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NARRATIVE REVIEW

Understanding School–Neighborhood Mesosystemic Effects on Adolescent Development

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Abstract Research has demonstrated that school and neighborhood microsystems have important implications for adolescent development, but less attention is given to the school–neighborhood mesosystem (i.e., how these contexts intersect through moderational and mediational mechanisms.) Understanding the school–neighborhood mesosystem is important conceptually, methodologically, and for public policy. This article provides a narrative review of literature that examines the effects of the school–neighborhood mesosystem on adolescent development. The review focuses on adolescents' proximal processes and phenomenological experiences in their schools and neighborhoods, as opposed to structural characteristics of these environments. This article situates the literature reviewed within a theoretical framework adapted from prior frameworks developed to describe the family–neighborhood mesosystem. Specifically, the framework outlines four moderational mechanisms and one mediational model through which school and neighborhood contexts may intersect. Within each mechanism, a narrative review of existing scholarship is presented, and hypothetical scenarios are offered when prior research is limited. This structure highlights the utility of the theoretical framework, by allowing for greater meaning making and synthesis across existing studies, identifying gaps in the current literature, and presenting directions for future research regarding the school–neighborhood mesosystem. The implications of the school–neighborhood mesosystem for both researchers and policy makers are discussed.

Keywords Ecological framework · Interaction · Advantage · Disadvantage

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Introduction

Decades of research have established the importance of studying development within context, often utilizing ecological and bioecological systems theories (Bronfenbrenner 1979; Bronfenbrenner and Morris 2006). Within these frameworks, most research focuses on developmental influences at the level of the microsystem (i.e., one's immediate settings with which he/she has frequent face-to-face interactions). School and neighborhood microsystems may have particularly important implications for adolescent development as social contexts outside of the family and home gain influence during the transition out of childhood. Adolescents spend the majority of their days interacting with peers and adults outside their homes, relative to younger children and adults, and consequently, their relationships shift from being centered on families to peers and institutions (Boardman and Saint Onge 2005). During this period, adolescents also experience increased autonomy and more mobility to engage with their schools and neighborhoods when and how they wish (Zimmer-Gembeck and Collins 2003).

Although many researchers utilize Bronfenbrenner's framework to understand the independent influence of school and neighborhood microsystems on adolescent development (see Cohen et al. 2009; Leventhal and Brooks-Gunn 2000, 2003; Sampson et al. 2002; Sawicki and Flynn 1996; Thapa et al. 2013; Weinstein 1979 for reviews), it is much less common to examine the combined and intersecting influence

of schools and neighborhoods, and how such *mesosystems* (Bronfenbrenner 1979) influence development. Bronfenbrenner defines the mesosystem as the interface between two or more settings in which a child is embedded and states that the mesosystem can be "as decisive for development as the events taking place within a given setting" (1979, p. 3). This article conceptualizes the mesosystem as the interactional (i.e., moderation) and causal (i.e., mediation) relations between school and neighborhood contexts.

The lack of understanding regarding how these intersectional influences impact adolescents severely inhibits the understanding of contextual impacts on development; there is strong methodological, conceptual, and public policy justification for studying the mesosystem rather than solely focusing on isolated microsystems. In this article, theory regarding schools and neighborhoods is advanced to establish a conceptual framework for school–neighborhood mesosystemic influences on adolescent development. Additionally, this article presents a narrative review of existing scholarship within this theoretical framework to highlight its utility and set an agenda for future research.

Relevance of the School–Neighborhood Mesosystem: Theory and Research Methods

Understanding the school–neighborhood mesosystem is important from a theoretical and methodological perspective, although limited research has considered both contexts simultaneously and interactively. Brazil (2016) suggests that this is due to the lack of a unifying theoretical framework that captures both school- and neighborhood-effects. He advances an ecological framework of neighborhood and school effects that addresses the four levels of Bronfenbrenner's (1979) nested ecological system. Specifically, Brazil describes the microsystem as the direct, independent effects of schools and neighborhoods on child and adolescent development, the mesosystem as the direct and indirect interactions between schools and neighborhoods, the exosystem as linkages between school and neighborhood characteristics that may not directly involve the individual (e.g., regional unemployment), and the macrosystem as the societal norms that may influence how children and adolescents perceive the information from their environments. Brazil's work begins to provide an important illustration of the ecological framework applied to the school–neighborhood mesosystem; however, more work is needed to explicate precisely how each level of the ecological model operates. To address this gap, the present article aims to enhance the theoretical conceptualization of the mesosystem specifically.

In addition to his theoretical contribution, Brazil (2016) provides important methodological justification for jointly considering the school and neighborhood mesosystem. Specifically, studies that ignore one context or another may over-estimate the effects of the context that they do include, and violate the independence assumption required for regression analyses. Studies that only include one type of context implicitly assume that adolescents are only influenced by the context that is being examined, that variation in the outcome is not explained by the excluded context, or that the two contexts vary as a direct function of one another (Arum 2000; Brazil 2016). Brazil compares a model that independently tests the impacts of school and neighborhood characteristics on development to a model that includes both simultaneously, and finds that the strength of the effect of each context decreases significantly when both are considered.

Despite the theoretical and methodological importance of studying the school–neighborhood mesosystem, limited empirical research has done so (Brazil 2016; Leventhal and Brooks-Gunn 2000). Some studies apply neighborhood theory to school contexts to understand whether similar mechanisms occur in both contexts but do not explore them simultaneously (e.g., Lindstrom Johnson et al. 2017). Others investigate linkages between school and neighborhood contexts without examining developmental outcomes (e.g., Kirk 2006; Ong and Rickles 2013; Shumow and Lomax 2001). The majority of studies that do include school and neighborhood contexts in the same model consider the relative impact of one microsystem in comparison to the other but not their mesosystemic (e.g., interacting) influences (e.g., Benbenishty and Astor 2005; Welsh et al. 1999; White et al. 2017b; see; Johnson 2012 for a review). Although accounting for both school and neighborhood factors in a single statistical model can limit misspecification caused by overestimating the effects of one context (Brazil 2016), these models do not account for the intersection between school and neighborhood characteristics or explore specific mechanisms through which the neighborhood and school influence one another.

Finally, the research that has examined the school–neighborhood mesosystem has primarily looked at the impact of structural variables, such as racial and socio-economic segregation (e.g., Ong and Rickles 2013; Owen et al. 2016), and not investigated process variables. While structural characteristics within a microsystem, such as a school and neighborhood, may set constraints or affordances available within a setting, they are unable to describe whether or how individuals utilize or interact with those resources (White et al. 2016a). Proximal processes, the continuous and constantly evolving interactions that individuals have with people, symbols, and objects in their environment (Bronfenbrenner and Morris 2006), often mediate the impact of structural characteristics on developmental outcomes (Bradshaw et al. 2009; Tseng and Seidman 2007). Supporting the critical nature of these variables, Bronfenbrenner defines development as the result of proximal processes (Bronfenbrenner and Morris 2006).

In addition to the limitations of studying structural characteristics in any given microsystem, focusing on structural characteristics within the school–neighborhood mesosystem presents additional challenges. Primarily, examining structural characteristics of each entity assumes that adolescents consider structurally defined neighborhood boundaries (e.g., census tracks) to be their primary residential areas or that students actually go to school in those areas. Additionally, schools draw from various neighborhoods; the distinct but often overlapping geographical boundaries of these two entities makes it difficult to define and measure the structural attributes of each context. Therefore, when studying mesosystemic influences on adolescent development, it is especially important to consider process variables, captured by assessing adolescents' phenomenological experiences in the spaces that they define as their schools and neighborhoods.

The Role of Public Policy in the School–Neighborhood Mesosystem

Further theoretical and empirical work on the school–neighborhood mesosystem is also justified by public policies that intentionally address this mesosystem (see Table 1 for descriptions of exemplar polices). These polices demonstrate the potential for bidirectional effects between research and policy. Researchers could use policies as a base for developing research questions and designs and policy makers could have additional scientific information to further develop legislation. Two poignant examples are low-income housing policies and school choice policies. Policies in both of these domains are premised on interconnections between the financial resources of schools and neighborhoods (Bayon et al. 2006; Brunner and Sonstelie 2003; Godwin and Kemerer 2002).

Overwhelmingly, schools in the US with low concentrations of students in poverty outperform those with high concentrations of students in poverty (Aud et al. 2010; Reardon 2011). One of the goals of school choice[1] and housing policies has been to disrupt the link between under-resourced neighborhoods and under-resourced schools to reduce this cumulative disadvantage. School choice policies attempt to increase families' educational options by removing barriers or providing incentives to choose schools outside of the adolescent's geographically assigned institution. This occurs through distributing public funds to families by providing tax credits and deductions for private education tuition or scholarship contributions, supporting charter, magnet, for-profit, or online schools, or encouraging inter/intra-district public school choice. Similarly, housing policies seek to increase low-income families' residential options, providing them not only with improved housing conditions but also with increased access to resources clustered within higher income neighborhoods, including higher quality schools. Some examples are inclusionary zoning policies, whereby developers receive incentives to produce affordable housing within market rate developments, and voucher programs, where low-income families are provided subsidies to afford higher quality housing.

These policies can alter adolescents' mesosystems and thus impact how adolescents engage with their schools and neighborhoods. Researchers need to consider these policies when studying development in context (both within and outside of the policy context). For example, as school choice increases in popularity, it may be less likely that adolescents are attending their local schools with neighboring peers. Accordingly, their mesosystems may be less defined by their neighborhoods and the schools within them. Thus, school choice policies call for researchers to examine mesosystems based on the neighborhoods in which adolescents live and the schools that they attend rather than neighborhoods in which adolescents' schools are located (e.g., Brazil 2016; Kirk 2009).

School choice and residential housing policies also raise questions about variables that should be studied within the mesosystem. Currently, there is minimal understanding of the quality of relationships, perceived safety and support, experiences of discrimination or inclusiveness, or other psychologically-salient processes that adolescents may experience in these settings. For example, it is assumed that moving low-income families and adolescents into more resourced settings will improve outcomes. However, researchers have not assessed how students experience and perceive these more resourced educational settings compared to their more advantaged peers. Assessing the phenomenological experiences of adolescents in their school–neighborhood mesosystems may explain some of the null or iatrogenic effects found in evaluations of school choice and housing policies (Cowen et al. 2013; Sanbonmatsu et al. 2011). Assessing variables other than financial resources, particularly those that capture adolescents' proximal processes in their environments, may also enhance understanding of developmental trajectories across a range of outcomes.

Critics have called for greater bidirectional impact between research and policy (Bogenschneider 2014). Better research and understanding of the school–neighborhood mesosystem can inform better public policy. Conversely, the needs of policy makers to positively impact contexts

[1] It is important to note that although the reduction of achievement gaps between low- and high- income students has been purported as one of the goals of school choice, there are many other goals that these policies intend to achieve. More generally, school choice intends to provide families, regardless of background, the option to choose an educational environment that they believe best suits their child's needs, based on religion, affinity toward a certain academic subject, or special needs.

Table 1 Residential and education policies with implications for the school–neighborhood mesosystem

Policy topic	Program	Description	Implications for school–neighborhood mesosystem
Zoning	Massachusetts 40R and 40S (Massachusetts Housing and Economic Development 2017)	The state of Massachusetts will reimburse cities and towns that establish high-density (8–20 units/acre) and mixed use zoning overlay districts with high proportions of affordable homes (at least 20%). Additional state funding will be provided for any added costs associated with educating school-aged children whose families move into these affordable housing units	Within the scope of inclusionary zoning, this policy encourages cities to encourage low-income families to move to new developments in smart-growth districts. In addition, this policy takes into consideration community concerns regarding the imbalance in tax revenue and service costs, particularly with regard to education. This may allow schools within these zones to continue providing high-quality education despite the reduced tax base, by defraying some of the costs to the state or other federal voucher programs. Requiring at least 20% of the district to be designated as low-income housing may alleviate some concerns with isolation; if this number reaches 40% or higher, however, concerns with re-segregation return
Property tax	People's Initiative to Limit Property Taxation (California Tax Data, undated)	California Proposition 13, passed by voters in 1978, restricted annual increases of property taxes to a state-determined inflation factor that cannot exceed 2%, regardless of the actual rate of inflation or appreciation in property values. Due to high inflation rates in the 70 s, California residents were concerned with severe hikes in their property taxes each year Additionally, under Prop 13, properties are assessed for tax purposes only when they change ownership, discouraging longtime homeowners from selling and relocating, and hindering the ability for first-time homebuyers to purchase property in California	Shortly after the passing of Prop 13, California's ranking in per-pupil spending in comparison to other states dropped dramatically. In 1978, California ranked 14th out of 50; as of 2014, the state ranks 36th, or 42nd after accounting for cost of living (Kaplan 2015). Due to the severe reduction in local property tax revenue, responsibility for school funding has fallen more heavily on the state and federal block-grants. In periods of recession and high unemployment, the state's revenue from income tax is particularly low, and even more limited resources need to be distributed across many government agencies and public services. Additionally, the property assessment policy may impact which neighborhoods families with school-aged children are able to move to, and which schools they are able to enroll in

Table 1 (continued)

Policy topic	Program	Description	Implications for school–neighborhood mesosystem
Transportation	Suburban Mobility Authority for Regional Transportation (Hamilton 2008; SMART 2017)	Suburban Mobility Authority for Regional Transportation (SMART) is a regional transportation authority organized under the Metropolitan Transportation Authorities Act of 1967, and operates within Oakland, Macomb, and Wayne counties of Michigan, in the Detroit metropolitan area. The transportation system is meant to provide public transportation options to suburban areas surrounding Detroit, but SMART allows communities to opt-out of participation in the program, limiting service to areas where residents have voted against the service	SMART could help alleviate concerns regarding transportation for students opting for school choice policies or for low-income families living in high-income, suburban neighborhoods. However, the opt-out clause allows suburban communities to effectively limit the ability for families and students to utilize these options. Additionally, within the city, the Detroit Public School District (undated) does not provide transportation for 9–12th graders; they do pay for bus passes for students who meet the criteria for free and reduced lunch attend school over 1.5 miles from their house, but they must attend their neighborhood school. These policies may limit the opportunities for children who rely on public transportation to fully take advantage of high-quality education opportunities
School tax credits	School Tax Credits for Individuals (Arizona Department of Revenue 2016)	In Arizona, an individual or family may claim a tax credit for making contributions or paying fees to a public school in support of extracurricular activities or character education programs (including athletics, field trips, art programs, tutoring, extended kindergarten, driver's education, standardized testing, career preparation). These contributions can be made to a school as a general donation in support of these activities or for a specific child's involvement in one of these programs	This policy is a mechanism through which residents of certain neighborhoods could contribute to the financial resources of their local school, and directly impact opportunities that students have to engage with important extra-curricular and scholastic activities. Although theoretically every school could benefit from donations, it is often schools in the wealthiest neighborhoods with the wealthiest families who are able to grant the money to their child's school, and wait for the tax credit reimbursement. Additionally, despite the potential impact on the school overall, this policy is more often used as a strategy for parents to compensate the expenses associated with their own child's extracurricular or scholastic activities

Table 1 (continued)

Policy topic	Program	Description	Implications for school–neighborhood mesosystem
Language	English for Children (Arizona; Arizona Revised Statute § 15–752 2000) Bilingual Education and Special Language Programs (Texas; Texas Education Code § 29.051–29.064 1995)	Two states have enacted very different policies to address instruction for English-language learners (ELLs). In Arizona, Proposition 203 (Arizona Legislative Council 2000), passed by voters in 2000, required English-only instruction for ELLs, as opposed to bilingual methods. Children with limited English proficiency are required to be taught as rapidly and efficiently as possible in immersion programs, intended not to exceed 1 year On the other hand, Subchapter B of the Texas Public Education Code established protocol for bilingual education programs. Any district with at least 20 or more students from one grade level with limited English proficiency and competency in a particular other language is required to offer bilingual education and special language programs. Children whose districts do not provide an appropriate language program are able to transfer to another district that does. English proficient children are also allowed to enroll in these programs	Bilingual education programs have the potential to strengthen children's connections to their neighborhoods and communities, preserving culture, language, and heritage. These processes could contribute to neighborhood cohesion and intergenerational closure. Whereas English-only programs likely reinforce stigmas of communities where English is not the primary language spoken, bilingual education programs value knowledge and skills of another language, which could foster pride amongst students and communities. Bilingual education programs also require bilingual instructors (either a single bilingual instructor or teaching pairs), which can also promote neighborhood-school cohesion and partnership, as the teaching workforce is more likely to represent the community in which the school is embedded Bilingualism (regardless of language background) has been associated with improved cognitive and academic gains, as well as preparing youth for a more globalized society (Thomas and Collier 2012). Therefore, these practices have been embraced by middle-class, native English speaking families and communities, but they could be important strategies in reducing the achievement gap for ELLs, which could have spill-over effects for their neighborhoods
Teaching	Louisiana Teacher Tenure Law (Louisiana Revised Statute § 17-441-445 2012–2014)	From 2012 to 2014, Louisiana enacted a series of laws that increased the difficulty to gain or maintain tenure status. The state rolled out a teacher evaluation system called Compass, and to be granted tenure, a teacher had to receive a highly-effective Compass rating for five out of six consecutive years. Any ratings of ineffective would revoke tenure. This did not only apply to new, incoming teachers, but also teacher who had already received tenure under the previous system	This policy has increased teacher turnover in Louisiana. In the aftermath of the law, 1,700 teachers left the workforce (Strunk et al. 2017). This was mostly due to voluntary exit of experienced, already tenured teachers, as opposed to those removed for ineffectiveness. This policy may have particularly strong implications for teachers and students in failing schools in under-resourced neighborhoods, who experienced a higher exit rate of teachers than those in higher performing areas in 2012 and 2013 (Strunk et al. 2017). These schools tend to have greater staffing problems and higher teacher turnover already, making building cohesive school, staff, and curricular processes difficult (Guin 2004). Teacher turnover has been linked to negative student outcomes, even after controlling for the quality of the teaching (Ronfeldt et al. 2011). It is also more difficult for students to build positive student–teacher relationships in schools with high turnover

Table 1 (continued)

Policy topic	Program	Description	Implications for school–neighborhood mesosystem
School Schedule	Four-Day School Week (Idaho Department of Education, undated)	Boundary County School District, in rural Idaho, has adopted a 4-day school-week model, mostly as a cost-saving measure. Instead of operating with 165 6-h school days, school districts can instead schedule 142 7-h school days, eliminating 23 school days (often Monday or Friday). This is meant to save money on busses, food, and energy/electricity	Major concerns regarding 4 -day school-weeks stem from the resources children may or may not have in their homes and neighborhoods for the day they are not in school. In some cases, community organizations, like churches and civic groups (4H in particular) have created "fifth-day learning" or recreational activities, enhancing children's interactions with their residential environments in the absence of formal schooling. However, in less-resourced or organized neighborhoods or communities, these activities are rare, and families would prefer to rely on the school district for learning and enrichment (Hill and Heyward 2015)
School Schedule	Multi-Track Year-Round Education (California Department of Education 2016)	Year-round schools have the same number of days as traditional schools, but utilize more consistent and shorter breaks throughout the year (e.g., 45 school days – 15 vacation days). Advocates believe that year-round school can prevent what is often considered the "summer slide," where students' academic competencies regress over long vacations From the late 80s through the 2000s, multi-track year-round schooling schedules were heavily adopted in California, particularly in Los Angeles, to deal with overcrowding in suburban schools that were experiencing a major influx of residents, mostly low-income and immigrant families. These schools assigned students to one of four staggered schedule tracks, so 75% of the children attend school at the same time, while one group (and their associated teachers and staff) is on vacation, increasing capacity. Los Angeles has recently cut back on this program. The costs of the program were massive, there was no conclusive evidence that it improved outcomes, and students on the multi-track system had 17 less day of instruction than those on a traditional schedule. In fact, the ACLU sued the state because instructional time and resources were "disproportionally distributed to kids as a function of their ZIP code" (Ceasar 2014). As a result, $750 million dollars from the state school construction budget were freed for the Los Angeles school district, and additional bond measures have also contributed to building new facilities, considered a more equitable solution to over-crowding (Watanabe 2015	In general, year-round schooling may have impacts on students who otherwise would not have the resources to enroll in enrichment programs over long periods of school vacation. This may be particularly beneficial for children in neighborhoods that do not provide opportunities for formal or informal learning outside of school or safe places for children and adolescents to spend time (e.g., parks, recreation centers, libraries). Some research has demonstrated that neighborhood crime rates are reduced when the local schools adopt year-round education schedules (Clayborn 2015) In the case of Los Angeles, the year-round school policy was especially linked to neighborhood issues, specifically overcrowding. Even schools that did not experience a massive increase in residents with school-aged children needed to switch to year-round schedules to accommodate other areas, leading to an exodus of white, middle-class families from those schools to other areas or private schools. The majority of students enrolled in multi-track year-round schools were those from low-income high-density neighborhoods. Bussing costs were costly to fill tracks from under-populated schools with students from over-crowded ones. Also, the staggered schedule track had implications reinforcing patterns of segregation, due to parental preference and resource efficiency. Only some tracks provided certain resources (e.g., English-language learning), meaning that children who shared certain characteristics or backgrounds, who also tended to live in the same areas, were separated into homogenous "schools within a school" (Ready et al. 2004)

that shape adolescent development can provide impetus for theory and empirical advances.

The Current Review

Given the importance of school–neighborhood mesosystems conceptually and its relevance for policy, this article offers a narrative review of the current state of research regarding this mesosystem and advances a theoretical framework for understanding the relevant interface between schools and neighborhood microsystems. Previous studies that have explored the phenomenological experiences of adolescents in their school–neighborhood mesosystem have done so without drawing from or advancing theory. By proposing a theoretical framework, the current review supports integration across studies and findings and advances the science of the school–neighborhood mesosystem to guide future scholarship. To facilitate this narrative review, two existing mesosystemic frameworks were adapted. Specifically, Roche and Leventhal (2009) and Noah (2015) have advanced conceptual frameworks for understanding how neighborhood and family microsystems can intersect.

Existing neighborhood-family frameworks outline moderational and mediational mechanisms through which the two microsystems may relate to impact developmental outcomes. Roche and Leventhal (2009) describe three mechanisms by which neighborhood characteristics and processes moderate family characteristics and processes to influence adolescent development; Noah (2015) extends these patterns to characterize the family as the moderator. Two of the three moderations that Roche and Leventhal (2009) propose implicate *effective* family processes as the main predictors of developmental outcomes, whereas the third describes variability in *ineffective* family processes. The authors then describe whether these family processes are stronger predictors of development for adolescents in *advantaged* neighborhoods or *disadvantaged* neighborhoods. They delineate three patterns of moderation: (1) amplified advantages, where *effective* family practices more strongly relate to adaptive outcomes for adolescents in *advantaged* neighborhoods; (2) family compensatory effects, where *effective* family practices more strongly relate to adaptive outcomes for adolescents in *disadvantaged* neighborhoods; and (3) amplified disadvantages, where *ineffective* family practices more strongly relate to detrimental outcomes for adolescents in *disadvantaged* neighborhoods. Additionally, Noah (2015) proposes mediational pathways whereby one microsystem explains the associations between the other microsystem and the outcome. These pathways are adapted to advance a single mediational model for the school–neighborhood mesosystem: the mesosystemic mediation model.

Adapting the theoretical framework outlined by Noah (2015) and Roche and Leventhal (2009) allows us to develop a framework that meaningfully organizes the current literature regarding school–neighborhood mesosystems, contributes to deeper meaning making and integration of these previous findings, and presents gaps in the knowledge base regarding this mesosystem prime for future research. Consistent with the bioecological model's emphasis on phenomenological perspectives, this review is focused on those studies that examined individuals' experiences and processes in schools and neighborhoods, rather than focusing on entity-level (e.g., school or neighborhood level) structural characteristics (e.g., neighborhood poverty rates). The review is also limited to examining process variables within an adolescent's perceived neighborhood, as opposed to an administratively defined area (e.g., census track), and the school that he/she attends, as opposed to the neighborhood within which a school is located. This manuscript emphasizes the importance of considering an individual's lived experiences in his/her unique school–neighborhood mesosystem.

Each moderating and mediating mechanism is explained and any studies examining the school–neighborhood mesosystem that are illustrative of that mechanism are described, maintaining a focus on process variables at the individual level. However, because literature on the school–neighborhood mesosystem is limited, there are some mechanisms that lack prior research. In these cases, potential scenarios in which the mechanism might occur are hypothesized, thus highlighting directions for future research. Similarly, in cases when only research examining structural or entity-level variables is available for a particular mechanism, the article extrapolates to how the mechanism might apply to an individual's phenomenological experiences within his/her school and neighborhood.

Research on neighborhood and school microsystems highlights a wide variety of contextual processes that can affect adolescent development. To facilitate meaning-making across these process variables, the current review is focused less on the specific school or neighborhood processes operationalized in any given empirical investigation and more on broader processes and constructs that are important for understanding adolescent development. Specifically, adolescent development is supported in environments that provide connection (i.e., consistent, positive emotional bonds with others), regulation (e.g., fair and consistent limits on behavior), and support for autonomy (ability to develop and value independent thoughts, emotions, and a sense of identity; Barber and Olsen 1997; Eccles et al. 1997). Consistent with this view, supportive neighborhoods are characterized by effective social organization, including formal and informal networks between parents and shared sets of expectations between families, facilitating relationships outside the home and contributing to a safe residential

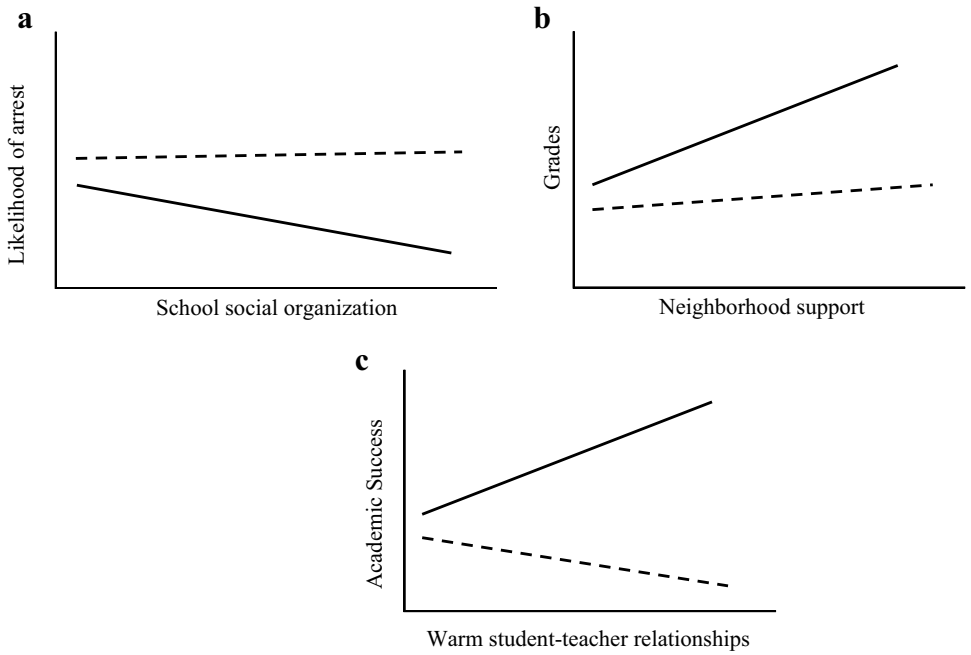

Fig. 1 **a** Amplified advantages mechanism (Roche and Leventhal 2009) with neighborhood as the moderator, using example from Kirk (2009). Solid line refers to socially organized neighborhoods, dotted line refers to socially disorganized neighborhoods. **b** Amplified advantages mechanism (Roche and Leventhal 2009) with school as the moderator, using example from Hopson et al. (2014). Solid line refers to safe schools, dotted line refers to unsafe schools. **c** Amplified advantages mechanism (Roche and Leventhal 2009) combined with effect of relative deprivation with neighborhood as the moderator, using hypothetical example. Solid line refers to high social cohesion neighborhoods, dotted line refers to low social cohesion neighborhoods

environment (Sampson 1992; Sampson et al. 1997). Similarly consistent with this perspective, supportive school contexts are characterized as positive school climate, encompassing engagement (e.g., relationships, participation), safety (emotional safety, physical safety), and environment (discipline, physical environment), which "shapes interactions between students, teachers, administrators, and staff and sets parameters of acceptable behaviors and norms for the school" (Bradshaw et al. 2014, p. 594). Thus, the term "advantaged" environments is used when the specific constructs examined in the reviewed literature were developmentally supportive, whereas "disadvantaged" environments is used when the specific constructs examined were developmentally inhibitive. More specific processes (e.g., sense of neighborhood safety, instead of advantaged neighborhood) are used when hypothetical scenarios are provided, in order to enhance clarity.

Moderation: Amplified Advantages Mechanism

One way that the school–neighborhood mesosystem can influence adolescent development is through an amplified advantages mechanism (Roche and Leventhal 2009). This mechanism suggests that the advantageous characteristics of one setting will have a stronger positive impact on those who already experience the benefits of advantage in another setting. In other words, an advantaged school will be especially impactful for those who live in advantaged neighborhoods (or vice versa; Fig. 1a, b). That is, the benefits of supportive school processes for adolescent development will be amplified when neighborhood processes are also supportive.

Three studies have found support for the amplified advantages mechanism of school–neighborhood mesosystemic influences on adolescent development. One conceptualized the school as the moderator (i.e., the influence of neighborhood context varying based on different levels of a school characteristic) and the others utilized the neighborhood as the moderator (i.e., influence of school context varying based on different levels of a neighborhood characteristics). Hopson, Schiller, and Lawson (2014) found that the benefits of advantageous neighborhood processes (i.e., neighborhood support) for adolescents' grades were amplified when adolescents also experienced advantageous school processes (i.e., school safety). Kirk (2009) found that advantageous school processes reduced the likelihood of arrest for adolescents who also lived in advantaged neighborhoods. Finally, in an examination of post-traumatic stress disorder (PTSD) in Gambian adolescents, O'Donnell et al. (2011) found that the association between an advantaged school environments (i.e., positive school climate) and lower PTSD was stronger

for high school students who experienced less disadvantage (i.e., higher safety) in their neighborhoods. These studies demonstrate that school–neighborhood mesosystemic effects can manifest as amplified advantages: advantageous experiences in one microsystem may be especially beneficial for adolescents who experience advantage in another microsystem.

One nuance to consider within the amplified advantages mechanism is what the advantageous characteristic of one setting means for those who experience disadvantage in the other environment. Whereas this mechanism outlines that adolescents who experience advantage in one setting will benefit more from advantage in another setting, Roche and Leventhal (2009) and Noah (2015) give no attention to the consequences of an advantage for those who experience disadvantage in another context, within this mechanism. For example, if an advantaged school is particularly beneficial for those who live in advantaged neighborhoods, what do these supportive school processes imply for those coming from disadvantaged neighborhoods (or vice versa)? While adolescents with advantage in two microsystems are experiencing enhanced benefits, what are adolescents with advantage in only one setting experiencing? Adolescents with disadvantages in one microsystem and advantages in the other could demonstrate either neutral (Fig. 1a) or detrimental (Fig. 1c) outcomes within the amplified advantages mechanism.

It is important to consider the possibility that "supportive" characteristics in one setting may not be supportive for those who experience disadvantage in another setting. Relative deprivation theory (also known as the "frog pond effect"; Crosnoe 2009) suggests that behavior is partially determined by individuals' comparisons of their own competencies and skills to those around them (Davis 1966; Meyer 1970; Nieuwenhuis et al. 2017). Accordingly, it is possible that adolescents from more disadvantaged neighborhoods may struggle in more advantaged school contexts due to their perceptions of their abilities and status relative to their more advantaged classmates (Crosnoe 2009; Jencks and Mayer 1990; Owens 2010).

Although the majority of studies examining relative deprivation examine entity-level structural variables (e.g., school and neighborhood financial resources; Owens 2010; Nieuwenhuis et al. 2017), it is possible to apply this concept to individual phenomenological process variables that adolescents experience in schools and neighborhoods. This may occur via negative competition, whereby students think they cannot compete against those with more resources and lower their goals and expectations for achievement accordingly. For example, adolescents from disadvantaged neighborhoods who attend advantaged schools may compare their ability to build relationships with their teachers with that of their classmates from neighborhoods that are also advantaged. These neighborhoods may provide models and expectations for how to build supportive relationships with adults on a regular basis. Even if their relationships with their teachers are objectively more supportive than those of their neighbors who attend schools with lower quality teaching, they may perceive that their relationships are not at the level of their peers, and may disengage from the norms and expectations of the school. In this case, the consequence of amplified advantages (warm student–teacher relationships benefitting students in organized neighborhoods) could combine with effect of relative deprivation and result in the opposite (warm student–teacher relationships negatively impacting those from disorganized neighborhoods; Fig. 1c).

Moderation: Compensatory Effects Mechanism

The compensatory effects mechanism suggests that advantageous characteristics of one setting will have a stronger influence on those experiencing disadvantages in another setting. In other words, advantageous school processes will be especially beneficial for those who experience disadvantageous processes in their neighborhoods (or vice versa; Fig. 2a, b). In other words, the advantages in one microsystem can compensate for disadvantages in the other microsystem.

Two studies found support for compensatory effects with regard to the school–neighborhood mesosystem. Kirk (2009) found that advantageous school processes (i.e., effective school social organization) reduced the likelihood of suspension, especially in the absence of advantageous neighborhood processes (i.e., effective neighborhood social organization). Similarly, O'Donnell et al. (2011) found that an advantageous school climate was particularly important for reducing PTSD for students in more disadvantaged neighborhoods. These studies suggest that advantaged school environments can buffer, or compensate, the impact of a disadvantaged neighborhood. These results reflect studies of resiliency that explore how adolescents exposed to high levels of stress or risk in their environments cope, recover, and exhibit successful development trajectories (Jain et al. 2012; Luthar 1993; Aisenberg and Herrenkhol 2008). Adolescents in disadvantaged neighborhoods may be particularly sensitive to advantaged schooling environments, whereas those in advantaged neighborhoods may already be thriving in optimal developmental conditions, and could be less impacted by advantages in their school.

Both Kirk (2009) and O'Donnell et al. (2011) conceptualized the school as the microsystem that promotes adaptive outcomes in the face of neighborhood risk, but neighborhoods could also serve as a buffering context in the face of school disadvantage (Fig. 2b). For example, neighborhood organization may be particularly important for adolescents who do not experience connectedness their schools. Research has shown that a sense of connection is associated

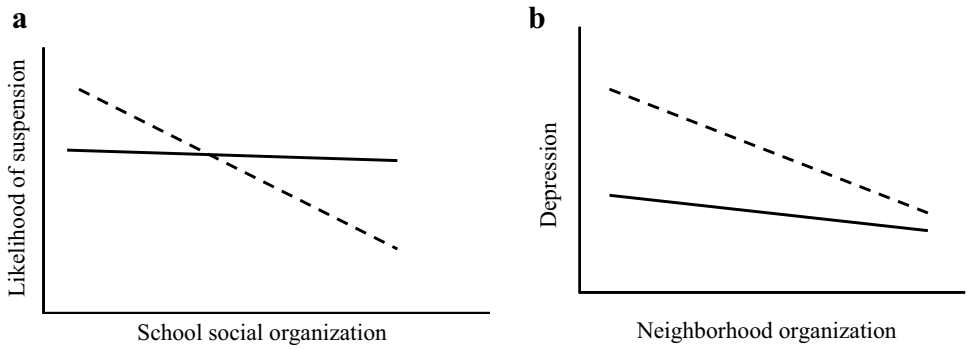

Fig. 2 **a** Compensatory effects mechanism (Roche and Leventhal 2009) with neighborhood as the moderator, using example from Kirk (2009). Solid line refers to socially organized neighborhoods, dotted line refers to socially disorganized neighborhoods. **b** Compensatory effects mechanism with school as the moderator (Roche and Leventhal 2009), using hypothetical example. Solid line refers to high connectedness in school, dotted line refers to low connectedness in school

with higher grades (Goodenow and Grady 1993), lower levels of delinquency (Demanet and Van Houte 2011; Napoli et al. 2003), decreased likelihood of school drop-out (Finn 1989), and improved socio-emotional functioning (Anderman 2002; Resnick et al. 1997). Adolescents who do not perceive this in their school may experience depression, reduced optimism, and social rejection (Anderman 2002), and may be especially sensitive to experiences of neighborhood support, where they can build meaningful relationships (White et al. 2017a, b). This may be particularly impactful for minority and other underrepresented adolescents, who may experience discrimination in diverse school environments (Seaton and Yip 2009), but feel greater support in their neighborhoods where their background, perspective, and contribution is either better represented or more valued.

It is important to note that both Kirk (2009) and O'Donnell et al. (2011) found support for *both* the compensatory effects and amplified advantages mechanisms. Together, these studies demonstrate that different scenarios may occur based on the specific predictors or outcomes in question. Kirk (2009) posits that the direction of the moderating effect (compensatory or amplified) may be impacted by whether the outcome behavior takes place within or outside the school (e.g., suspension vs. arrest). O'Donnell et al. (2011) argue that perhaps the severity of the threat (e.g., witnessing violence vs. victimization) impacts whether an adolescent will be able to benefit from supportive school processes. These nuances are worthy of consideration when conceptualizing research hypotheses or developing school or neighborhood interventions, programs, or policies. It is important to understand which adolescents might be expected to benefit most from enhancements made in one environment, dependent partially on the characteristics of other environments in which they are developing. A school intervention expected to enhance outcomes for "at-risk" adolescents might in fact continue to expand the gap between them and their more advantaged classmates if consideration is not given to the conditions that might not allow the "at-risk" group to benefit from the intervention.

Moderation: Amplified Disadvantages Mechanism

The amplified disadvantages mechanism suggests that disadvantageous characteristics of one setting will have a stronger influence on those already experiencing disadvantages in another setting. In other words, disadvantageous school processes will be particularly harmful for those who also experience disadvantageous neighborhood processes (or vice versa; Fig. 3a, b).

Although no studies have explored amplified disadvantages within the school–neighborhood mesosystem with adolescents, one study has examined the amplified disadvantages mechanism utilizing entity-level structural variables with elementary school students (Whipple et al. 2010). This study found that the higher levels of school disadvantage negatively predicted the percentage of students meeting academic standards in the school for schools located in moderately disadvantaged neighborhoods, but did not predict academic performance for students from neighborhoods with low levels of disadvantage. Overall, there is a lack of empirical support for the pervasive public rhetoric regarding the linkages between "bad" neighborhoods and "bad" schools, and the presumed consequences of these environments for children and adolescents (e.g., Semuels 2016).

Despite minimal evidence, it is possible to theorize about the amplified disadvantages of the combined experiences of school and neighborhood adversity. Consistent with the findings of Whipple et al. (2010), it would be expected that adolescents who experience higher disadvantage in multiple contexts would be at a particular risk for school failure or decreased socio-emotional well-being. For example, adolescents who perceive their neighborhoods and schools to

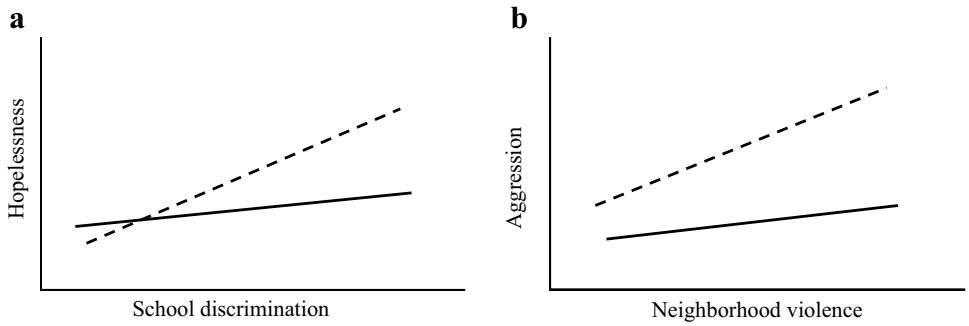

Fig. 3 **a** Amplified disadvantages mechanism (Roche and Leventhal 2009) with neighborhood as the moderator, using hypothetical example. Solid line refers to high cohesion neighborhoods, dotted line refers to low cohesion neighborhoods. **b** Amplified disadvantages mechanism with school as the moderator (Roche and Leventhal 2009), using hypothetical example. Solid line refers to low school violence, dotted line refers to high school violence

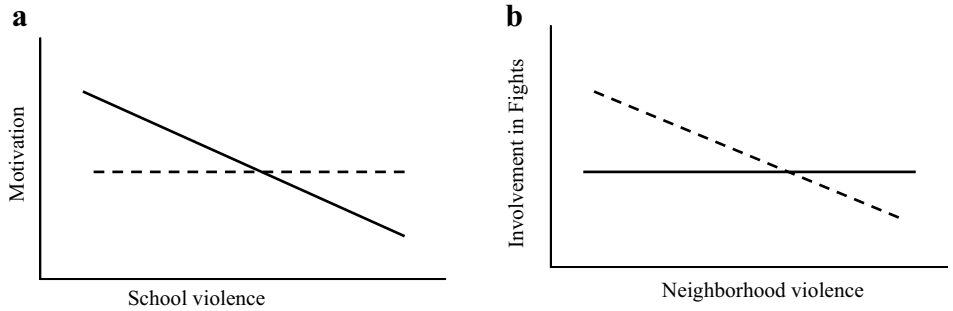

Fig. 4 **a** Contextual adaptation mechanism (adapted from White et al. 2015, 2016b) with neighborhood as the moderator, using hypothetical example. Solid line refers to low violence neighborhoods, dotted line refers to high violence neighborhoods. **b** Contextual adaptation mechanism with school as the moderator (adapted from White et al. 2015, 2016b), using hypothetical example. Solid line refers to low school violence, dotted line refers to high school violence

be characterized by high levels of violence may at risk for victimization and/or developing aggressive behaviors. In violent neighborhoods, adolescents may develop feelings of hopelessness which are amplified without supportive social networks and role models in the neighborhood and at school (Bolland 2003; Stoddard et al. 2011). Within the school environment, perceived discrimination may be particularly harmful for those who also lack supportive neighborhood relationships.

Moderation: Contextual Adaptation Mechanism

The fourth and final moderation mechanism has received limited attention in the family–neighborhood literature, and none with regard to the school–neighborhood mesosystem. It is a direct converse to the amplified disadvantages mechanism. It suggests that disadvantageous characteristics of one setting may actually have more harmful impacts for adolescents who experience advantages in another setting, and/or have beneficial effects on those who experience disadvantage in the other setting (White et al. 2015, 2016b; Fig. 4a, b). In the context of the school–neighborhood mesosystem, neighborhood disadvantage would not be particularly detrimental (and may even be beneficial) for adolescents who also experience school disadvantage, but instead would cause greater harm to those in advantaged schools. Alternatively, school disadvantage would have the greatest negative impact on those in advantaged neighborhoods.

For example, adolescents who experience high levels of neighborhood disadvantage may develop coping mechanisms that buffer the consequences of school disadvantage. Accordingly, school disadvantage could have stronger negative effects on those who come from relatively advantaged neighborhoods because these adolescents are less capable of successfully navigating disadvantaged environments. In other words, the incremental impact of exposure to disadvantage at school may be greater for adolescents who have not been exposed to disadvantage in their neighborhood. Some literature supports the notion that adolescents who come from violent neighborhoods may feel relatively safe in their schools, even in schools characterized by high violence (Noguera 1995). This feeling of being safe can buffer

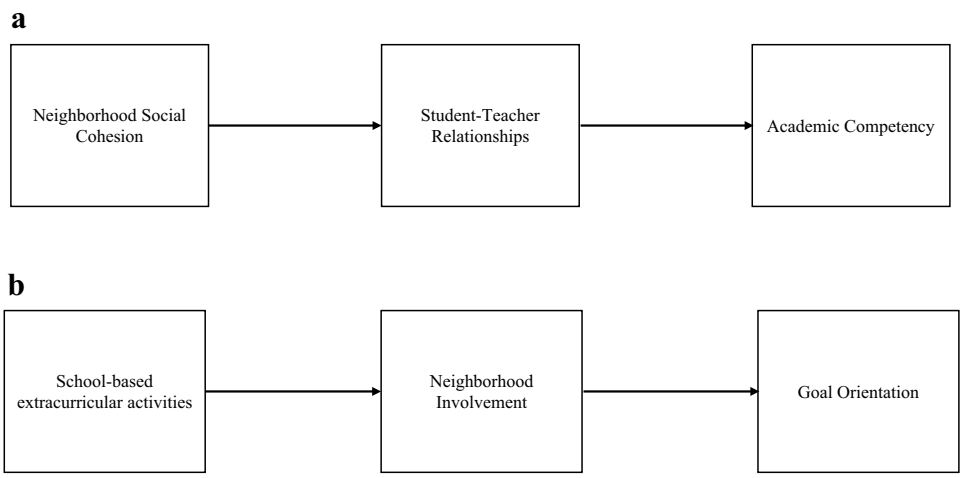

Fig. 5 **a** Mesosystemic mediation model with school as the mediator, using hypothetical example. **b** Mesosystemic mediation model with neighborhood as the mediator, using hypothetical example

the negative psychological and behavioral impacts of risk. Adolescents who experience high levels of violence may attach different meaning to aggression and violence, and be less affected by any additional exposure. Additionally, these adolescents may have learned how to successfully resist peer pressure to be involved in gangs or drugs from their neighborhood context, and are less impacted by those activities at school. Brooms (2015) suggests that adolescents from disadvantaged neighborhoods may see school as their primary way out of their communities, and develop motivation to remain engaged and successful in school. These students may be successful in school, regardless of school advantage, whereas students who do not experience as much neighborhood disadvantage may not be as successful in disadvantaged schools.

Mediation: Mesosystemic Mediation Mechanism

The mesosystemic mediation mechanism suggests the influence of one microsystem on adolescent development will be explained at least partially, by processes occurring in another microsystem. School characteristics could directly impact neighborhood characteristics, or neighborhood characteristics could directly impact school characteristics, as experienced by the adolescent, and, in turn, predict outcomes. Additionally, in this mechanism, the characteristics of the exogenous and mediating settings could be considered developmental stressors or promotors (Fig. 5a, b).

No work to our knowledge has tested the mesosystemic mediation mechanism pertaining to the school–neighborhood mesosystem. Two previous studies have examined how neighborhood process variables predict school process variables, but these studies did not test impacts on developmental outcomes (Kirk 2006; Shumow and Lomax 2001). Three studies have tested whether the contribution of neighborhood effects on development is nullified when school effects on development are also taken into account, but they do not assess the relation between school and neighborhood contexts (Ainsworth 2002; Rendón 2014; Sykes and Musterd 2011). Previous research has studied how school and neighborhood settings influence one another as entities, examining the interconnectedness of school and neighborhood resources (Owens et al. 2016), the relation between school and neighborhood demographic characteristics (Ong and Rickles 2013), and the influence that the neighborhood can have on school policies through the school board (Arum 2000; Elmore 2000) or taxes, bonds, and overrides (Baker et al. 2015; Kane et al. 2006). However, none of these studies examined how the experiences an adolescent has in one context might directly impact the experiences he/she has in another to impact his/her development.

Conceptually, microsystems support sets of demands and affordances that signal and facilitate competencies needed to be successful in each (e.g., school competencies; neighborhood competencies; Fuller and García Coll 2010). From the mesosystemic mediation perspective, adolescents' opportunities to learn and practice competencies in one microsystem may transfer (Greeno 1998) to other microsystems. For example, adolescents' opportunities to access meaningful non-parental adult relationships in their neighborhoods may shape what skills and expectations they bring to student–teacher relationships. Highly organized neighborhoods may provide opportunities for adolescents to have meaningful interactions with non-parental adults (Hurd et al. 2013), providing models for what non-parental adults may be able to provide in terms of guidance and safety in other settings. These adolescents, in turn, may be more likely to develop the skills and desire to build meaningful relationships with teachers or other school personnel. On the other hand, in neighborhoods characterized by high disorganization, parents may socialize their children to avoid extra-familial community members (Furstenberg et al. 1993), often for safety concerns. In turn, the adolescents may be wary of adults in school settings and reluctant to warm up to teachers.

Because building relationships have important implications for adolescents' academic and socio-emotional outcomes (Crosnoe et al. 2004; Hallinan 2008; Muller 2001), opportunities to develop these skills in one microsystem may have mesosystemic implications for similar skillsets in other microsystems.

Similarly, skills that adolescents learn in school can have a positive function in their neighborhood settings. Although participating in a one-time neighborhood activity would not constitute a proximal process, adolescents may be encouraged in classes or extracurricular activities they join at school to become consistently involved with neighborhood activities. In this way, involvement in school-based activities may give adolescents opportunities to build organization and leadership skills that can be effectively translated to extra-school, including neighborhood, settings. There may be opportunities to engage with neighborhood leadership groups, community service events, athletic teams, or theater, art, or other creative projects. Such involvement can enhance students' sense of belonging, provide further opportunities for skill and relationship building, and enhance their life satisfaction, hopefulness, and motivation (Busseri et al. 2006; Ludden 2011; Mahoney et al. 2005). Adolescents' involvement in community activities can also have positive impacts on the neighborhood itself by enhancing intergenerational contact and collective efficacy (Kaplan 1997).

Although it is possible for both the neighborhood and school microsystem to serve as the mediating variable in this model, it is important to conceptualize in which circumstances it would be expected that school contexts would mediate the effects of neighborhood processes on development and in which circumstances neighborhood contexts would be expected to mediate the effects of school processes on development. Often, it is presumed that the more distal variable would serve as the predictor, which would impact a more proximal variable, and in turn impact adolescent outcomes. For example, in the environmental stress model proposed in the family–neighborhood mesosystem literature (Noah 2015), the neighborhood, the more distal microsystem to the developing adolescent, is conceptualized as the predictor, with the more proximal family context considered the mediator. However, within the school–neighborhood mesosystem, it is less clear which context is more distal, particularly in adolescence. Earlier in development (e.g., middle childhood) the school may be more proximal as students have more personal interactions there, but during adolescence, when individuals are engaging more independently with neighborhood processes (White et al. 2016a), it would be difficult to discern whether the school or neighborhood is more proximal. It is likely that each context could serve as both the predictor and mediating variable, based on the particular process or developmental outcome of focus. Perhaps, for developmental outcomes that are particularly germane to success in school, the neighborhood would be conceptualized as the predictor and school processes as the more proximal mediator, whereas for extra-academic outcomes, the neighborhood is likely the proximal mediating context.

Discussion

Although it is well established that schools and neighborhoods are important contexts for adolescent development (Bronfenbrenner 1979; Cohen et al. 2009; Sampson et al. 2002), limited empirical or theoretical work has been devoted to understanding the intersection of these two contexts, the *school–neighborhood mesosystem*. Despite the importance of the school–neighborhood mesosystem from a conceptual, methodological, and public policy standpoint (Arum 2000; Brazil 2016; Godwin and Kemerer 2002; Kirk 2009), there is a need for a deeper exploration of how these two contexts may intersect with one another (e.g., through mediational or moderational mechanisms) to impact developmental outcomes. This is important as adolescents are not living in isolated microsystems, but instead are required to synthesize their experiences across a variety of contexts; the experiences they have in one setting may influence the experiences they have in another and/or the way that such experiences affect development. Research focused on understanding contextual influences on development need to consider adolescents' lived realities occurring across many settings.

The purpose of this article was, therefore, to establish a theoretical framework for school–neighborhood mesosystemic influences on adolescent development, and review existing developmental studies in light of this framework. This framework was adapted from frameworks utilized within the family–neighborhood mesosystem (Noah 2015; Roche and Leventhal 2009). The review emphasized the importance of exploring adolescents' phenomenological neighborhood and school experiences to capture their proximal processes within the school–neighborhood mesosystem. To date, there have been only minimal attempts to synthesize prior literature regarding the school–neighborhood mesosystem and situate this literature within a cohesive theoretical framework. This framework, therefore, organizes existing studies to help understand the complex interplay between two microsystems integral to adolescent development and also stimulates future research into these mesosystemic mechanisms.

Implications of the Review and Theoretical Framework

This framework does not advance a comprehensive pathway to explain the relations among developmental phenomena. Instead, the framework presents an overview of potential, and sometimes competing, mechanisms that reflect the

way that the school and neighborhood contexts may jointly impact development. It is unknown at this point which of these mechanisms is likely to garner the most evidence; it is likely that evidence for each of these mechanisms could arise in different scenarios, with different populations of adolescents, examining different characteristics of the school and neighborhood context, and evaluating different developmental outcomes. In the family–neighborhood literature, from which portions of the current theoretical framework were derived (Noah 2015; Roche and Leventhal 2009), support for each of these mechanisms has emerged. With regard to the school–neighborhood mesosystem, the limited literature reviewed demonstrates somewhat similar levels of support for the two mechanisms using promotive contexts as predictors (i.e., amplified advantages and compensatory effects). Minimal support was found for the two moderation mechanisms discussing adverse contexts (i.e., amplified disadvantages and contextual adaptation) as well as for mediational mechanisms. Researchers have yet to elucidate a comprehensive understanding of the school–neighborhood mesosystem, especially when considering characteristics other than financial resources or structural variables. It is expected that future research regarding the school–neighborhood mesosystem will find varied results for each of these mechanisms.

The intentional focus on proximal process variables forces us to better conceptualize the underlying mechanisms that drive developmental change. Instead of relying on demographic and compositional characteristics of school and neighborhood contexts, this approach requires consideration of the supports and barriers in contexts that elicit certain proximal phenomenological processes that could promote or impede positive development. Clearly, there are trade-offs to this approach. Data collection procedures for understanding proximal processes may be very resource-intensive and prone to bias, particularly with regard to self-report data. At the same time, there are challenges in examining structural data of contexts as well. Although data collection and analysis could be easily facilitated using administratively defined boundaries of an adolescent's neighborhood and the area in which his/her school is located, this may not represent his/her lived experience. In addition, due to the intersecting and overlapping geographies of administrative boundaries, such as school catchment zones and census tracts, it would be difficult to apply administrative, structural data to an individual adolescent's school–neighborhood mesosystem. Due to these challenges, it may be necessary to establish overarching trends with large-scale structural information (e.g., school size, neighborhood composition) and to then unpack these in more nuanced (and likely smaller) studies. This approach could also contribute to the development of intervention programs and policies within school and neighborhood settings. Whereas national, state, and municipal policies tend to intervene on a structural level, research that carefully considers the mechanisms at play within the school–neighborhood mesosystem can help develop more nuanced interventions and programs within schools and neighborhoods under the jurisdiction of more large-scale policies.

Relatedly, this article also provides some insight regarding the intersection between public policy and research. When scholars discuss the gap between research and policy, it is often in terms of how to translate research for lawmakers or administrators; this perspective begins with the research, not the policy. However, in order to have a meaningful impact, it is also important for scientists to begin with the policy, to better understand the systems and legislative constraints within which they are trying to study developmental processes, and perhaps enact change. Understanding how policy influences school and neighborhood contexts will allow researchers to be more intentional in designing research questions, selecting participants or sites, choosing measures, and articulating relevant implications. In addition, it is important for policy makers to consider the multiple and varied ways that school and neighborhood microsystems can intersect, as they continue to draft legislation that impacts adolescents' educational and residential lives. When developing policy in one sector, it is important to consider how characteristics of another sector will affect uptake or effectiveness of that policy. It may be the case that the population that the policy is intended to target is actually unaffected or detrimentally impacted based on constraints present in another context.

Limitations and Future Directions

This article presents a comprehensive framework that will stimulate future research into mesosystemic processes that impact adolescent development. Empirical study of the school–neighborhood mesosystem, to date, is very limited, especially with regard to including process variables at the individual level. Given the current state of knowledge, four limitations to the current review are important to highlight, which suggest additional directions for future research regarding school–neighborhood mesosystems.

No consideration was given to individual characteristics or characteristics of other microsystems (e.g., family) that might shape the way that adolescents experience their schools or neighborhoods. These characteristics potentially include adolescents' social identities, personality characteristics, academic and socio-emotional skills, as well as parents' socialization practices. All of these might influence the way an adolescent interacts with his/her environment and/or the reactions elicited from his/her environment, which in turn shape future interactions and development (Bronfenbrenner and Morris 2006). Future research can examine the role of individual characteristics in the school–neighborhood mesosystem using moderated mediation, three-way

interaction, and person-centered models. The conditions under which evidence of each mechanism is likely to be exhibited may be shaped by other characteristics of and contexts within the ecological and bio-ecological models (Bronfenbrenner 1979; Bronfenbrenner and Morris 2006) are beyond the scope of the current article.

Additionally, this review is limited in its ability to speak to the importance of macrosystemic influences (e.g., culture, geo-political trends) because the literature sampled for the review are overwhelmingly based on research in the US. The policies discussed were also restricted to the US context. However, presenting these policies permits readers to understand the institutional structures within which adolescents are developing in the US. These policies do not provide insight on how students' experiences in their mesosystem may vary in different societies or nations with different norms or laws. The particular conditions under which each may mechanism operate is likely shaped by ideologies, social structures, and national histories of those societies.

Relatedly, future research should examine whether this framework operates similarly in urban and rural contexts. Perceptions of schools and neighborhoods likely differ across these settings. In rural areas, schools are more often seen as a center of social activity and intergenerational civic engagement (Lyson 2002; Peshkin 1978; Schafft and Jackson 2010), and therefore may hold particular importance for rural adolescents' development outside of their formal learning experiences. Additionally, even though the concept of a neighborhood is often associated with an urban environment, the present focus on phenomenological experiences allows for this framework to be applied to adolescents in rural contexts as well. More work is needed in neighborhood research to better conceptualize what constitutes a neighborhood in rural settings; a promising direction of research is understanding how rural residents define their own neighborhoods (De Marco and De Marco 2009). Similarly, identifying unique conceptualizations of the school–neighborhood mesosystem across rural and urban adolescents, as well as the potentially disparate implications of this mesosystem, is an important application of this framework.

Finally, there are methodological concerns to consider when conducting research on the school–neighborhood mesosystem. In some cases, what is interpreted as a statistical interaction might actually reflect a ceiling or floor effect for certain groups. For example, if evidence consistent with a compensatory effects interaction is found, in that a promotive school environment is particularly important for the socio-emotional development of adolescents in disadvantaged neighborhoods, researchers are likely to conclude that school climate is minimally important for those in advantaged neighborhoods. However, it may actually be the case that the measure of socio-emotional competency is unable to capture any incremental nuance in the outcome for students in advantaged neighborhoods. Having reliable and discriminant measures is essential for improving modeling and interpreting mesosystemic models, particularly interaction effects.

Conclusion

The current article emphasizes that adolescent development occurs within and across multiple contexts. This article draws attention particularly to the school and neighborhood microsystems. It emphasizes the perceived boundaries and experiences of adolescents and offers an organizing framework for exploring the joint contribution of school and neighborhood contexts. The traditional approach to understanding the effects of school and neighborhood contexts on development has lacked integration, with scholars either focusing on one context or the other, or sometimes analyzing their relative, but not joint, impact. Minimal work has explored how these contexts moderate or influence the other's impact on development. The current article presents four ways in which the school and neighborhood microsystems may interact to affect adolescent development, focused on exploring how an advantaged context may enhance, or a disadvantaged context may thwart, developmental processes occurring according to the advantages/disadvantages in the other context. We also present a meditational mechanism through which processes occurring in one context may influence processes occurring in the other context which in turn influence adolescent development. Research that ignores one context or another is unable to grasp the complexity of these systems. This is critical, as without understanding this complexity, our knowledge of the lived experiences of adolescents is incomplete and our ability to formulate effective interventions or policies is consequently limited.

Authors' Contributions LMG conceived of and conducted the review, adapted previous theoretical frameworks to develop the framework advanced in the article, and drafted the manuscript; SLJ and RMBW contributed to the development of the theoretical review and helped to draft the manuscript. JP and LD contributed important conceptual feedback and theoretical critiques, especially regarding the writing of the methodological and policy justification. All authors read and approved the final manuscript.

Compliance with Ethical Standards

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