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Peer Influence on Ethnic-Racial Identity Development: A Multi-Site Investigation

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The peer context features prominently in theory, and increasingly in empirical research, about ethnic-racial identity (ERI) development, but no studies have assessed peer influence on ERI using methods designed to properly assess peer influence. We examined peer influence on ERI centrality, private, and public regard using longitudinal social network analysis. Data were drawn from two sites: a predominantly Latina/o Southwestern (SW) school ($N = 1034$; $Mage = 12.10$) and a diverse Midwestern (MW) school ($N = 513$; $Mage = 11.99$). Findings showed that peers influenced each other's public regard over time at both sites. However, peer influence on centrality was evident in the SW site, whereas peer influence on private regard was evident in the MW site. Importantly, peer influence was evident after controlling for selection effects. Our integration of developmental, contextual, and social network perspectives offers a fruitful approach to explicate how ERI content may shift in early adolescence as a function of peer influence.

Adolescence is a period marked by greater engagement and time spent with peers (e.g., Larson & Richards, 1991). Despite the central role that peers play in shaping adolescent lives and the documented importance of ethnic-racial identity (ERI) to adolescent development, little is known about how peers influence ERI development. ERI is a meta-construct that reflects one's ethnic background as well as racialized experiences associated with membership in a particular group in the United States (Umaña-Taylor et al., 2014). The omission of peer socialization of ERI stands in sharp contrast to a large body of research that underscores the role of peer influence in broader socioemotional processes, such as the role of peer rejection and acceptance in shaping well-being and later delinquent or criminal behavior (for a review, see Parker, Rubin,

Erath, Wojcslawowicz, & Buskirk, 2006). It is also curious given that diverse theoretic traditions underscore that identity development is a dialectical process through which youth make sense of their ethnic/racial group membership in light of experiences with others (Erikson, 1968; Phinney, 1990; Tajfel & Turner, 1986).

A limited number of scholars have considered the role of peers on ERI development and documented that peers inform youths' understanding of ERI via endorsement of racial/ethnic stereotypes (Way, Santos, Niwa, & Kim-Gerver, 2008) and offer opportunities to discuss ERI-related experiences (e.g., among best friend dyads; Syed & Juan, 2012). Other research has focused on the role of the peer context (i.e., ethnic/racial composition of schools and friendship groups) in shaping ERI development (e.g., Phinney, Romero, Nava, & Huang, 2001; Yip, Douglass, & Shelton, 2013). To the best of our knowledge, no study to date has empirically evaluated whether peers *influence* ERI in adolescent networks after accounting for the role of peer selection. That is, do friends' ERI beliefs become

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more similar to each other over time (influence), or is it simply the case that adolescents tend to gravitate toward similar-minded friends (selection)? This question requires the use of methods that, to date, have not been employed in the ERI research. The current study addresses this critical knowledge gap using longitudinal social network analysis (SNA), which is novel to this field and is designed to parse out peer influence from peer selection processes.

Developing a more nuanced understanding of peer influence in the stability and change of ERI is important because ERI informs the development of youths' sense of self and their self-esteem through the values individuals attribute to their racial/ethnic group membership (e.g., Fuligni, Witkow, & Garcia, 2005; Phinney, 1990; Roberts et al., 1999). Our research has roots in early research on identity development (e.g., Erikson, 1968; Tajfel & Turner, 1986) but draws primarily on the work of Sellers, Smith, Shelton, Rowley, and Chavous (1998) concerning the identity content. Drawing on the previous work by Cross (1991) and Luhtanen and Crocker (1992), Sellers and colleagues proposed a multidimensional model for conceptualizing racial identity among African Americans (Sellers, Rowley, Chavous, Shelton, & Smith, 1997). However, the model and scale incorporate social identity perspectives (e.g., Luhtanen & Crocker, 1992) and allows for the extension of aspects of the original model that are grounded in more general (rather than group-specific) identity concepts to other groups (e.g., Latina/os, Asian Americans; cf. Rivas-Drake, Hughes, & Way, 2009; Yip, 2005). Our focus on ERI content over ERI process (or other dimensions of ERI) is noteworthy in that it allows us to consider both within-person aspects (e.g., how central and positive one feels about one's ERI) as well as between-person aspects of ERI (e.g., how one thinks others view one's group, or public regard), which may be particularly amenable to the influence of messages received in social situations and settings (e.g., friendships, peer interactions).

Although changes in the ERI content may not follow a particular developmental trajectory, how youth construct their ERI content *is* thought to evolve over time as youth are exposed to new ideas about the meaning of their group membership. Thus, changes in the ERI content need to be studied longitudinally (Hughes, Way, & Rivas-Drake, 2011). Following a process-person-context-time (PPCT; Bronfenbrenner, 2005) overarching framing of this investigation, we posit that peer socialization (process) results because of the influence on the ERI content (person characteristic) as the adolescent

becomes more or less similar in the ERI content to his or her friends (context) and that such influence can only be observed over a meaningful period of time. Given this framing, it is necessary to employ a method that will allow us to observe how all the PPCT components function and evolve simultaneously. Though novel to the field, longitudinal SNA is well-suited to this task, as it disentangles the effects of peer network influence from confounding processes of peer selection on any important characteristic, including the ERI (Snijders, Van de Bunt, & Steglich, 2010). For example, adolescents tend to select friends based on similarities such as racial/ethnic background (Leszczensky & Pink, 2015); there is also the possibility that youth may select friends who have similar levels of ERI content. Accordingly, in a longitudinal exploration of peer influence on ERI content, it is important to account for this potential factor in peer selection to provide accurate estimates of peer influence, something we are able to do via the use of longitudinal SNA.

In summary, our main goal is to examine the peer influence on ERI content, while controlling for (a) initial choices of friends of the same ethnic/racial background, (b) similar levels of ERI, and (c) structural processes that are universal to peer networks (e.g., the unique characteristics associated with befriending a friend of a friend vs. a complete stranger). A secondary, and related goal, is to examine how peer influence and selection processes related to ERI vary across two school contexts: a predominantly Latino/a school and a racially and ethnically diverse school. We chose these two sites because they differ on racial/ethnic composition, building on a growing body of research that suggests ERI development may vary as a function of racial/ethnic composition of schools (e.g., Yip et al., 2013), and because it allows us to examine if peer network influence on ERI content operates similarly or differently in each of these sites with distinct racial/ethnic composition. Finally, to accomplish these goals, we draw upon theory and research grounded in identity (e.g., Erikson, 1968; Sellers et al., 1998) and peer influence (Prinstein & Dodge, 2008) processes in youth. We utilize an advanced SNA approach of stochastic actor-based modeling (SABM; Snijders et al., 2010), which disentangles peer influence from peer selection processes.

Developmental Considerations Regarding Peer Context and ERI Development

Adolescents have a need to belong, affiliate, and achieve social status (Baumeister & Leary, 1995).

Along with such needs, during adolescence, youth are developing a more complex sense of self and constructing their identities in the context of social relationships. Erikson (1968) emphasized that identity development is a process of constant negotiation and renegotiation within oneself that is grounded in relationships with others. A long history of theory and scholarship underscores the importance of interpersonal relationships to how individuals view themselves (Mead, 1934; Sullivan, 1947) by noting that people think of themselves at least in part based on the way that they believe others think of them. One of the most well-known is Cooley's (1902) concept of a looking-glass self, which highlighted that individuals experience a process of reflected appraisal in that one's self-concept reflects how one thinks others perceive oneself. With regards to the role of peers in shaping self-appraisal, scholars have emphasized that peers play a key role in shaping development in childhood and adolescence (e.g., Abrams, Van de Vyver, Pelletier, & Cameron, 2015). Thus, given the importance of peers to children and adolescents' social world, these relationships are particularly important to consider in shaping adolescents' emerging sense of self. Indeed, there is evidence that peers are remarkably similar in terms of a broad range of behaviors (e.g., aggressive and risk taking behaviors) and attitudes (e.g., regarding what is accepted or desirable behavior; see Brechwald & Prinstein, 2011, for a review); however, less is known regarding the extent to which peers influence each others' levels of self-concept and identity.

Despite the dearth of research examining peer influence on social identities, there may be several mechanisms through which peers influence each other's ERI development. For example, peer influence may occur via modeling of peer behaviors and attitudes, or normative peer pressure (i.e., a desire to "fit in" in one's peer network). According to a review conducted by Brechwald and Prinstein (2011), one mechanism through which peers are expected to exert influence is by engaging in behaviors and holding attitudes that contribute to a favorable self-identity, further elucidating the links between peer influence and identity. From this perspective, adolescents first learn the norms of their valued peer group and they later establish behaviors and ways of participating in these relationships that affirm these norms. These behaviors, in turn, are typically favorably evaluated by peers, as they are consistent with peer norms. Thus, by aligning with the norms of admired peers, adolescents themselves develop a heightened sense of self and

identity. Research suggests that peer conformity (i.e., aligning and affirming peer norms) may foster a positive self-concept (Gibbons, Gerrard, & Lane, 2003). On the one hand, this research suggests that aligning one's levels of ERI content to that of one's peer group may be desirable because it would lead to consistency in peer norms related to ERI content that might lead to a more positive self-concept. On the other hand, as Brechwald and Prinstein (2011) suggest, different behaviors, attitudes, and self-concepts may be influenced differently by peer norms, and in some cases, anti-conformity to peer norms may reaffirm individuality and freedom from peer norms and expectations.

Empirical Evidence Linking the Peer Context to ERI

To the best of our knowledge, there are no quantitative studies assessing the role of peer network influence on shifts in ERI content (see Rivas-Drake, Umaña-Taylor, Schaefer, & Medina, 2017; for a study of friendship networks and ERI exploration and resolution). Existing quantitative research has focused on peer context characteristics, more generally, such as racial and ethnic composition of schools or friendship groups. Considering the effects of racial and ethnic composition of friendships on ERI development, in a racially and ethnically diverse sample, Phinney et al. (2001) found that frequency of contact with friends of the same ethnicity was positively associated with higher levels of ERI affirmation, belonging, and exploration, even after controlling for the effects of parental cultural practices and language proficiency. Importantly, this study documented that spending more time in the company of co-ethnic peers had a stronger effect on ERI compared with speaking an ethnic language, which underscores the key socializing role of peers in ERI development. Likewise, Kiang, Peterson, and Thompson (2009) reported that adolescents with same- and mixed-ethnicity friends reported greater levels of ethnic centrality than those with friends who were mostly of a different ethnicity. In a longitudinal study of racially and ethnically diverse youth, Kiang, Witkow, Baldelomar, and Fuligni (2010) found that having a greater proportion of friends who are of the same race/ethnicity was associated with higher levels of ethnic and racial belonging and exploration. In terms of friendship selection according to levels of ERI, Hamm (2000) found that African American youth (but not Asian and European American) were more likely to have best friends who were similar to them in terms of

their sense of belonging and feelings about own ethnic/racial group. This small body of quantitative research suggests that the racial and ethnic make-up of peers in school or in friendships may play a role in shaping ERI processes. These studies, however, examine ERI from the perspective of a focal adolescent and do not consider how levels of peers' ERI within a school or friendship network may influence the focal adolescent's levels of ERI, something we undertake in the present study.

Turning to the effects of racial and ethnic composition of schools on ERI development, Yip et al. (2013) used a multi-level integration of school-level racial/ethnic composition, daily diary, and biannual survey data to examine such effects. Yip et al. (2013) found that Asian Americans who reported feeling that their racial identity was important to their sense of self also reported feeling more positive about their racial identity on days when they spent more time among other Asian American peers. Conversely, Asian American students who reported feeling that their racial identity was not important to their sense of self appeared to feel less positive about their racial identity on days when they were around other Asian American peers. But the aforementioned results were qualified such that spending time with same-ethnic peers was only related to feelings about racial identity among youth in schools that were predominantly White or that had no single racial/ethnic majority.

In a distinct but relevant line of inquiry, a growing body of qualitative studies examine the role of friends in shaping ERI processes. There are a number of ethnographic studies that document homophily (i.e., preference for similar others) on race and ethnicity among peers (e.g., Tatum, 2003). Pollock (2004), Carter (2005), and Lee's (1996) ethnographies documented the use of humor, language, style, and dress among friends to convey expectations of ethnic/racial identity expression among adolescents. Using participant observation methods and semi-structured interviews, Way et al. (2008) found that experiences with peers in two schools that had no clear dominant racial/ethnic group majority played a critical role in shaping how youth felt about their ERI. Youths' narratives about their ERI revealed that youth engaged in a process of resistance and accommodation to stereotypes about race/ethnicity projected onto them by their peers and the larger culture. Using a narrative method, Syed (2012) reported that youth were more likely to share stories of racial and ethnic discrimination with peers compared with parents. Taken together, evidence from qualitative studies suggests that

youth navigate racial and ethnic expectations and stereotypes in the context of friendships; these processes may further spur modeling and/or normative influence processes by peers on ERI development.

Although previous work has collectively advanced our understanding of the role of peers, in a general sense, in ERI development, these studies were unable to disentangle peer influence on ERI from the confounding processes of peer selection that is driven by a potential preference for affiliating with peers of the same ethnic/racial background and similar ERI beliefs. Rather, the aforementioned studies examined how static attributes of proximal contexts (e.g., ethnic/racial composition of a peer group or school) may influence levels of ERI. An exception is a recent study (using the same MW sample as in the current study) documenting peer network influence on ERI exploration and resolution in a sample of ethnically diverse youth (Rivas-Drake et al., 2017). Thus, we build on this body of research by exploring the dialectical nature of how youths' ERI may influence the ERI content (i.e., centrality, public and private regard) of their friends using longitudinal SNA approach, a cutting edge method uniquely equipped for the study of peer influence.

Peer Influence on ERI Development: Contributions of Social Network Analysis

The peer group has been viewed as a prominent source of social influence in childhood and adolescence (see recent reviews by Brechwald & Prinstein, 2011 and Dishion & Tipsord, 2011). ERI scholars have posited that the construction of ERI content may be context-dependent (Phinney, 2000) and evolve over time (Hughes et al., 2011). Given that peers are a key context for adolescent development (Larson & Verma, 1999), it is likely that they influence ERI content. Peer relationships are complex social systems, and they are reciprocally linked to developmental outcomes (Parker et al., 2006). This interdependence between peer networks and development poses methodological challenges in that a trajectory of a developmental outcome is contingent on initial choices of friends who subsequently influence development. These initial choices of friends in networks are often driven by preference for affiliating with others of the same ethnic/racial background and gender, for instance (McPherson, Smith-Lovin, & Cook, 2001). Another important contributor to the initial network selection known being network structural processes: These processes

describe how the nature of connections among individuals in networks depends on the nature of their ties with other members of a group (Rivera, Soderstrom, & Uzzi, 2010). One such structural process is *reciprocity*—which refers to the phenomenon that “if you treat me as a friend, I will treat you the same way”—this network structural process is often observed in social networks. Another key process is *transitivity*, which refers to the propensity of individuals to form friendships with friends of friends.

Examining peer influence without controlling for initial peer selection may result in biased findings regarding peer influence (Steglich, Snijders, & Pearson, 2010). Consider an example of how several processes are implicated in the way that ERI content and ethnic/racial background contribute to network selection. Because individuals prefer to affiliate with others who are of the same ethnic/racial background (i.e., racial/ethnic homophily, or the tendency to select friends of the same race/ethnicity; McPherson et al., 2001), it is likely that these friends also exhibit similar levels of ERI (i.e., levels of ERI covary with selection of peers according to race/ethnicity). These initial similarities (on race/ethnicity and ERI) are further amplified via *transitivity*, as when a friend of a friend becomes a friend. Thus, at least two distinct social processes occur in this scenario: Transitivity and ethnic/racial homophily. If we were to examine peer influence on ERI without controlling for ethnic/racial and ERI homophily and transitivity, we would overestimate peer influence on ERI (for reviews see, Snijders et al., 2011; Steglich et al., 2010; Veenstra & Steglich, 2012).

A key benefit of employing SABM to study peer network influence over other methods, such as actor-partner interdependence modeling techniques (APIM; Kenny, Kashy, & Cook, 2006), is that SABM methods allow us to consider the effects of *multiple* friends of the focal individual and not just one best friend, as in APIM techniques that are limited to a dyad as the unit of analysis (i.e., individuals can only be present in the data one time—either as an actor, or a partner). SABM conceptualizes friendship network as composed of dyadic friendship ties, thus individuals are not restricted to be a member of only one peer group (as is required in socio-cognitive mapping, Kindermann, 2007), and these friendship ties change over time. Thus, all friends whom the focal individual nominates are considered to be in their friendship network, and peer influence is estimated by considering how the focal individual changes his/her behavior over time as a function of that behavior's levels in his/her

friendship network. In short, a longitudinal SNA approach (i.e., SABM) allows us to obtain unbiased estimates of peer influence from multiple peers, which is not feasible in traditional statistical methods.

Applied to the present study, the key advantage of SABM is that the examination of peer influence effects on ERI content is conducted while controlling for homophily (i.e., preference for similarity) on ERI content and ethnic/racial composition in friendship networks as well as network structural effects. The benefits of SABM have been largely documented (Veenstra, Dijkstra, Steglich, & Van Zalk, 2013), and despite being relatively new in developmental research, there is a growing body of studies that are translating the benefits of SABM to developmental science (e.g., Martin et al., 2013). This approach has been used to unravel complex and reciprocal links between peer networks and various developmental outcomes, including aggressive behavior (Sijtsema et al., 2010); complex interplay between bullying, victimization, and defending (Huitsing, Snijders, Van Duijn, & Veenstra, 2014); academic achievement and truancy (Rambaran et al., 2016); feelings of xenophobia and tolerance toward immigrants (van Zalk, Kerr, van Zalk, & Stattin, 2012); and depressive symptoms (Schaefer, Kornienko, & Fox, 2011; van Zalk, Kerr, Branje, Stattin, & Meeus, 2010).

The Current Study

Our primary goal was to examine the extent to which peers influence each others' ERI centrality, private regard, and public regard over time. ERI scholars have long argued that the construction of identity is context dependent (Phinney, 2000; Sellers et al., 1998; Umaña-Taylor, 2004). Given that peers are a key social context for childhood and adolescent development (Larson & Verma, 1999) and that one's peer group is considered a prominent source of social influence in childhood as well as adolescence (for reviews, see Brechwald & Prinstein, 2011; Dishion & Tipsord, 2011), peers are likely to influence adolescents' beliefs about the significance and meaning of ERI (i.e., centrality, regard). Yet, peer relationships are complex and evolving social systems (Steglich et al., 2010) and the potential interdependence between peer network dynamics and evolving ERI content poses methodological challenges. Specifically, to understand the extent to which ERI was influenced by an individual's peer network, we needed to control for how this network came to be and describe the network selection

processes. The present study examined peer network influence using longitudinal SNA methods, in particular, stochastic actor-based modeling (SABM; Snijders et al., 2010), which is an optimal tool for studying the co-evolution of networks and behaviors. Employing SABM (Snijders et al., 2010) provided key advantages for this study of peer influence on ERI dimensions because it estimated peer influence on changes in ERI while controlling for a host of confounding processes, including: (a) initial selection into friendships based on similar levels of ERI, ethnic-racial background, gender, and (b) network structural processes (e.g., reciprocity).

Further, we examined these processes in two distinct school settings for several reasons. It may be that peer selection and socialization processes related to ERI content vary across schools. A multi-site approach permitted us to include a conceptual replication component within the larger investigation, following García Coll’s (2015) call for such replications in the field. This helped provide an initial sense of the robustness of our findings. More broadly, a multi-site approach helps researchers in the field consider the potential boundaries of the extent to which peer influence is seen in different places and types of contexts; that is, should we think of peer influence on ERI as a generalized process? Thus, the present investigation helped provide foundational information regarding the generalizability and replicability of results in two distinct school sites.

Method

Participants

We utilized data from a middle school in the U.S. Southwest (SW) and another in the Midwest

(MW). The SW school ($N = 1,034$) was racially and ethnically diverse but the largest group was Latina/o (53.2%). The MW school ($N = 513$) was also racially and ethnically diverse but there was no single majority group. Full sample descriptive information for each site is provided in Table 1.

Procedure

Southwest Site

Data at this site were collected as a part of a larger study investigating identity and socioemotional development. The school agreed to act *in loco parentis* of the study, and therefore a passive consent procedure in which parents were given the option to opt their child out of participation was employed. The study was introduced via an informational letter sent home to parents with the option to opt out of the study. Surveys were administered in early fall (Wave 1) and late spring semester (Wave 2) of one academic year (October 2011–April/May 2012). As a way to thank participants for completing the survey, we gave each participant a small gift (i.e., a water bottle or pen). It took students approximately 90 min to complete the survey at each wave. Surveys were administered by two-to-four research assistants per classroom. Once surveys were completed, they were deidentified and participants were assigned an ID. The study was approved by the Arizona State University’s Institutional Review Board. In the SW site, in wave 1, 94.67% of students at the school completed our survey. In terms of attrition, of the students who participated in Wave 1, 87.46% of students were retained in Wave 2.

Table 1
Sample Description

	Southwest site	Midwest site
Sample size	1,034	513
Mean age (<i>SD</i>)	12.10 (.99)	11.99 (.93)
<i>n</i> by grade	364 (6th), 330 (7th), 340 (8th)	165 (6th), 182 (7th), 166 (8th)
Ethnic/racial background	13.8% White; 18.6% African American; 53.2% Latina/o; 8.6% Native American; 7.9% Other	30% White; 28% African American; 14% Latina/o; 1% Native American; 6% Other; 8% Multiracial; 8% Asian American or Pacific Islander
Sex	49% girls	47% girls
Participation within grade	89% of 6th 92% of 7th 94% of 8th	92% of 6th 94% of 7th 90% of 8th
Free and reduced lunch status	84%	n/a

Midwest Site

Data were collected as part of the MW school's efforts to understand academic, social, and emotional development among its students. Student surveys were administered during homeroom; students were assured of the confidentiality of their responses (i.e., with the statement that "your individual answers will be private and will never be shared with anyone at this school" on the survey cover sheet). Subsequently, surveys were deidentified: All names were removed and replaced with ID codes by an external consultant who is not affiliated with the university research team. After this deidentification process, the surveys were given to the university team for analysis. As in the SW site, surveys were administered in fall (Wave 1) and spring semester (Wave 2) of an academic year (October 2014–March 2015). The project was determined to be "Exempt" by the University of Michigan Institutional Review Board. In the MW site, in Wave 1, 91.77% participated in the study and completed our survey. In terms of attrition, of students who participated in Wave 1, we retained 88% in Wave 2.

Measures

Ethnic-Racial Identity

ERI was measured using adapted subscales of the *Multidimensional Inventory of Black Identity-Teen* (MIBI-T; Scottham, Sellers, & Nguyen, 2008) across both sites. These subscales have been shown reliable and valid in prior studies of ethnically and racially diverse youth, including youth of similar age in schools that have a dominant Latina/o population, as in our SW site, as well as in schools that are more racially and ethnically diverse, as in our MW site (see Hughes et al., 2011). Although ERI studies typically focus on racial and ethnic minorities, scholars have brought attention to the importance of examining ERI dimensions among White youth in settings where they are not the numerical majority, as this condition may make race and ethnicity more salient to such youth relative to majority White settings, something we undertake in the present study (e.g., Rivas-Drake et al., 2009; see also Hughes, Witherspoon, Rivas-Drake, & West-Bey, 2009). The modifications we made to the MIBI-T were minor in that we replaced references to African Americans in the original measure by stating no particular ethnic or racial group and leaving it open to the participant's own group; a similarly

modified MIBI-T has been used with White youth in previous research (e.g., Rivas-Drake et al., 2009). *Centrality* consists of three items that assess the extent to which participants feel that their ERI is an important part of their self-definition (e.g., "If I were to describe myself to someone, one of the first things that I would tell them is my ethnicity"). *Private regard* consists of three items that assess how positively students felt about their group (e.g., "I feel good about people from my ethnic group"), whereas *public regard* consists of three items that assess how positively students felt others viewed their group (e.g., "People of other ethnicities think that people from my ethnic group have made important contributions"). For all ERI items, response options ranged from (1) *strongly disagree* to (5) *strongly agree*, and higher values indicate more centrality, higher private regard, and more positive public regard, respectively. We created composite measures by taking an average of items comprising each scale. These scales were found to be internally consistent at both sites: centrality (SW W1 $\alpha = .85$, W2 $\alpha = .86$; NW W1 $\alpha = .72$, W2 $\alpha = .76$), private regard (SW W1 $\alpha = .86$, W2 $\alpha = .89$; NW W1 $\alpha = .87$, W2 $\alpha = .88$), public regard (SW W1 $\alpha = .75$, W2 $\alpha = .81$; NW W1 $\alpha = .75$, W2 $\alpha = .69$). Adequate internal consistency (Cronbach's $\alpha > .70$) was observed across racial/ethnic groups with few exceptions. Notably, while there were some exceptions, there was evidence of internal consistency in each ERI measure in at least one wave for each of the main groups being studied (i.e., African American, Whites, Native American, Latina/o, and Asian American/Pacific Islander). The readers are referred to Supplementary Materials and Table S1 for full measure information organized by site, wave, and racial/ethnic groups.

Peer Networks

At each site, within-grade friendship nomination data were used to construct peer (friendship) networks. At the SW site, participants received a roster listing all students from their grade and were asked to nominate up to 10 friends. At the MW site, students were asked to list their friends, or who they "hang out with and talk to" in their grade, which is a common name generation approach among youth in this age group (Ryan, 2001); nominations were unlimited. These nomination data were used to construct network matrices for each grade students for Wave 1 and Wave 2 such that these matrices contained unilateral (i.e., A nominated B) friendship nominations that were coded in a binary fashion

such that 1 denoted that a friendship tie existed between A and B, and 0 indicated no tie existed between A and B.

Analytical Strategy

Our analytical strategy entails the use of SABM approach to examine peer influence on the ERI content while controlling for youth's selecting friends of the same ethnic-racial background and similar levels of ERI as well as network structural processes. It is important to note that because SABM requires discrete ordinal behavioral outcome variables, we recoded each of the continuous ERI composites into ordinal variables. Each was recoded to six levels, using increments of .75 of the continuous z -score (i.e., $z < -1.5$, $-1.5 \leq z < -0.75$, $-0.75 \leq z < 0$, $0 \leq z < 0.75$, $0.75 \leq z < 1.5$, $z \geq 1.5$). We provide a brief model overview, definition of effects, and modeling approach below.

SABM Overview

The SABM consists of two submodels that are simultaneously estimated (Snijders et al., 2010). The *network submodel* tests the likelihood of friendship ties between adolescents based on various network selection processes. The *behavior submodel* captures effects related to changes in ERI over time. The model estimates change between observed networks using a continuous-time Markov process that allows for a sequence of a large number of unobserved micro-steps to be taken between observation points (one network tie or a behavior can be changed in one micro-step). An evaluation function describes the "rules" that guide actors' decisions, which are the model parameters for the hypothesized peer selection and influence effects. A rate function determines how many opportunities for change occurs between waves. Model parameters are estimated with the method of moments procedure, which uses a series of simulations to adjust the model parameters to improve model fit. Model parameters are tested for significance based on a t -ratio (estimate divided by the standard error).

Peer Influence Effects on ERI Dimensions

For the ERI dynamics submodel, which allows us to model the role of friends for peer influence on ERI content, we tested two effects that represent feedback on the three dimensions of ERI. The *linear*

shape effect expresses the basic tendency toward higher or lower values of ERI, whereas the *quadratic shape* effect allows for the self-reinforcement of ERI that can result in a bimodal distribution of ERI (underdispersion if quadratic effect is negative or overdispersion if positive). We then estimated peer influence on each of the three ERI dimensions using the *total similarity effect*, which predicts changes in ERI based upon how similar an adolescent's ERI is to the *total levels* of ERI across all of her friends. A positive effect indicates that changes in ERI bring an adolescent closer to her friends' level of ERI. This effect is weighted by the total number of friends, and thus considers the overall level of a particular ERI dimension in individual's friendship network.

Network Selection Dynamics

For the network submodel, which estimates contributions of confounding processes of network selection to obtain unbiased estimates of peer influence on ERI dimensions, we considered three types of effects on network selection for each ERI dimension. The *ERI ego* effect estimates the effect of a given ERI dimension on an adolescent's tendency to nominate others as friends (i.e., gregariousness). A positive effect would indicate that adolescents with greater levels of ERI nominated more friends over time. The *ERI alter* effect describes how an ERI dimension is associated with adolescents' likelihood of receiving nominations from peers (i.e., popularity or prestige within the friendship network). A positive effect would indicate that adolescents with greater levels of ERI dimensions were more likely to be nominated as friends by their peers. The *ERI similarity* effect estimates the tendency of adolescents to nominate friends who have similar levels of respective ERI self-construct (measured by their absolute difference). A positive effect of ERI similarity would mean that friendships were more likely among adolescents with similar levels of ERI. Additionally, we estimated the effect of similarity on gender, ethnic/racial background, being U.S.-born, and free-reduced lunch status (available for SW site only) on the likelihood of network selection. We included parameters for several structural processes: *reciprocity* captured whether adolescents were more likely to nominate peers who had nominated them; *transitive triplets* estimated whether ties were more likely among adolescents as the number of mutual friends increased; *indegree popularity* estimated whether students who received more nominations

were more likely to receive additional nominations over time; and *outdegree popularity* estimated whether students who sent out more nominations were more likely to receive more nominations. We used a square-root transformation of these popularity effects to give greater weight to differences in popularity at low versus high levels. We also included the effects for *outdegree* (number of friendships in the network) and *network rate*, which represented network change opportunities.

Modeling Approach

Friendship network selection and influence processes were examined using *RSiena* 4.0 (version 1.1-274; Ripley, Snijders, & Preciado, 2016), which is implemented in *R* (version 3.1; R-Project; <http://www.r-project.org>). To gain sufficient power to detect peer influence on ERI dimensions, we used a multi-group option (Ripley et al., 2016). This approach was used to assemble one multigroup object across sixth, seventh, and eighth grades for the SW site and another multigroup object across the three grades for the MW site. Whereas the multigroup option has the advantage of boosting the power to detect peer influence effects, it assumes that all parameter estimates are the same across three grades. We followed a recommended procedure of forward-model selection approach (Lospinoso et al., 2011) and examined grade-related heterogeneity by including dummies into our models (i.e., Dummy 1 compared effect for seventh grade with that of sixth grade, Dummy 2 compared effect for eighth grade with that for seventh grade). We conducted the joint score-type tests for grade-related heterogeneity of the final models to show that parameter estimates were homogeneous and discuss the grade differences in parameters in the supplementary analyses.

Results

Preliminary Analyses

We explored the differences in responses to ERI measures across race/ethnicity. In the SW site, results from a one-way analysis of variance (ANOVA) revealed significant differences in terms of ERI centrality at Wave 1, $F(4, 939) = 4.93$, $p < .01$, and Wave 2, $F(4, 885) = 4.91$, $p < .01$. Tukey post hoc analyses revealed that in both Waves, Latina/os reported higher levels of ERI centrality compared with Whites, and in Wave 2, African Americans reported higher levels of ERI

centrality than Whites. There was also a significant difference in terms of ERI public regard in Wave 2, $F(4, 884) = 2.59$, $p < .05$, with Latina/os reporting higher levels compared with Whites. Finally, results revealed significant differences in terms of ERI private regard at wave 1, $F(4, 938) = 10.47$, $p < .01$, and wave 2, $F(4, 884) = 10.11$, $p < .01$. Tukey post hoc analyses revealed that in both waves Whites reported lower levels of private regard compared with all other racial/ethnic groups.

In the MW site, results from a one-way ANOVA exploring mean level differences in the ERI measures across racial/ethnic groups revealed significant differences in terms of ERI centrality at Wave 1, $F(6, 424) = 2.93$, $p = .008$, and Wave 2, $F(6, 377) = 3.72$, $p = .001$, ERI private regard at Wave 1, $F(6, 429) = 2.46$, $p < .05$, and ERI public regard at Wave 2, $F(6, 377) = 2.97$, $p = .008$. Tukey post hoc analysis revealed that in Wave 1, White youth reported significantly lower levels of ERI centrality than youth in the "other" category and had marginally lower levels of private regard than youth in the "other" category ($p = .05$). At Wave 2, White youth reported significantly lower levels of ERI centrality compared with African American youth. Asian American youth reported having significantly higher levels of public regard than African American youth and marginally higher public regard than Latina/o youth ($p = .06$). No other significant differences were detected in the MW site.

We also explored whether there are differences in response to the ERI measures between Waves 1 and 2. In the SW site, results from a paired samples *t*-test revealed that there were significant differences in ERI centrality at Wave 1 ($M = 3.61$, $SD = .84$) and Wave 2 ($M = 3.40$, $SD = .87$); $t(805) = 6.50$, $p = .000$; private regard at Wave 1 ($M = 4.26$, $SD = .76$) and Wave 2 ($M = 4.11$, $SD = .82$); $t(803) = 4.72$, $p = .002$; and public regard at Wave 1 ($M = 3.44$, $SD = .85$) and Wave 2 ($M = 3.34$, $SD = .88$); $t(803) = 3.12$, $p = .000$. Thus, there was a decline in the levels of all three ERI measures from Wave 1 to Wave 2 in the SW site. In the MW site, however, paired samples *t*-tests revealed no significant differences between W1 and W2 ERI centrality ($M = 3.64$, $SD = .81$ and $M = 3.61$, $SD = .90$, respectively); $t(340) = 0.72$, $p = .47$; W1 and W2 private regard ($M = 4.19$, $SD = .74$ and $M = 4.18$, $SD = .80$, respectively); $t(342) = 0.20$, $p = .85$; or W1 and W2 public regard ($M = 3.62$, $SD = .74$ and $M = 3.55$, $SD = .81$, respectively); $t(340) = 1.57$, $p = .12$. The readers are referred to Supplementary Materials and Table S1 for mean and standard deviation information per wave for the overall sample and for each racial/

ethnic group within sites. Finally, we conducted correlations among the ERI scales. In the SW site, correlations among ERI measures ranged from .17 to .54. In the MW site, correlations among ERI measures ranged from .27 to .70. The readers are referred to Supplementary Materials and Table S2 for the full correlation table among ERI measures in each site.

Considering network characteristics for the SW and MW sites, our descriptive results on the number of students per cohort, number of ties and proportion of missing ties are presented in Supplementary Materials and Table S3.

Peer Influence on ERI

Our primary goal was to assess peer influence on ERI content at each site (Table 2, Peer Influence Effects on ERI). The respective *total similarity effects* estimated how changes in the focal youth's levels

Table 2
SABM Results of Peer Influence on ERI Development

Peer influence effects on ERI	SW site			MW site		
	Estimate	SE	p	Estimate	SE	p
Effects predicting ERI centrality						
Rate (6th grade) ^a	4.938	0.674		5.160	1.185	
Rate (7th grade)	3.550	0.447		3.300	0.548	
Rate (8th grade)	2.984	0.355		3.381	0.721	
Linear shape	0.040	0.026		0.018	0.038	
Quadratic shape	-0.002	0.037		-0.058	0.042	
Peer influence ERI centrality						
Total similarity	0.360	0.110	***	0.304	0.177	
Effects predicting ERI public regard						
Rate (6th grade)	5.111	0.855		2.895	0.535	
Rate (7th grade)	4.471	0.594		4.083	0.771	
Rate (8th grade)	3.340	0.392		3.555	0.838	
Linear shape	0.001	0.026		-0.011	0.042	
Quadratic shape	0.053	0.037		-0.026	0.045	
Peer influence ERI public regard						
Total similarity	0.474	0.116	***	0.449	0.199	*
Effects predicting ERI private regard						
Rate (6th grade)	4.123	0.606		5.856	1.520	
Rate (7th grade)	4.334	0.630		2.305	0.383	
Rate (8th grade)	4.379	0.646		2.308	0.476	
Linear shape	0.147	0.031	***	0.071	0.046	
Quadratic shape	-0.003	0.043		-0.020	0.045	
Peer influence ERI private regard						
Total similarity	0.025	0.087		0.349	0.173	*

Note. Peer influence on ERI: *total similarity effect*, which predicts changes in ERI based upon how similar an adolescent's ERI becomes to the *total levels* of ERI across all of his/her friends. See *Model Effects* section for definition of the remaining effects. SW = Southwest; MW = Midwest. ^aRates describe opportunities for change in ERI content. * $p < .05$. *** $p < .001$ (all two-tailed).

of ERI were associated with his or her friends' ERI levels. We observed significant and positive peer network influence on ERI centrality (est. = 0.360, $p < .001$) and ERI public regard (est. = 0.474, $p < .001$) in the SW site and ERI public regard (est. = 0.449, $p < .05$) and private regard (est. = 0.349, $p < .01$) in the MW site across the three grade cohorts. These findings suggest that over time, adolescents' levels of each of these ERI content dimensions became similar to those reported by their friends. Thus, in response to our primary question, our study reveals evidence that peers influence adolescents' ERI content over time.

Finally, we found only one significant difference in the magnitude of peer influence as a function of ethnic/racial group membership. Specifically, only in MW site, African-American youth were less susceptible to peer influence on ERI private regard levels from their friends, compared to their White counterparts. Readers are referred to Supplementary Materials and Table S4 for this follow-up examination of ethnic/racial group differences in the magnitude of peer influence on ERI content.

Controlling for Network Selection Dynamics

To arrive at the above findings and obtain unbiased estimates, we statistically controlled (by estimating them in the same model) for network selection on ERI components (i.e., how ERI is associated with initial selection of friends). In doing so, we were also able to assess how the three ERI dimensions were associated with network selection (Table 2, Network Selection Dynamics, ERI Effects on Network Selection). Our results showed that only in the SW site, adolescents befriended others with similar levels of ERI centrality, suggesting that preference for similarity in ERI centrality (or ERI centrality homophily) increased the likelihood of friendship tie formation (est. = 0.261, $p < .01$). Because the outcome for network selection sub-model of the SABM is the likelihood of a binary social tie, we can calculate odds ratio (OR) of network tie selection by exponentiating the coefficient, that is, $\exp(.261) = 1.298$. Thus, the ERI centrality homophily increased the odds of becoming a friend by nearly 30%. None of the ERI content dimensions were significantly predictive of peer network selection in the MW site.

When studying ERI development within peer networks, we need to account for several static demographic attributes (e.g., gender, race/ethnicity), which are typically sources of segregation in friendship networks (Table 2, Network Selection

Table 3

SABM Results of Peer Selection on ERI, Confounding Attributes, and Structural Processes

Network selection dynamics	SW site			MW site		
	Estimate	SE	p	Estimate	SE	p
ERI effects on network selection						
Centrality alter	−0.026	0.013		−0.001	0.033	
Centrality ego	−0.012	0.015		−0.015	0.033	
Centrality similarity	0.261	0.130	*	0.279	0.267	
Pub. Reg. alter	−0.003	0.013		0.002	0.027	
Pub. Reg. ego	0.015	0.015		0.023	0.028	
Pub. Reg. similarity	0.149	0.141		−0.313	0.250	
Priv. Reg. alter	0.029	0.018		0.043	0.034	
Priv. Reg. ego	0.010	0.018		−0.025	0.036	
Priv. Reg. similarity	−0.085	0.131		0.104	0.212	
Confounding network selection						
White similarity	0.017	0.032		0.157	0.044	***
African Am similarity	0.113	0.029	***	0.219	0.043	***
Latina/o similarity	0.169	0.026	***	0.106	0.054	
Other similarity	−0.013	0.045		—	—	—
Native Am similarity	0.066	0.035		—	—	—
Other/Native Am similarity	—	—	—	0.271	0.077	***
Asian Pacific Islander similarity	—	—	—	−0.077	0.061	
Multiracial similarity	—	—	—	0.173	0.060	***
Male similarity	0.494	0.025	***	0.468	0.044	***
U.S.-born similarity	0.031	0.031		0.094	0.065	
Free-Reduced Lunch similarity	−0.056	0.030		—	—	—
Network structural processes						
Constant network rate (6th grade) ^a	30.846	1.421		15.416	1.075	
Constant network rate (7th grade)	21.463	0.993		12.858	0.811	
Constant network rate (8th grade)	21.638	0.771		12.015	0.732	
Outdegree (density)	−2.065	0.078	***	−2.310	0.104	***
Reciprocity	1.978	0.044	***	2.324	0.074	***
Transitive triplets	0.380	0.016	***	0.583	0.025	***
Transitive reciprocated triplets	−0.203	0.026	***	−0.425	0.037	***
Indegree—popularity (sqrt)	0.245	0.016	***	0.345	0.036	***
Outdegree—popularity (sqrt)	−0.447	0.034	***	−0.689	0.055	***

Note. Network selection effects related to ERI (and other individual attributes): *ERI alter* = effect of ERI on number of incoming ties; *ERI ego* = effect of ERI on number of outgoing ties; *ERI similarity* = tendency of adolescents to nominate friends who have similar levels of ERI. Similarity for confounding network selection effects is defined in the same manner. SW = Southwest; MW = Midwest; Am = American; Centrality = ERI centrality; Priv. Reg. = ERI private regard; Pub. Reg. = ERI public regard. ^aRates describe opportunities for change in network ties. * $p < .05$. *** $p < .001$ (all two-tailed).

Dynamics, Confounding Network Selection). Thus, our models included such controls and revealed significant homophily effects, as is typically found (e.g., Goodreau, Kitts, & Morris, 2009), on several categories of ethnic/racial background. Specifically, we found that friendship ties were more likely to form over time if both students were African American (est. = 0.113, $p < .001$; OR = 1.12, or 12% increase in odds of a friendship) and Latino/a (est. = 0.169, $p < .001$; OR = 1.18, or 18% increase in odds of a friendship) in the SW site, and if both students were White (est. = 0.157, $p < .001$; OR = 1.17,

or 17% increase in odds of a friendship), African American (est. = 0.219, $p < .001$; OR = 1.24, or 24% increase in odds of a friendship), other racial/ethnic category and Native American (est. = 0.271, $p < .001$; OR = 1.31, or 31% increase in odds of a tie), as well as multiracial (est. = 0.173, $p < .001$; OR = 1.19, or 19% increase in odds of a tie) in the MW site. In addition, in both sites, we also documented that friendship ties were more likely to form among students of the same gender, which is also typical in studies of peer networks (e.g., Mehta & Strough, 2009). Specifically, the odds of same-

gender friendship tie increased by 64% in SW site (est. = 0.494, $p < .001$; OR = 1.64) and 60% in the MW site (est. = 0.468, $p < .001$; OR = 1.60). Finally, we also controlled for whether friends were selected based on similarity in being US-born and receiving free-reduced lunch (a proxy for socioeconomic status), and these factors were not significantly associated with peer selection.

In addition to statistically controlling for network selection processes, we also included network structural effects (Table 2, Network Selection Dynamics, Network Structural Processes). We found that at both sites, adolescents' networks were formed through several commonly observed network structural processes. Specifically, we found that adolescents were likely to nominate friends who had nominated them (reciprocity effects: est. = 1.978, $p < .001$ in SW site, est. = 2.324, $p < .001$ in MW site). Youth were more likely to have friendships with friends of their friends (transitive triplets effects: est. = 0.380, $p < .001$ in SW site, and est. = 0.583, $p < .001$ in MW site). Youth were less likely to have mutual or reciprocated friendships with friends of their friends (transitive reciprocated triplets effects: est. = -0.203 , $p < .001$ in SW site, and est. = -0.425 , $p < .001$ in MW site). Also, adolescents who received a high number of friendship nominations were more attractive for others to send friendship ties to (indegree popularity effects: est. = 0.245, $p < .001$ in SW site, and est. = 0.325, $p < .001$ in MW site). This effect suggests that high friendship network popularity reinforces itself over time as popular youth become more popular (Snijders et al., 2010). We also found that adolescents who sent out a high number of friendship ties were less attractive for other students to send ties to (out-degree popularity effects: est. = -0.447 , $p < .001$ in SW site, and est. = -0.689 , $p < .001$ in MW site). This means that nominating a high number of friends was inversely related to friendship network popularity because popular students are more selective in whom and how many friends they nominate. Taken together, these effects suggest that friendships at both sites and across grade cohorts were structured according to fundamental and expected network processes.

Supplementary Analyses to Examine Homogeneity of Effects Across Grades

To examine whether peer influence and selection effects occurred equally across the different grades at each site, we included dummy effects to compare them (Lospinoso, Schweinberger, Snijders, & Ripley,

2011). Results suggested that network selection varied among the students in the SW site such that (a) seventh graders were less likely to select friends on the basis of similarity on being African American compared with sixth graders (est. = -0.15 , $p < .05$), and (b) Seventh graders were more likely to select same-gender friends compared with sixth graders (est. = 0.14, $p < .05$). In the MW site, several significant grade-related differences also emerged: (a) Seventh graders were more likely to form transitive friendships (i.e., a friend of a friend becomes a friend) than younger students (est. = 0.10, $p < .05$), (b) seventh and eighth graders were less likely to select same-gender friends relative to sixth graders (est. = -0.43 , $p < .001$; est. = -0.57 , $p < .001$, respectively), and (c) compared with sixth graders, eighth graders were significantly less likely to form friendships when both students were Asian American-Pacific Islander (est. = -0.34 , $p < .001$) and more likely to become friends when both were of "Other" backgrounds (est. = 0.41, $p < .05$). Importantly, no significant grade-related heterogeneity was observed in peer influence and selection estimates regarding ERI content. Joint score-type tests for grade heterogeneity revealed that, adjusted for the noted dummies, the joint significance tests for time heterogeneity at each site were not significant, suggesting that the parameter estimates were homogeneous across grades, SW sample: $\chi^2(34) = 36.15$, $p = .37$; MW sample: $\chi^2(32) = 37.80$, $p = .22$. This means that, having controlled for the noted grade differences, the remainder of the documented peer network influence and selection effects were similar across grades.

Additional Analyses to Illustrate Peer Influence on ERI

As a follow-up to our analyses, we further explored peer influence dynamics for ERI centrality and public regard in SW sample and ERI public and private regards in MW sample (as we documented significant peer influence on these dimensions of ERI). We present this detailed information for eighth grade students across both sites for illustrative purposes. To do so, we relied on ego-alter peer influence tables that present the model-predicted contribution of the focal adolescent's ERI content and his or her friends' ERI content to the objective function for peer influence on this particular ERI dimension (see Ripley et al., 2016 for more details). Using parameter estimates and formulas for effects, the ego-alter influence table provides an illustration of how attractive different values of the ERI content are for participants (egos), depending

on the levels of ERI content reported by their friends (i.e., alters). Because we use the total similarity effect used here to model for peer influence, which operationalizes influence as a sum total of all friends' ERI levels, these illustrations represent peer influence levels of exactly one friend (Ripley et al., 2016), and peer influence from multiple friends with particular levels of ERI could be calculated through addition of the respective attractiveness levels of this ego's multiple friends' ERI levels. We represent the levels of attractiveness of behavior in the three-dimensional plots shown in Supplementary Materials, Figure S1. In these plots, ego's ERI content levels are on the *x*-axis, alter's ERI content levels are represented on the *y*-axis, and *z*-axis represents the relative attractiveness of the different potential values of ERI that is conditional on ego's and alter's ERI content levels, thus depicting the *magnitude and direction of peer influence*. The color palette (blue, green, yellow, red) of the *z*-axis plane represents the range of attractiveness values from lowest to highest for an ego, given the ERI content levels of his/her friend. In other words, red and yellow colors of the *z*-plane represent a "pull" of the ego's ERI level toward his/her friend's ERI level, whereas blue and green colors of the *z*-plane represent a "push" away of the ego's ERI level from that of his or her friend's level.

These follow-up illustrations of peer influence revealed that among eighth graders from SW site (Supplementary Materials, Figure S1A), those adolescents with higher levels of ERI centrality preferred to change their levels of ERI centrality *toward* higher levels of their friend (red color of *z*-plane represents highly attractive values) and *away* from lower levels of centrality of their friend (blue color of *z*-plane represents highly unattractive values). Turning to peer influence on public regard in SW site (Supplementary Materials, Figure S1B), we see that youth with both highest and lowest levels preferred to change their levels of public regard to be similar to their friends (red color); similarly, adolescents with highest and lowest levels of public regard were "pushed away" from changing their levels in the direction of their friends with lower and higher levels of public regard (blue color). Interestingly, in the MW site (Supplementary Materials, Figure S1C), the direction of peer influence on public regard was the same as in the SW site. However, whereas the magnitude of peer influence remained similar across all levels of ERI public regard in the MW site, in the SW site, the pull toward similar peers was only evident for extreme values of public regard. Finally, considering private

regard in the MW site (Supplementary Materials, Figure S1D), adolescents with higher levels preferred to adopt similarly higher values of private regard from their friends. In summary, our results documented that the direction and magnitude of peer influence varied as a function of ERI content and geographic sites that varied in ethnic/racial composition.

Discussion

Using the state-of-the-art longitudinal SNA methods (i.e., SABM), this study examined peer network influence on ERI content in middle school. In addition to the unique feature of being a multisite peer network study of ERI development, to the best of our knowledge, this study is the first study to document quantitatively peer influence on ERI content while accounting for various confounding factors inherent in how adolescents form friendships that can bias estimates of peer influence, if not properly controlled for. By applying SABM to the study of ERI development, we were able to reveal evidence of peer influence on ERI public regard across grade cohorts in both sites; evidence of peer influence on ERI centrality in the SW site across grade cohorts; and evidence of peer influence on private regard in the MW site across grade cohorts as well. Thus, in response to our primary research question: Yes, peers in school matter and influence adolescents' ERI content over time.

These findings reveal that adolescents' levels of these respective ERI components in each site became similar to the levels reported by their friends, and these patterns were evident across the three middle school grade cohorts. For example, youth in the SW site who initially reported being low on ERI centrality, who were friends with adolescents with high ERI centrality, moved toward their friends' levels of ERI centrality over time. These findings suggest a pattern of ERI co-regulation among peers that has not been previously reported in the literature. Our integration of developmental, contextual, and social network perspectives offers a fruitful approach to explicate how ERI content may shift in early adolescence as a function of peer influence. Importantly, the documented patterns of peer influence were ascertained while controlling for peer selection based on racial/ethnic characteristics and levels of ERI content. Examinations of peer influence on a changing behavior or attribute, such as ERI, risk producing biased

estimates if peer selection processes are not properly accounted for (Steglich et al., 2010; Veenstra & Steglich, 2012).

Although the multisite dimension of the present investigation was exploratory (i.e., we are not able to directly compare the magnitude and direction of peer influence across the two sites because influence is estimated within site-level peer networks), it is important to consider both how this influence may happen as well as why peer influence on ERI public regard did not vary across school sites, whereas it did for centrality and private regard. With regard to the similar findings concerning peer influence on public regard, public regard assesses how positively students feel that others view their racial/ethnic group, and to an extent it reflects a between-group dimension of ERI content. Given that the nature of public regard concerns one's perceptions of others' views, this dimension may be particularly malleable to direct peer actions and statements (i.e., social information, modeling) to which youth are exposed and to indirect forces such as adolescents' motivation to "fit in" with their peers by showing similar levels of public regard (e.g., via normative pressure). Whether influence occurs as a result of modeling or normative processes, or another type of social mechanism (cf. Brechwald & Prinstein, 2011), is an intriguing and important question for future investigation.

The issue of potential normative pressure is also relevant for why youth in the SW site became similar to their friends in their levels of ERI centrality while those in the MW site became similar to their friends in their levels of ERI private regard. However, "fitting in" with one's friends may not, in and of itself, explain why these two arguably within-group dimensions of ERI content varied across sites. The variation in peer network influence on ERI centrality could occur because of the characteristics of the local and larger context in which youth are embedded within each of these sites. The SW site was diverse but predominately Latina/o, and it is located in a state ranked among the most hostile U.S. states for immigrants across the nation (Pham & Van, 2012). Given the various issues facing racial and ethnic minority communities in this state, it is not entirely surprising that Latina/os in the SW site reported higher levels of ERI centrality compared with the Whites, as did African Americans. However, given that the magnitude of peer influence did not vary across racial/ethnic groups, it is plausible that all youth in this context may be more likely to "fit in" by adopting a perspective that one's group membership is a central aspect of social existence while living in a local and larger state

context that makes race and ethnicity an important source of controversy in its social and political life. These experiences within this site may affirm salience of race/ethnicity across numerous situations on a daily basis, and consequently ERI centrality, a dimension that could be more malleable to peer influence within this context if it is an aspect of one's self that is continually highlighted in daily life. Interestingly, there was a decline in all three measures of ERI content from Wave 1 to Wave 2 in the SW site but not in the NW site, further alluding to contextual aspects of the SW site that may make race/ethnicity salient on the one hand and more susceptible to change over time.

In the context of the MW site there was evidence of influence in private regard, or how positively youth felt about their ERI, such that youth matched their levels of private regard (low, medium or high) to the level of their friends over time. Interestingly, there were no differences among racial/ethnic groups in the MW site in terms of levels of private regard whereas there was in the SW site. It is plausible that in a more racially and ethnically integrated school context with no numerically dominant group, youth of all groups could be more susceptible to peer influence and messages from peers concerning positive or negative attitudes toward one's peer group as opposed to how important, or central, it is to their sense of self.

To illustrate the magnitude and direction of peer influence effect given a particular level of ERI content of the focal adolescent and that of his or her friends, we used visualizations (Supplementary Materials, Figure S1), which demonstrated distinct patterns of peer influence for different ERI aspects in the two sites. Specifically, in SW site, peer influence on ERI centrality was strongest for adolescents with the highest levels of this construct who were friends with other youth of similarly high levels of ERI centrality (Supplementary Materials, Figure S1A). We found that peer influence on ERI public regard was the strongest for SW youths at both ends (high and low levels) of public regard (Supplementary Materials, Figure S1B). In the MW site, peer influence on ERI public regard was similar across all levels (high and low) of friends' ERI public regard (Supplementary Materials, Figure S1C). Finally, MW youth with higher levels of private regard preferred to adopt similarly higher values of private regard from their friends (Supplementary Materials, Figure S1D). These analyses provide a detailed look at the nature and direction of the changes in ERI content over time and reflect an important avenue for future and further investigation.

It is noteworthy that the magnitude of peer influence appeared relatively invariant across racial/ethnic groups in both sites (Supplementary Materials, Table S4). Our examination of the moderating role of individual's race/ethnicity on peer influence on ERI dimensions revealed that only in MW site, African-American youth were less susceptible to peer influence on ERI private regard levels from their friends, compared to their White counterparts. Thus, our study shows evidence that racially and ethnically diverse peers have the potential to influence each other's levels of ERI content, including Whites in two contexts where they were not the numerical majority and two school settings that varied in their racial/ethnic composition.

We were able to ascertain peer influence on ERI dynamics while accounting for network selection on ERI content and sociodemographic characteristics, which helps to contextualize these findings. Interestingly, we only documented that ERI centrality was significantly and positively associated with how youth selected their friends in the SW site. ERI public regard and private regard were not significant factors evident in peer selection in either sites. Although we did not find many significant contributions of ERI content to friendship selection, consistent with past research, we documented significant racial/ethnic segregation in youth's friendships (Goodreau et al., 2009). It is likely that ethnic/racial segregation in adolescent friendships contributes to creating a social context in which race/ethnicity becomes salient, which can later influence meaning making and ERI identity formation processes. Considering the observed patterns of racial/ethnic segregation in peer selection in the SW site, Latina/os make up the largest group, and it was not surprising that similarity on being Latina/o increased the likelihood of friendship ties, and that in the context of the MW site in which there is not a clear dominant ethnic or racial group, friendships were formed based on racial or ethnic similarity for multiple groups. Interestingly, in the SW site, similarity on being a member of a non-Latina/o group (with the exception of African Americans) did not increase the chance of forming friendship ties. In a setting where there is a clear dominant group (over 50%, unlike the MW site), non-Latina/o and non-African American youth in the SW site may have greater opportunities for exposure to other groups and to develop awareness of other group's norms that allows them to form intra-ethnic/racial ties. Notably, however, in the same site, African Americans differed from other non-Latina/o groups in that being similar in terms

of race increased the likelihood of network tie selection among African Americans. Although outside the scope of the present study, it may be that African Americans experience a uniquely elevated amount of discrimination (cf. Seaton, Caldwell, Sellers, & Jackson, 2008) across numerous types of contexts, and thus African American youth may be more likely to select one another as friends because in this social context, they can turn to each other for support. Another noteworthy contribution to peer selection was a significant homophily observed in terms of gender indicating that youth preferred to befriend others of the same gender. This pattern is in line with widespread gender segregation effects observed in early adolescence in which youth show preference for same-gender peers (e.g., Mehta & Strough, 2009).

Limitations and Future Directions

Despite the noted strengths of the present investigation, it also has several limitations. For one, the data on friendship networks were constrained to each grade, and this decision was influenced by prior research demonstrating that grade level is the relevant sampling frame for middle school students' friendships (Cairns, Xie, & Leung, 1998); however, we could have missed older or younger peers (i.e., in other grades) who could also be sources of influence on ERI content. Future studies may want to examine whether the peer influence processes documented during early adolescence in the present study hold among older adolescents. In addition, research on other dimensions of ERI (e.g., exploration) may offer additional insights into peer socialization processes. Although having multiple sites is a strength of this study, ours is but a first step toward better understanding the potential universality in the role of peers in shaping ERI development. Having two sites in which to model these processes helped shed new light on peer socialization of public regard, for example, which was evident in both sites. Future studies may want to examine schools that are more closely aligned in terms of their racial/ethnic composition and perhaps geographic region; this will help clarify whether influence on centrality and private regard is indeed more universal than it appears in the present study. Finally, we are unable to discern the nature of the influence process (e.g., modeling, normative pressure) underlying the present results. Yet, this study provides compelling evidence and lays important groundwork for future studies of specific ERI socialization mechanisms by peers.

Conclusion

Our investigation reveals that the integration of developmental, contextual, and social network perspectives is a productive approach to explicate how ERI content may shift in early adolescence as a function of peer influence. A longitudinal SABM analysis examined how peers influence each others' ERI content over time while simultaneously accounting for peer selection. As we have shown, this methodology has the potential to revolutionize our understanding of the peer context of ERI development. Moving forward, more longitudinal, multisite investigations will need to continue illuminating how contexts matter in the formation of adolescents' ERI and thus will help advance new methods and theories pertinent to the field.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

Figure S1. Peer Influence on ERI Content Levels by Ego and Alter ERI Content Levels

Table S1. Ethnic-Racial Identity Measure Information

Table S2. Correlations Among Study Variables Within the Midwest and Southwest Sites

Table S3. Description of Network and ERI Variables per Wave and Longitudinal Transitions Between Waves

Table S4. Testing Ethnic/Racial Group Differences in Peer Influence Processes