Black	Hispanic	Asian	F (p value)	Post hoc contrasts
ECLS 8th						
Sample size	5,612	908	1,562	507		
Locus of control	2.06 (.39)	2.22 (.49)	2.20 (.43)	2.12 (.41)	72.69 ***	B > W, A; H > W, A; A > W
Peer acceptance	3.81 (.88)	3.74 (.95)	3.73 (.91)	3.88 (.82)	5.57 ***	W > H; A > B, H
NELS 8th						
Sample size	8,484	1,228	1,604	860		
Locus of control	3.02 (.48)	2.91 (.49)	2.87 (.51)	2.95 (.48)	66.42 ***	W > B, A, H; A > H
Peer acceptance	2.02 (.48)	2.10 (.48)	1.95 (.49)	1.98 (.50)	26.15 ***	W > B, A, H; B > H, A
NELS 10th						
Sample size	7,910	1,065	1,318	810		
Locus of control	2.98 (.45)	2.94 (.49)	2.93 (.48)	2.95 (.43)	5.39 ***	W > H
Peer acceptance	1.97 (.47)	2.01 (.48)	1.91 (.46)	1.94 (.46)	11.73 ***	W > H; B > H, W, A

Table 2 ECLS-K regressions predicting peer acceptance in 8th grade (N = 8,589)

Predicting peer acceptance	Model 1 b (SE)	Model 2 b (SE)
Locus of control	.43 (.01)***	.44 (.01)***
Hispanic	.01 (.02)	.00 (.02)
Asian	.09 (.04)*	.10 (.04)*
Black	.00 (.03)	.00 (.03)
Gender	.25 (.02)***	.25 (.02)***
Hispanic × locus of control	–	−.17 (.04)***
Asian × locus of control	–	−.17 (.06)**
Black × locus of control	–	−.21 (.04)**

* $p < .05$; ** $p < .01$; *** $p < .001$

Caucasian = reference group

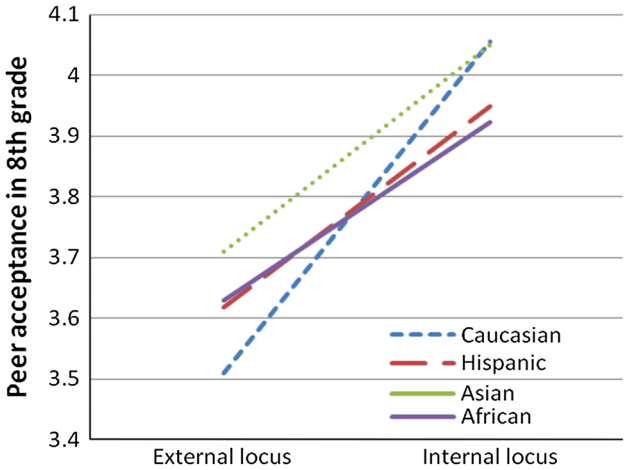

Fig. 1 Relationship of ethnicity and locus of control to peer acceptance in 8th grade: (ECLS-K). Regression lines were plotted with x-axis defined as −1SD = external locus of control and +1SD = internal locus of control

also a main effect of ethnicity, with Asian Americans reporting slightly but significantly greater peer acceptance than Caucasian students ($b = .09$, $p < .05$). Females reported feeling more accepted than did males ($b = .25$, $p < .001$).

Next, we examined whether the relationship between peer acceptance and locus of control differed among Caucasian, Hispanic, Asian, and African American adolescents. To examine this question, we included the interaction between locus of control and ethnicity in the model. Results showed significant Ethnicity × Locus of Control interactions for Hispanics relative to Caucasians ($b = -.17$, $p < .001$), Asian Americans relative to Caucasians ($b = -.17$, $p < .01$), and African Americans relative to Caucasians ($b = -.21$, $p < .001$). As shown in Fig. 1, the slope for locus of control and peer acceptance for Caucasians was significantly steeper than it was for Hispanic, Asian, and African American adolescents. Taken together, these findings indicate that, although internal locus of control is associated with greater peer acceptance for adolescents of all three ethnicities, locus of control was more strongly associated with peer acceptance for Caucasian than for Hispanic, Asian, and African American adolescents.

To examine whether our results could have been explained by select demographic variables, SES, percent minority students at school, and generational status were included as control variables. Results showed that SES was positively associated with peer acceptance ($b = .06$, $p < .001$). Percentage of minority students in a given school ($b = -.02$, $p = .06$) and generational status were not significantly associated with peer acceptance ($b = .07$, $p = .25$). The ethnicity-by-locus of control interactions remained significant for Hispanics relative to Caucasians ($b = -.21$, $p < .001$), Asian Americans relative to Caucasians ($b = -.27$, $p < .001$), and African Americans relative to Caucasians ($b = -.22$, $p < .001$).

Study 2: The NELS Dataset

The purpose of this study was two-fold: to determine whether the results from Study 1 extended to a slightly different aspect of peer relations (i.e., peer status) using another dataset with adolescents from the same four ethnic groups as in Study 1. We selected subjects at the same grade-level, i.e., grade 8. For this study, we used the *National Education Longitudinal Study* (NELS), another large-scale, nationally representative, longitudinal dataset. The NELS study was launched in 1988 and selected a cohort of 25,000 eighth-grade students from approximately 1,000 public and private schools across the nation. Data from students were collected when they were in the eighth grade, tenth grade, twelfth grade, and at two post-high school time points (i.e., 2 years later in 1994 and 8 years later in 2000). In addition, data were collected from the students' parents, teachers, and school administrators. Although the NELS data included student data from time points collected in 8th grade through post-high school, only the 8th and 10th grade dataset contained locus of control variables. Only the data from those two time points were used in order to preserve comparability with the ECLS-K dataset and thus allow us to examine whether the Study 1 results could be replicated.

Methods

Participants

The resulting sample consisted of 8,484 Caucasian, 1,604 Hispanic, and 860 Asian, and 1,228 African American adolescents from the 8th grade data collection. Gender was approximately evenly split (females = 48 %). A subsample (i.e., former 8th grade participants who provided data in 10th grade) of 7,910 Caucasian, 1,318 Hispanic, 810 Asian, and 1,065 African American adolescents from the 10th grade time point were included in the study. Gender was approximately evenly split (females = 48 %). Similar to the ECLS-K, longitudinal analyses using the NELS data typically involve applying statistical weights to adjust for differential sample selection and for non-response rates over time. For the same reason mentioned in relationship to Study 1, we did not include the sampling weights in our analyses, i.e., in order to retain the larger sample of Hispanic and Asian American participants.

Measures

Demographics The same five demographic variables as in Study 1 were created and used in this study: gender, ethnicity, generational status, SES, and percent minority students at school.

Locus of Control This measure was the same as that used in the ECLS-K. The measure assessed students' general perceptions of how much control they have over their lives and consisted of six items that were rated on a scale of 1 (*strongly disagree*) to 4 (*strongly agree*). As with the ECLS-K, this measure was obtained via self-report. Data on locus of control were obtained in 8th and 10th grade. Examples of the items were provided in relationship to Study 1. Coefficient alpha for the locus of control scale in eighth grade was .68 for the total sample, ranging from .61 to .69 for the four ethnic groups; coefficient alpha for the locus of control scale in tenth grade was .71 for the total sample, ranging from .63 to .73 for the four ethnic groups. See Table 1 for descriptive statistics for this measure.

Social Status Among Peers (NELS) Social status reflects a composite of three items developed by NELS:88 researchers. Perceived social status was obtained in 8th and 10th grade. Respondents rated how their classmates viewed them (popular, athletic, important) on a scale of 1 (*very*) to 3 (*not at all*). The items in the scale were reverse-scored, so that higher scores reflected higher perceived social status among peers. Cronbach's alpha for the scale in eighth grade was .65 and .64 in 10th grade. Coefficient alpha for the peer status scale in eighth grade was .65 for the total sample, ranging from .53 to .69 for the four ethnic groups; and coefficient alpha for the peer status scale in tenth grade was .64 for the total sample, ranging from .58 to .65 for the four ethnic groups. See Table 1 for descriptive statistics for this measure.

Analytic Strategy

To replicate the results from the ECLS-K study, we conducted the same set of regression analyses as in Study 1 to test the relationship between locus of control and social status among peers in 8th grade and 2 years later in 10th grade.

Results

Results for 8th Grade

To test the hypothesis that there is an association of peer status and locus of control, gender, and ethnicity, social status among peers was regressed on the aforementioned variables (see Table 3). Results indicate that students with an internal locus of control orientation had higher perceived peer status than those with an external locus of control orientation ($b = .12$, $p < .001$). There was a main effect of ethnicity, with Asian Americans ($b = -.05$, $p < .01$) reporting lower social status among peers than Caucasian students. African American students reported

Table 3 NELS:88 regressions predicting perceived social status among peers in 8th grade (N = 12,176)

Predicting social status among peers	Model 1 *b* (SE)	Model 2 *b* (SE)
Locus of control	.12 (.01)***	.12 (.01)***
Hispanic	−.06 (.01)***	−.06 (.01)***
Asian	−.05 (.02)**	−.05 (.02)**
Black	.09 (.01)***	.08 (.01)***
Gender	−.11 (.01)***	−.11 (.01)***
Hispanic × locus of control	–	−.05 (.02)**
Asian × locus of control	–	−.02 (.02)
Black × locus of control	–	−.09 (.02)***

* $p < .05$; ** $p < .01$; *** $p < .001$

Caucasian = reference group

Table 4 NELS:88 regressions predicting perceived social status among peers in 10th grade (N = 11,103)

Predicting social status among peers	Model 1 *b* (SE)	Model 2 *b* (SE)
Locus of control	.11 (.01)***	.12 (.01)***
Hispanic	−.06 (.01)***	−.06 (.01)***
Asian	−.03 (.02)	−.03 (.02)
Black	.06 (.01)***	.05 (.01)***
Gender	−.13 (.01)***	−.13 (.01)***
Hispanic × locus of control	–	−.05 (.02)**
Asian × locus of control	–	−.06 (.02)*
Black × locus of control	–	−.09 (.02)***

* $p < .05$; ** $p < .01$; *** $p < .001$

Caucasian = reference group

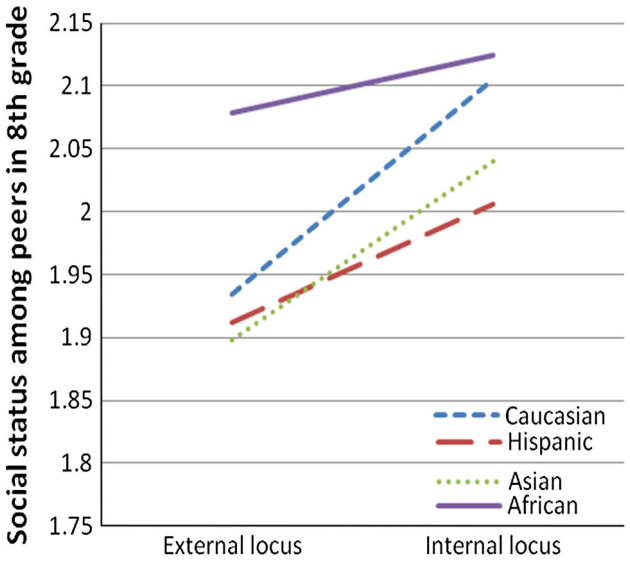

Fig. 2 Relationship of ethnicity and locus of control to perceived social status in 8th grade: (NELS:88). Regression lines were plotted with x-axis defined as −1SD = external locus of control and +1SD = internal locus of control

higher social status among peers than Caucasian students ($b = .09$, $p < .001$). Although tangential to our central research question, males reported higher peer status than did females ($b = -.11$, $p < .001$).

To test whether the association of peer status and locus of control differed among Caucasian, Asian, Hispanic, and African American adolescents, we added the interaction between locus of control and ethnicity to the previously-described model. As shown in Fig. 2, the association between locus of control and peer status differed by ethnicity, such that the slope for locus of control and peer status for Caucasians was significantly steeper than it was for Hispanic adolescents ($b = -.05$, $p < .01$) and African American adolescents ($b = -.09$, $p < .001$). In other words, locus of control was more strongly associated with contemporaneously-reported peer status for Caucasian youth than for Hispanic and Black youth.

Finally, SES, percent minority students, and generational status were included as control variables. Results showed that SES was positively associated with peer status ($b = .05$, $p < .001$), and the percentage of minority students in a given school was negatively associated with peer status ($b = -.01$, $p < .01$). Generational status was not a significant predictor ($b = -.04$, $p = .09$). Ethnicity-by-locus of control interactions remained significant for Hispanics relative to Caucasians ($b = -.04$, $p < .01$) and African Americans relative to Caucasians ($b = -.07$, $p < .001$).

Results for 10th Grade

To test whether the association between locus of control and peer status holds in 10th grade, social status among peers was regressed on locus of control, gender, and ethnicity (see Table 4). Similar to the results in 8th grade, students with a more internal locus of control had higher perceived peer status than those with a more external locus of control ($b = .11$, $p < .001$). Asian Americans ($b = -.04$, $p < .05$), but not Hispanics, reported lower social status among peers than did Caucasian students. African American students reported higher social status among peers than Caucasian students ($b = .06$, $p < .001$). As in Study 1, males reported higher perceived peer status than did females ($b = -.13$, $p < .001$).

To examine the association of peer status and locus of control among Asian American, Hispanic, and Caucasian adolescents, we included an interaction between locus of control and ethnicity. Results showed significant interactions for ethnicity and locus of control in relation to peer status for African Americans compared to Caucasians

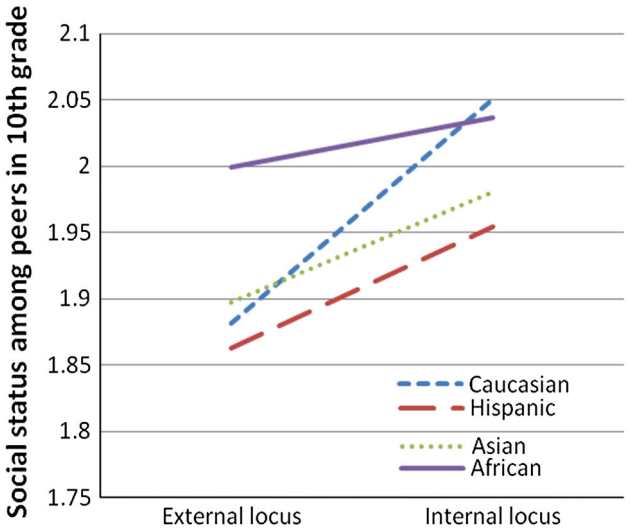

Fig. 3 Relationship of ethnicity and locus of control to perceived social status in 10th grade: (NELS:88). Regression lines were plotted with x-axis defined as −1SD = External locus of control and +1SD = Internal locus of control

($b = -.09$, $p < .001$), Asians compared to Caucasians ($b = -.06$, $p < .05$) and Hispanics compared to Caucasians ($b = -.05$, $p < .001$), such that the slope for locus of control and peer status for Caucasians was significantly steeper than it was for Asian, Hispanic, and African American adolescents (see Fig. 3). These findings indicate that locus of control was more strongly associated with social status among peers for Caucasian than for Hispanic, Asian, and African American adolescents.

Results of the additional analysis including SES, percent minority students, and generational status were also similar to those for the 8th grade dataset. SES was positively associated with peer status ($b = .06$, $p < .001$), and the percentage of minority students in a given school was negatively associated with peer status ($b = -.01$, $p < .01$). Generational status was not significantly associated with peer status ($b = -.02$, $p = .33$). Ethnicity-by-locus of control interactions remained significant for Hispanics relative to Caucasians ($b = -.05$, $p < .01$), Asians relative to Caucasians ($b = -.07$, $p < .01$), and African Americans relative to Caucasians ($b = -.10$, $p < .001$).

Discussion

Previous research has shown that locus of control plays an important role in adolescents' academic achievement and adjustment (Mühlig-Versen et al. 2012; Strayhorn 2010), but little is known about how culture may moderate the relationship between locus of control and peer relationships. The objective of the present pair of studies was to examine the role that locus of control plays in peer relationships among adolescents from different ethnic backgrounds. Using two nationally representative datasets, ECLS-K and NELS, we examined the effect of locus of control on peer acceptance and social status among peers for Caucasian, Hispanic, Asian, and African American adolescents. Our results attest to the importance of examining cultural norms and values among different groups and investigating how these norms and values may differentially affect relationships between locus of control and peer relationships.

This study confirms previous findings in the literature that there is a relationship between locus of control and social relationships. Previous studies have shown that individuals with a more internal of locus orientation fare better in the social domain (Crozier 2011; Lam and Mizerski 2005; Mühlig-Versen et al. 2012) and individuals with a more external locus of control have poorer interpersonal relationships (Martin et al. 2005; Osterman et al. 1999; Slee 1993). Most of the previous studies were conducted with either children or adults and relatively small samples. This study extended the findings to adolescents in two nationally representative samples as well as across two aspects of peer relationships (peer acceptance and social status). Consistent with the previous studies, we also found that locus of control was significantly associated with peer relationships.

Previous literature suggests that cultural values can influence one's perception of control over one's social environment. For example, it has been suggested that cultures that emphasize autonomy and freedom promote values in individuals that are congruent with an internal locus of control orientation (Hamid 1994; McLaughlin and Saccuzzo 1997; Morris and Peng 1994). Minority groups in the US, in contrast, have been found in some studies to hold a more external locus of control, which is consistent with their collectivistic views (McCabe et al. 2008; Norenzayan, and Lee 2010; Threlfall et al. 2013). Extending this line of research to peer relationships, we found that culture influences the relationship between locus of control and peer relationships. Having an internal locus of control was particularly important for Caucasians' relationships with peers compared to those of Hispanic, Asian, and African Americans. These results were consistent across both datasets as well as for both 8th grade and 10th grade time points in the NELS study, and they remained significant after we controlled for potential covariates such as family SES, adolescents' generational status, and percentage of minority students at school. We therefore speculate that general cultural values, such as individualism and collectivism, may influence perceptions of the extent of control one has over one's social relationships. For Caucasian adolescents, an internal locus of control may lead adolescents to be agentic and to show initiative in peer

relations (McCullough et al. 1994), which in turn may lead to higher social status and greater peer acceptance. However, for African American, Hispanic, and Asian adolescents, an internal locus of control in peer relationships may conflict with cultural values, leading them to see their own and peers' agentic attitudes and behavior as a threat to positive relationships in the peer group—especially, perhaps, in relationships with their peers of their same ethnicity, and thus leading to differential experiences in peer relationships (Shweder et al. 2006; Way 2006; Wheeless et al. 1986). An alternative explanation is that external locus of control may have developed as a coping mechanism among minority youths in response to social threats, such as overt and perceived discrimination (Burgess and Brown 2000; Dyal 1984). The weaker association between locus of control and peer relationships in minority groups than in the majority group suggests that an external locus of control may not be as detrimental to the minority groups' social well-being as to that of Caucasians. Along similar lines, O'Connor and Shimizu (2002) demonstrated that Japanese students had a lower sense of personal control than British students, but a lower sense of personal control was only associated with higher stress, anxiety, and negative mood among the British students. Taken together, these findings suggest that culture plays an important role in locus of control and its influence on peer relationships. Future research is needed to explicate the mechanisms involved, such as the two we speculated above (i.e., minority groups' cultural value of collectivism and group harmony, or a mechanism of coping with majority's discrimination).

Four limitations of the present study should be noted. First, the study relied on datasets with different measures of peer relationships. Future studies should examine the relationship between *peer acceptance* and *peer status* within the same model and investigate whether the two aspects of peer relations may be differentially affected by locus of control. Second, the current study used a general measure of locus of control. Future research should examine peer relationships using a domain-specific measure of locus of control—a measure that focuses on the degree to which adolescents view their "success" (or lack of success) in peer relations as a consequence of their own attributes and behaviors versus the attitudes and actions of others or of other external factors. Another limitation of the study is the relatively low level of internal consistency among the items comprising the measure of perceived social status. Finally, this study was based on self-reports of peer acceptance and status in the peer group. An important next step in this area of research would involve obtaining reports from youth's peers that shed light on their acceptance and social standing in the peer group.

Conclusion

This study demonstrates that the role of locus of control in peer relationships varies across ethnic groups. For European American youth, our study confirmed previous findings of a positive association between internal locus of control and peer relationships. Our study showed that this association was much weaker for minority groups perhaps due to either these groups' cultural orientation towards collectivism and social harmony or their need to cope with discrimination. Given the importance of peer relationships in adolescent development, the present study provides important implications for minority adolescents' social experiences at school. Teachers and other school personnel need to be attentive to the social needs of minority because, for these adolescents, having an internal locus of control may not lead to good peer relationships.

Author contributions HK conceived of the study. HK and CS participated in the statistical analyses of the data. HK, CS, KC, and EG participated in the interpretation of the data and drafted the manuscript. All authors read and approved the final manuscript.

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