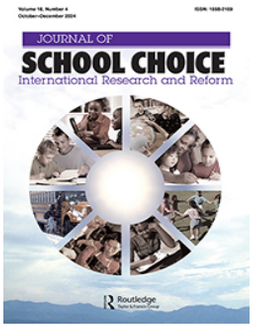

Routledge
Taylor & Francis Group

Journal of School Choice
International Research and Reform

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/wjsc20

A Heuristic Model to Guide the Study of Homeschoolers' Academic Competence

Carlos Valiente, Tracy L. Spinrad, Nancy Eisenberg & Brian Ray

To cite this article: Carlos Valiente, Tracy L. Spinrad, Nancy Eisenberg & Brian Ray (2024) A Heuristic Model to Guide the Study of Homeschoolers' Academic Competence, Journal of School Choice, 18:4, 668-682, DOI: 10.1080/15582159.2024.2422249

To link to this article: https://doi.org/10.1080/15582159.2024.2422249

JOURNAL OF SCHOOL CHOICE
2024, VOL. 18, NO. 4, 668–682
https://doi.org/10.1080/15582159.2024.2422249

Routledge
Taylor & Francis Group

ARTICLE

A Heuristic Model to Guide the Study of Homeschoolers' Academic Competence

Carlos Valiente[a], Tracy L. Spinrad[b], Nancy Eisenberg[c], and Brian Ray[d]

[a]Human Development and Family Science, Oklahoma State University, Stillwater, Oklahoma, USA; [b]T. Denny Sanford School of Social and Family Dynamics, Arizona State University, Tempe, Arizona, USA; [c]Department of Psychology, Arizona State University, Tempe, Arizona, USA; [d]National Home Education Research Institute, Salem, Oregon, USA

ABSTRACT

Studies exploring homeschooling typically focus on comparing homeschoolers to conventionally schooled peers on a range of academic outcomes. Largely absent from the literature are within-group studies designed to identify experiences that facilitate (or hinder) homeschoolers' academic outcomes. The aim of this paper is to describe a heuristic model outlining ways the home environment, instructional practices, parent characteristics, child characteristics, and the broader context might relate to homeschoolers' academic competence. The heuristic model is attentive to the possibility that these relations might vary as a function of child characteristics. In addition, the potential for transactional and mediated relations is considered.

KEYWORDS

Academic competence; homeschooling; learning environment

Homeschooling is increasingly popular. Although estimates vary, it is believed that between 3% to 5% of students in the USA are homeschooled (Watson & Smith, 2023). The increasing number of homeschooled students and the controversy surrounding homeschooling (Bartholet, 2019; Kunzman & Gaither, 2020) highlight the need to better understand this form of education. Unfortunately, the extant literature is small, and most researchers focus on between-group differences (i.e., homeschoolers are compared to conventionally schooled students). This leaves a significant gap in knowledge regarding how parents, children, and the broader context might shape homeschooling experiences. The goal of this paper is to begin to fill this gap by proposing a heuristic model that can guide a next generation of studies designed to understand homeschoolers' academic competence (AC), which is of relevance for key life outcomes (e.g., earnings, success in the labor market, well-being, National Academies of Sciences, Engineering, & Medicine, 2024).

Homeschooling can be defined in various ways, but we find it useful to define it as, "parent-directed education that largely takes place in the home" (Valiente et al., 2022, p. 1). Our definition affirms parents as primarily

CONTACT Carlos Valiente carlos.valiente@okstate.edu Human Development and Family Science, Oklahoma State University, 340 Nancy Randolph Davis, Stillwater, OK 74078, USA

responsible for their children's education, and it allows for situations in which children receive instruction from others inside or outside of the home (e.g., co-ops). We do not consider students homeschoolers if they are completing an online program directed by an educational organization.

Parents most often homeschool for what we refer to as foundational reasons that are unlikely to change (e.g., concern about the school environment (including negative peer treatment), dissatisfaction with school instruction, and religious motivations (M.-T. Wang et al., 2019). Consistent with this notion about underlying motivations, approximately 90% of homeschooling parents reported they planned to homeschool their child through high school (Valiente et al., 2024). Nonetheless, 45% of homeschooled students were only homeschooled for 1–2 years (Hamlin & Cheng, 2022). The disconnect between this finding and the foundational reasons for homeschooling suggests the presence of challenges that inhibit learning.

There are additional justifications for developing a deeper understanding of homeschooling. First, more knowledge is needed given the potential costs and benefits to children who are homeschooled. If education is low-quality, children may experience negative outcomes, including poor health, low academic achievement, and un/under employment (National Academies of Sciences, Engineering, & Medicine, 2024). Second, studying homeschooling is important given calls to increase its regulation (Bartholet, 2019). Currently, there is great variability across states regarding homeschooling laws (e.g., parent qualifications, subjects that must be covered, required assessments, Home School Legal Defense Association, 2020) and data are needed to inform relevant discussions. Unfortunately, " . . . there are almost no empirical studies that specifically explore the question of how homeschooling impacts student learning" (Murphy, 2014, p. 246). Third, because homeschooling is not equivalent to education in conventional schools, data from homeschoolers are needed to avoid potentially inaccurate generalizations.

The heuristic model displayed in Figure 1 was conceptualized to guide research on understanding individual differences in homeschoolers' AC (broadly defined). It was informed by discussions with the homeschooling community, the broader literature, and the theoretical work of several research groups (e.g., Eisenberg et al., 1998; Jennings & Greenberg, 2009; Ladd et al., 1999; McDonald, 2019; Murphy, 2012).

This model, and the following discussion, focuses on elementary-aged homeschoolers' AC given the importance of early AC. The model might generalize to older students, especially if additional consideration is given to the peer domain. We acknowledge that definitions of AC vary and that high levels of AC may not be the primary goal for all homeschooling families (Neuman & Guterman, 2016). Some homeschooling families, for example, may prioritize development of faith or engagement in the trades. We define AC broadly in that we move beyond grades or standardized test scores in

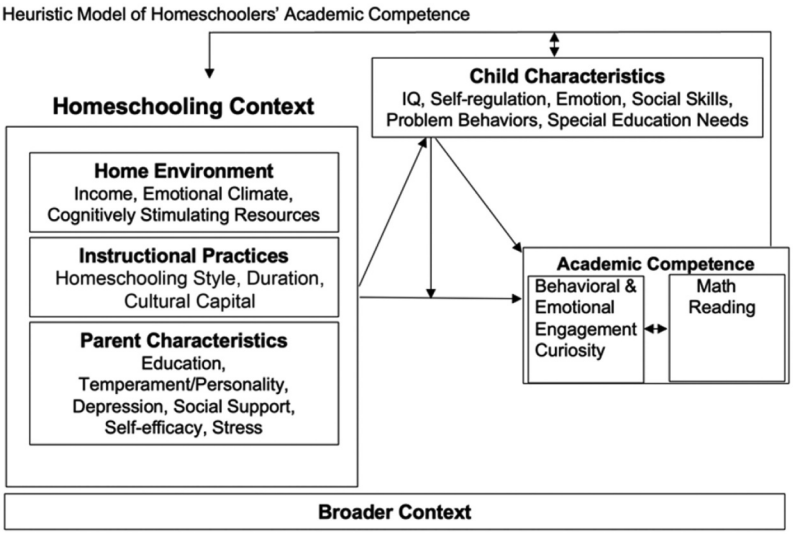

Figure 1. Heuristic Model of homeschoolers' academic competence.

reading/math and also focus on academic engagement. Considering engagement as an index of AC in its own right, as well as a predictor of academic achievement, is consistent with the educational literature (Fredricks et al., 2004; K. Wang et al., 2019). Due to space constraints, we illustrate key constructs to spur additional interest and do not provide exhaustive discussion of all relevant constructs within each domain. It is important to acknowledge that although we hypothesize the home environment, instructional practices, and parent and child characteristics predict AC, the double-headed arrows reflect findings in the broader literature that longitudinal transactional relations likely occur. As explained below, we expect child characteristics, and possibly some contextual factors, to operate as moderators.

The role of the home environment

Surprisingly, little is known about the ways the home environment is related to homeschoolers' AC. In this section, we focus on family income, the emotional climate, and cognitively stimulating resources.

Families with higher incomes can facilitate their conventionally schooled children's AC by providing access to quality schools via the neighborhoods they live in, educational resources, and supplemental support (e.g., tutoring, Duncan et al., 2019). Moreover, compared to high-income families, low-income families likely experience more stressors (e.g., food insecurity, inconsistent parenting) that interfere with learning. The extent to which these same processes occur in a homeschooling population is unclear. Although some homeschooling data are consistent with the pattern identified for

conventionally schooled children (i.e., income is positively related to achievement, Ray et al., 2010), there are indications that income may play a weaker role in achievement for homeschoolers than for conventionally schooled children (Dumas et al., 2010; Ray, 2000). Although it is not clear why this would be the case, we hypothesize that the potentially more focused individualized instruction offsets challenges posed by lower levels of income (Murphy, 2012; Ray, 2000). In addition, the school quality advantage provided by income seems less germane in the homeschooling context. This difference in method of schooling seems particularly relevant given clear school/district-level effects on individual student's AC (Fahle & Reardon, 2018). Beyond considering families' total income, it might also be important to focus on the absolute amount of money spent on homeschooling.

Marital and parent-child conflict are indices of the home emotional climate and there is reason to believe both may undermine homeschoolers' AC (Bradley, 2019; Harold & Sellers, 2018). Marital conflict is expected to be particularly consequential in the homeschooling context because it likely increases stress in the learning context and decreases creativity and optimal parenting (Harold & Sellers, 2018). Negative relations between homeschoolers' AC and parent-child conflict seem especially likely if the conflict involves the parent most involved in homeschooling. Research on the student-teacher relationship of conventionally schooled children suggests that conflict can interfere with learning by eroding children's feelings of security, motivation to participate in school lessons, and desire to please the teachers (García-Rodríguez et al., 2023; Verschueren & Koomen, 2012). In fact, student-teacher conflict is negatively related to school engagement, and math and reading scores (García-Rodríguez et al., 2023).

In a meta-analysis involving children in the conventional school system, M-T. Wang et al. (2020) found small-to-medium negative relations between classroom organization and academic outcomes. Whereas classroom organization may be indicative of teachers' instructional quality, for homeschooled children, homeschool-related disorganization and household chaos (a lack of organization and routines) might interfere with AC because children who live in noisy, chaotic environments might struggle with maintaining attention while learning, enjoying educational activities, and feelings of insecurity that undermine exploration and the acquisition of new knowledge (Berry et al., 2016). Thus, homeschooled students' learning might be especially hindered by home chaos given that the home is likely the primary place where learning occurs. However, too much homeschool related (or household) structure or control (i.e., no flexibility in routines) could also be detrimental to learning, especially for areas of AC related to curiosity or emotional engagement.

Variability exists in the type of instructional materials used by homeschoolers, and, surprisingly, it is largely unknown if the type of homeschooling materials relates to AC. The Committee on Developments in the Science of

Learning demonstrated the importance of cognitively stimulating resources for conventionally schooled children, and we expect such resources to be especially important for homeschoolers (Bradley, 2019; Caldwell & Bradley, 2016; National Research Council, 2000). Access to an array of learning materials is likely to facilitate children's interest in learning, engagement in academic tasks, and knowledge (Bradley, 2019). Because homeschoolers may not have access to as many teachers or books/materials provided by schools, we believe these resources may be especially important for homeschoolers (Bradley, 2019; National Research Council, 2000).

The role of instructional practices

There is a need to understand the implications (if any) of homeschooling instructional practices. Many instructional practices are available for homeschooling families. Some parents utilize a structured approach, which involves purchasing a complete curriculum and adhering to a schedule. On the other end of the continuum, other homeschooling parents offer a far less structured approach and embrace "unschooling," which has been described as, "[parents] who primarily or entirely let children learn about whatever they are interested in, and use little or no formal adult-chosen curricula" (p. 29, McDonald, 2019).

It is difficult to predict how instructional practices relate to homeschoolers' AC; relations might be dependent upon the component of AC being considered. Low-structure approaches might be negatively related to math or reading scores given a potential uneven focus on core subjects, low utilization of curriculum tightly connected to the educational goals assessed by standardized tests, and a lack of practice taking tests. In contrast, low-structure approaches might be positively related to engagement in learning and curiosity. Relevant findings are inconsistent. Although the relations between a high-structure environment (i.e., full-service curriculum) and academic achievement were non-significant in one study (Ray et al., 2010), Martin-Chang et al. (2011) reported that unschooling (low structure) was associated with low achievement. More research is needed, especially given that Martin-Chang's study only involved 12 unschooled children. A fuller understanding of the relations between instructional styles and academic outcomes seems particularly relevant given some within-group findings indicating that homeschoolers do better in reading than math (Kunzman & Gaither, 2020; c.f.; Wilkens et al., 2015). If, for example, instructional practices explain the difference in math and reading achievement, it may be useful to design additional approaches to improve math achievement.

Advancing the understanding of homeschooling instructional practices is likely to benefit from considering instruction outside of the home (e.g., at a museum or historical site). Hamlin (2019) referred to the provision of such activities as ways to promote cultural capital and demonstrated that

homeschoolers are likely to participate in such activities. As noted in Figure 1, engagement in cultural capital activities might be related to high levels of school liking, curiosity, and engagement in additional academic activities (i.e., follow-up writing assignments about the historical site), which, in turn, facilitate AC.

Homeschoolers are not a monolithic group with respect to how they teach their children. According to Hamlin and Cheng (2022), fewer than 25% of homeschooling children experience education via receiving instruction solely from their parent at home. Homeschooling parents follow a variety of educational philosophies and practices and rely on varying levels of supports (e.g., tutors, online resources, co-ops). It is unknown to what degree the homeschooling approach is connected to outcomes. Before substantial progress in this area can take place, there needs to be scientifically validated tools capable of capturing instructional practices. A potential step involves assessing if measurement approaches utilized in conventional schools (e.g., the Classroom Assessment Scoring System) can be adapted for assessing the homeschooling context (Center for Advanced Study of Teaching and Learning, 2018).

The role of parent characteristics

There are theoretical and empirical reasons to consider parents' characteristics (particularly the parent who does the majority of academic teaching) as predictors of homeschoolers' AC (Bornstein & Leventhal, 2015; Bradley, 2019). Based on the parenting literature and work with elementary school teachers, we suggest that parents' education, temperament/personality (e.g., self-regulation, anger), depression, social support, self-efficacy, and stress might relate to homeschoolers' AC.

Suggestions that homeschooling parents should have education credentials highlights the need to examine if the homeschooling parent's education is related to their child's AC (Bartholet, 2019). Greater parental education could be expected to facilitate the use of numerous customized learning opportunities that enhance engagement and subsequent performance. Interestingly, however, relevant empirical data involving homeschoolers and students in conventional schools is mixed. For example, although parents' education level is frequently positively related to conventionally schooled children's AC (Duncan et al., 2019), such relations are sometimes not significant (or are weaker) for homeschoolers (Dumas et al., 2010; Ray, 2000). In addition, although some researchers have identified positive relations between conventional school teachers' education and student outcomes, others find quite small or nonsignificant relations (Kane et al., 2006; Maranto, 2020).

It may be important to consider the type of parent education. Perhaps parents with an education background are more effective homeschooling

parents than those with another type of degree. Alternatively, and consistent with premises often expressed in the homeschooling community and some research, an education background may not be as relevant, especially if one uses a quality curriculum and is supported by the homeschooling community (Classical Conversations, 2024; Ray, 2000). Given the documented concerns regarding certification of conventional teachers (Maranto, 2020), care must be taken when considering qualifications for home educators.

Informed by findings from the parenting and educational literature, we hypothesize that homeschool parents' self-regulation, consciousness, social support, and teaching self-efficacy are positively related to children's academic experiences (Eisenberg, 2020; Jennings & Greenberg, 2009; Valiente et al., 2020). In contrast, parental depression, stress, and anger are expected to undermine children's learning. Parents who are high in self-regulation or conscientiousness, social support, and teaching self-efficacy (and low in depression, stress and anger) would be expected to maintain routines, flexibility, and responsiveness in ways that maximize learning experiences. They are also expected to be able to respond in optimal ways to misbehavior and learning difficulties. These predictions are consistent with findings involving elementary school teachers (Jennings & Greenberg, 2009; Jeon et al., 2021; Lambert et al., 2018; McLean & McDonald Connor, 2015; Valiente et al., 2020).

The role of child characteristics

Children enter the learning environment with characteristics that are likely to facilitate (e.g., IQ, self-regulation, social skills) or hinder (e.g., negative emotion, problem behaviors) AC. Due to the lack of relevant data involving homeschoolers, we relied on conversations with the homeschooling community and the broader literature to focus on children's temperament, social skills, problem behaviors, and academic engagement (Eisenberg, Valiente, et al., 2010; Robson et al., 2020). As depicted in Figure 1, we expect child characteristics to have direct effects on AC and to moderate or mediate effects from other domains.

Individual differences in children's characteristics, particularly self-regulation and proneness to negative emotions, have been found to predict AC in conventionally schooled children (Cameron et al., 2024). Self-regulation reflects the processes that modulate emotional and behavioral responses to the environment, and it is generally thought to be an aspect of children's temperament (Rothbart & Bates, 2006). Additionally, it includes ways children control their attention and their behavior. For homeschooled children, self-regulation is likely especially relevant given potential distractors (e.g., siblings, toys, TV, and related media) in the home. The reverse pattern is expected for dispositional negative

emotionality and impulsivity, partly because both interfere with concentration and assistance from others, although relations could be more complex or non-significant if parents are more forgiving of expressions of negative emotion than teachers (Hernández et al., 2018; Pekrun et al., 2017; Valiente et al., 2012).

It is somewhat difficult to know if homeschoolers' problem behaviors and social skills predict their AC. On the one hand, externalizing problems and lack of social skills may undermine learning in similar ways to what takes place in conventional schools (i.e., creating distractions, conflictual relationships, Eisenberg, Valiente, et al., 2010; Valiente et al., 2020). On the other hand, significant relations may not be identified because parents are more likely to adapt to misbehavior than are teachers in conventional schools. Peer interactions are less frequent when direct instruction takes place during homeschooling, which further complicates prediction. Internalizing problems are inconsistently related to conventionally schooled children's AC (Duncan et al., 2007), and it is unclear if significant relations are likely to emerge amongst homeschoolers.

Broader context

Bronfenbrenner and Ceci (1994) argued that efforts to understand children's lives need to consider experiences in the microsystem (i.e., family, peers, church), mesosystem (i.e., the ways that features of the microsystem interact), exosystem (i.e., neighbors, local politics), macrosystem (i.e., cultural values), and chronosystem (i.e., changes over time). It is clear some features of the model are relevant to homeschooling. Illustratively, variation in local politics (exosystem) impact homeschooling policies and requirements families must follow (e.g., notifying the state, assessment requirements, stated mandated coverage of certain subjects, Home School Legal Defense Association, 2020). In addition, significant family and peer support (microsystem) for homeschooling parents and their children can facilitate shared teaching and opportunities for social interactions. Although it is too early to delineate if, or how, key features of the broader context relate to homeschooling, and especially to outline ways learning may be influenced by these systems, we believe the next generation of research should examine experiences outside of the home (see Hamlin, 2019, as an example).

Child characteristics as moderators

Below, we discuss some potential interactions with the goal of spurring research that could inform approaches for optimizing homeschooling for children with different characteristics. Many homeschooling parents are likely

to instinctively adapt their teaching to characteristics of their children, but we are unaware of empirical studies that can guide parents.

The interaction of the home environment and child characteristics

Relations between family income and homeschoolers' AC appear somewhat complex. One reason may be that child characteristics operate as a moderator. For example, income may be most positively related to AC for children low in self-regulation, social skills, or initial AC, or high in frustration, impulsivity, or problem behaviors. This interaction might occur because higher-income parents likely have more access to higher-quality supplemental services and resources than do lower-income parents. In addition, although we generally expect parent-child or marital conflict to be negatively related to AC, these relations might be significant (or more significant) for children low in self-regulation, social skills, and/or initial achievement. Children high on these assets might possess the capacity to overcome challenges associated with conflict.

The interaction of instructional practices and child characteristics

Positive outcomes for conventionally schooled children are often associated with higher structured home or school environments, but only for certain children (Bradley, 2019; Rimm-Kaufman et al., 2015). Based on these findings, we expect the relation between low structure and AC to be moderated by child characteristics (e.g., self-regulation, engagement, initial AC). For example, low structure may be negatively related to AC, particularly for children low in these characteristics. Children high in these characteristics may have sufficient abilities to acquire core academic competencies. Advocates of the unschooling approach, however, argue that less structured approaches might be especially beneficial for children prone toward impulsivity and low self-regulation because these children need freedom to guide their education (McDonald, 2019). In addition, lower structure approaches might be positively related to engagement and achievement because unschooling may enhance enjoyment in learning. Data are needed to address these types of research questions. It may also be useful to consider other demographic characteristics of the child when considering the educational approach. For example, the age of the child may be an important factor. Elementary-aged students are likely to need structure and clearer guidance as they learn foundational reading and math skills, whereas older students likely need increased opportunities to set their own goals and to pursue more individualized interests. Furthermore, although speculative, there may be more complexities when considering children's sex; homeschooled daughters, for example, may be more responsive to their mothers' structure and guidance compared to sons.

The interaction of parent and child characteristics

The broader literature informs our prediction that the relation between parent characteristics and child outcomes vary based on child characteristics (Bornstein & Leventhal, 2015; Bronfenbrenner & Morris, 2006; Crosnoe & Benner, 2015). Children who struggle academically, are low in self-regulation, positive emotion, social skills, or curiosity (or high in frustration or externalizing problems), might do more poorly if their parents are unregulated, prone to anger, or do not have confidence in their teaching skills. Parents who are highly educated, have an education-related degree, or who have high levels of support and teaching self-efficacy (along with low stress) might be optimally positioned to engage in such activities.

Transactional and mediated relations

It is important to consider transactional and mediated relations (Eisenberg, Spinrad, et al., 2010; Jennings & Greenberg, 2009; Valiente et al., 2020). We believe it is particularly likely that transactional relations exist between parent-child conflict (and parental stress) and AC. This hypothesis is consistent with evidence of negative transactional relations between teacher-child conflict and children's school engagement (Li et al., 2022) and parents' academic expectations and children's AC (Zhang et al., 2011). It is important to identify transactional relations to limit cascading negative patterns.

Identifying mediating pathways offers a method for explaining why homeschooling is effective (or not) in fostering AC. Potentially mediating pathways include testing if exposure to cultural capital (e.g., museums, cultural exhibits) fosters curiosity, which in turn fosters high levels of learning in core subjects. Likewise, household chaos and family income are expected to undermine children's regulation, which in turn, would be expected to relate to low AC (Lecheile et al., 2020).

Testing the model

The following suggestions represent ways for advancing the study of homeschooling and the proposed heuristic model.

First, the model needs to be examined via a within-group design. Rather than only asking questions such as, "How do homeschoolers compare with conventionally schooled children on achievement tests?," we believe significant progress can be made by asking questions such as, "What facilitates (or hinders) homeschoolers' AC?."

Second, investigators should collect multi-method/reporter data to reduce shared reporter and method bias. Observational methods are available for assessing many relevant constructs. For example, the Home Inventory is

a widely used assessment that relies on observational data to assess the emotional climate of the home, availability of learning materials, and parents' responsivity (Caldwell & Bradley, 2016). In addition, researches could administer the Woodcock Johnson Tests of Achievement (or assessments like this) to access AC (Schrank et al., 2014). These approaches are time-intensive and costly, but the value associated with their use often outweighs the disadvantages.

Third, longitudinal data are needed. Longitudinal data allow investigators to examine if changes in the homeschooling environment relate to changes in outcomes, the potential implications of different patterns of homeschooling (e.g., homeschooling for a few years vs. all years), and ways child functioning shapes the homeschooling environment.

Fourth, diverse samples should be studied. Homeschoolers are no longer a monolithic group and studies need to include more representative samples. For example, 26% of homeschoolers are Hispanic and 8% are Black (Cui & Hanson, 2019). There is additional diversity with respect to where children live (e.g., rural, urban) and the parent most involved in homeschooling (K. Wang et al., 2019).

Conclusion

Homeschooling is an increasing popular educational choice. Rather than focus on determining if children who are homeschooled do better, the same, or worse on outcomes, we aspire to advance the study of homeschooling by proposing a heuristic model to guide efforts to understand what facilitates or hinders homeschoolers' academic competence. The model is informed by multiple literatures and extends heuristic models that have received support from children attending conventional schools (Eisenberg et al., 1998; Jennings & Greenberg, 2009; Ladd et al., 1999). Nevertheless, within-group studies are needed to avoid making unwarranted generalizations. Strong tests of the model will require collecting multi-method, multi-reporter, longitudinal data. In addition, a community-based participatory research (CBPR) approach will likely be useful. Working from a CBPR approach, the research team will need to be aware of concerns in the homeschooling community, build and maintain relationships with leaders, engage homeschoolers in the process, and work together to share findings (Collins et al., 2018). The next generation of studies have potential for improving homeschoolers' educational experiences.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was partially supported by the Ramona Ware Emmons Paul Professorship in Early Childhood in the College of Education and Human Sciences at Oklahoma State University, awarded to Carlos Valiente.

References

Bartholet, E. (2019). Homeschooling: Parent rights absolutism vs. child rights to education & protection. *Arizona Law Review*, *62*, 1–80. https://doi.org/10.2139/ssrn.3391331

Berry, D., Blair, C., Willoughby, M., Garrett-Peters, P., Vernon-Feagans, L., & Mills-Koonce, W. R. (2016). Household chaos and children's cognitive and socio-emotional development in early childhood: Does childcare play a buffering role? *Early Child Research Quarterly*, *34*, 115–127. https://doi.org/10.1016/j.ecresq.2015.09.003

Bornstein, M. H., & Leventhal, T. (2015). Children in bioecological landscapes of development. In M. H. Bornstein, T. Leventhal, & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science: Ecological settings and processes* (7th ed. Vol. 4, pp. 1–5). John Wiley & Sons, Inc.

Bradley, R. H. (2019). Environment and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting* (3rd ed. Vol. 2, pp. 474–518). Routledge.

Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nuture reconceptualized in developmental perspective: A bioecological model. *Psychological Review*, *101*(4), 568–586. http://www.apa.org/journals/rev.html

Bronfenbrenner, U., & Morris, P. A. (2006). Handbook of child psychology. In W. Damon & R. M. Lerner (Eds.), *The bioecological Model of human development, Theoretical models of human development* (16 th ed. pp. 793–826). John Wiley & Sons Inc, Hoboken, NJ.

Caldwell, B. M., & Bradley, R. H. (2016). *Home observation for measurement of the environment: Administration manual Tempe, AZ*. Family & Human Dynamics Research Institute, AZ:. https://thesanfordschool.asu.edu/home-inventory

Cameron, C. E., McClelland, M. M., Grammer, J., & Morrison, F. J. (2024). Self-regulation and academic achievement. In M. A. Bell (Ed.), *Child development at the intersection of emotion and cognition* (2nd ed. pp. 374–412). American Psychological Association.

Center for Advanced Study of Teaching and Learning. (2018). *Measuring and improving teacher-student interactions in PK-12 settings to enhance students' learning*. https://curry.virginia.edu/uploads/resourceLibrary/CLASS-MTP_PK-12_brief.pdf

Classical Conversations. (2024). *Are you qualified to homeschool your child?* https://classicalconversations.com/blog/homeschool-qualifications/

Collins, S. E., Clifasefi, S. L., Stanton, J., The Leap Advisory, B., Straits, K. J. E., Gil-Kashiwabara, E., Rodriguez Espinosa, P., Nicasio, A. V., Andrasik, M. P., Hawes, S. M., Miller, K. A., Nelson, L. A., Orfaly, V. E., Duran, B. M., & Wallerstein, N. (2018). Community-based participatory research (CBPR): Towards equitable involvement of community in psychology research. *The American Psychologist*, *73*(7), 884–898. https://doi.org/10.1037/amp0000167

Crosnoe, R., & Benner, A. D. (2015). Children at school. In M. H. Bornstein, T. Leventhal, & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science: Ecological settings and processes* (Vol. 4, pp. 268–304, 907 Pages). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118963418.childpsy407

Cui, J., & Hanson, R. (2019). *Homeschooling in the United States: Results from the 2012 and 2016 parent and family involvement survey (PFI-NCES: 2012 and 2016)*. National Center for Education Statistics.

Dumas, T. K., Gates, S., & Schwarzer, D. R. (2010). Evidence for homeschooling: Constitutional analysis in light of social science research. *Widener Law Review*, *16*, 63–87.

Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Pagani, L. S., Feinstein, L., Engel, M., Brooks-Gunn, J., Sexton, H., Duckworth, K., & Japel, C. (2007). School readiness and later achievement. *Developmental Psychology*, *43*(6), 1428–1446. https://doi.org/10.1037/0012-1649.43.6.1428

Duncan, G., Magnuson, K., Murnane, R., & Votruba-Drzal, E. (2019). Income inequality and the well-being of American families. *Family Relations*, *68*(3), 313–325. https://doi.org/10.1111/fare.12364

Eisenberg, N. (2020). Findings, issues, and new directions for research on emotion socialization. *Developmental Psychology*, *56*(3), 664–670. https://doi.org/10.1037/dev0000906

Eisenberg, N., Cumberland, A. J., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological Inquiry*, *9*(4), 241–273. https://doi.org/10.1207/s15327965pli0904_1

Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relation to children's maladjustment. *Annual Review of Clinical Psychology*, *6*, 495–525. https://doi.org/10.1146/annurev.clinpsy.121208.131208

Eisenberg, N., Valiente, C., & Eggum, N. D. (2010). Self-regulation and school readiness. *Early Education & Development*, *21*(5), 681–698. https://doi.org/10.1080/10409289.2010.497451

Fahle, E. M., & Reardon, S. F. (2018). How much do test scores vary among school districts? New estimates using population data, 2009–2015. *Educational Researcher*, *47*(4), 221–234. https://doi.org/10.3102/0013189x18759524

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59–109. https://doi.org/10.3102/00346543074001059

García-Rodríguez, L., Iriarte Redín, C., & Reparaz Abaitua, C. (2023). Teacher-student attachment relationship, variables associated, and measurement: A systematic review. *Educational Research Review*, *38*, 38. https://doi.org/10.1016/j.edurev.2022.100488

Hamlin, D. (2019). Do homeschooled students lack opportunities to acquire cultural capital? Evidence from a nationally representative survey of American households. *Peabody Journal of Education*, *94*(3), 312–327. https://doi.org/10.1080/0161956x.2019.1617582

Hamlin, D., & Cheng, A. (2022). Homeschooling, perceived social isolation, and life trajectories: An analysis of formerly homeschooled adults. *Journal of School Choice*, *16*(2), 332–359. https://doi.org/10.1080/15582159.2022.2028338

Harold, G. T., & Sellers, R. (2018). Annual research review: Interparental conflict and youth psychopathology: An evidence review and practice focused update. *Journal of Child Psychology and Psychiatry*, *59*(4), 374–402. https://doi.org/10.1111/jcpp.12893

Hernández, M. M., Eisenberg, N., Valiente, C., Thompson, M. S., Spinrad, T. L., Grimm, K. J., VanSchyndel, S. K., Berger, R. H., Silva, K. M., Pina, A. A., Southworth, J., & Gal, D. E. (2018). Trajectories of the expression of negative emotion from kindergarten to first grade: Associations with academic outcomes. *Journal of Educational Psychology*, *110*(3), 324–337. https://doi.org/10.1037/edu0000213

Home School Legal Defense Association. (2020). https://hslda.org/legal

Jennings, P. A., & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research*, *79*(1), 491–525. https://doi.org/10.3102/0034654308325693

Jeon, S., Jeon, L., Lang, S., & Newell, K. (2021). Teacher depressive symptoms and child math achievement in head start: The roles of family-teacher relationships and approaches to learning. *Child Development*, *92*(6), 2478–2495. https://doi.org/10.1111/cdev.13601

Kane, T. J., Rockoff, J. E., & Staiger, D. O. (2006). *What does certification tell us about teacher effectiveness? Evidence from New York City*. National bureau of economic research working paper series, No. 12155. https://doi.org/10.3386/w12155

Kunzman, R., & Gaither, M. (2020). Homeschooling: An updated comprehensive survey of the research. *Other Education: The Journal of Educational Alternatives*, *9*(1), 253–336.

Ladd, G. W., Birch, S. H., & Buhs, E. S. (1999). Children's social and scholastic lives in kindergarten: Related spheres of influence? *Child Development*, *70*(6), 1373–1400. https://doi.org/10.1111/1467-8624.00101

Lambert, R. G., McCarthy, C. J., Fitchett, P. G., & Eyal, M. (2018). Examining elementary teachers' risk for occupational stress: Associations with teacher, school, and state policy variables. *Teachers College Record*, *120*(12), 1–42. https://doi.org/10.1177/016146811812001205

Lecheile, B. M., Spinrad, T. L., Xu, X., Lopez, J., & Eisenberg, N. (2020). Longitudinal relations among household chaos, SES, and effortful control in the prediction of language skills in early childhood. *Developmental Psychology*, *56*(4), 727–738. https://doi.org/10.1037/dev0000896

Li, L., Valiente, C., Eisenberg, N., Spinrad, T. L., Johns, S. K., Berger, R. H., Thompson, M. S., Southworth, J., Pina, A. A., Hernández, M. M., & Gal-Szabo, D. E. (2022). Longitudinal associations among teacher–child relationship quality, behavioral engagement, and academic achievement. *Early Childhood Research Quarterly*, *61*, 25–35. https://doi.org/10.1016/j.ecresq.2022.05.006

Maranto, R. (2020). Between elitism and populism: A case for pluralism in schooling and homeschooling. *Journal of School Choice*, *15*(1), 113–138. https://doi.org/10.1080/15582159.2020.1856562

Martin-Chang, S., Gould, O. N., & Meuse, R. E. (2011). The impact of schooling on academic achievement: Evidence from homeschooled and traditionally schooled students. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, *43*(3), 195–202. https://doi.org/10.1037/a0022697

McDonald, K. (2019). *Unschooled: Raising curious, well-educated children outside the conventional classroom*. Chicago Review Press Incorporated.

McLean, L., & McDonald Connor, C. (2015). Depressive symptoms in third-grade teachers: Relations to classroom quality and student achievement. *The Child*, *86*(3), 945–954. https://doi.org/10.1111/cdev.12344

Murphy, J. (2012). *Homeschooling in America: Capturing and assessing the movement*. Corwin Press.

Murphy, J. (2014). The social and educational outcomes of homeschooling. *Sociological Spectrum*, *34*(3), 244–272. https://doi.org/10.1080/02732173.2014.895640

National Academies of Sciences, Engineering, & Medicine. (2024). *Reducing intergenerational poverty*. The National Academies Press. https://doi.org/10.17226/27058

National Research Council. (2000). *How people learn: Brain, mind, experience, and school* (Expanded Edition ed.). National Academy Press. https://doi.org/10.17226/9853

Neuman, A., & Guterman, O. (2016). Academic achievements and homeschooling—it all depends on the goals. *Studies in Educational Evaluation*, *51*, 1–6. https://doi.org/10.1016/j.stueduc.2016.08.005

Pekrun, R., Lichtenfeld, S., Marsh, H. W., Murayama, K., & Goetz, T. (2017). Achievement emotions and academic performance: Longitudinal models of reciprocal effects. *Child Development*, *88*(5), 1653–1670. https://doi.org/10.1111/cdev.12704

Ray, B. D. (2000). The ameliorator of negative influences on learning? *Peabody Journal of Education*, *75*, 71–106. https://www.jstor.org/stable/1493090

Ray, B. D., Null, N., Null, N., & Null, N. (2010). Academic achievement and demographic traits of homeschool students: A nationwide study. *Academic Leadership: The Online Journal*, 8. https://doi.org/10.58809/QPJR6206

Rimm-Kaufman, S. E., Baroody, A. E., Larsen, R. A. A., Curby, T. W., & Abry, T. (2015). To what extent do teacher–student interaction quality and student gender contribute to fifth graders' engagement in mathematics learning? *Journal of Educational Psychology*, *107*(1), 170–185. https://doi.org/10.1037/a0037252

Robson, D. A., Allen, M. S., & Howard, S. J. (2020). Self-regulation in childhood as a predictor of future outcomes: A meta-analytic review. *Psychological Bulletin*, *146*(4), 324–354. https://doi.org/10.1037/bul0000227

Rothbart, M. K., & Bates, J. E. (2006). Temperament. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology* (Vol. 3, pp. 99–166). John Wiley & Sons. Social, emotional, personality development (6th ed.).

Schrank, F. A., Mather, N., & McGrew, K. S. (2014). Woodcock-Johnson IV tests of achievement.

Valiente, C., Spinrad, T. L., Ray, B. D., Eisenberg, N., & Ruof, A. (2022). Homeschooling: What do we know and what do we need to learn? *Child Development Perspectives*, *16*(1), 48–53. https://doi.org/10.1111/cdep.12441

Valiente, C., Spinrad, T. L., Ray, B., & Eisenberg, N. (2024). *Parental commitment to homeschooling through high school graduation*. [Unpublished manuscript]. Department of Human Development and Family Science, Oklahoma State University,

Valiente, C., Swanson, J., DeLay, D., Fraser, A. M., & Parker, J. H. (2020). Emotion-related socialization in the classroom: Considering the roles of teachers, peers, and the classroom context. *Developmental Psychology*, *56*(3), 578–594. https://doi.org/10.1037/dev0000863

Valiente, C., Swanson, J., & Eisenberg, N. (2012). Linking students' emotions and academic achievement: When and why emotions matter. *Child Development Perspectives*, *6*(2), 129–135. https://doi.org/10.1111/j.1750-8606.2011.00192.x

Verschueren, K., & Koomen, H. M. Y. (2012). Teacher–child relationships from an attachment perspective. *Attachment & Human Development*, *14*(3), 205–211. https://doi.org/10.1080/14616734.2012.672260

Wang, K., Rathbun, A., & Musu, L. (2019). *School choice in the United States: 2019* (*NCES 2019-106*).

Wang, M.-T., Degol, J. L., & Henry, D. A. (2019). An integrative development-in-sociocultural-context model for children's engagement in learning. *The American Psychologist*, *74*(9), 1086–1102. https://doi.org/10.1037/amp0000522

Wang, M.-T. L., Degol, J., Amemiya, J., Parr, A., & Guo, J. (2020). Classroom climate and children's academic and psychological wellbeing: A systematic review and meta-analysis. *Developmental Review*, *57*, 57. https://doi.org/10.1016/j.dr.2020.100912

Watson, A. R., & Smith, G. (2023). *National summary*. Johns Hopkins Homeschool Hub. https://education.jhu.edu/edpolicy/policy-research-initiatives/homeschool-hub/national-summary/

Wilkens, C. P., Wade, C. H., Sonnert, G., & Sadler, P. M. (2015). Are homeschoolers prepared for college calculus. *Journal of School Choice*, *9*(1), 30–48. https://doi.org/10.1080/15582159.2015.998963

Zhang, Y., Haddad, E., Torres, B., & Chen, C. (2011). The reciprocal relationships among parents' expectations, adolescents' expectations, and adolescents' achievement: A two-wave longitudinal analysis of the NELS data. *Journal of Youth & Adolescence*, *40*(4), 479–489. https://doi.org/10.1007/s10964-010-9568-8