

## COMMENTARY

# Changing the conversation: A culturally responsive perspective on executive functions, minoritized children and their families

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## Abstract

How might we shift language about executive functions and self-regulation for minoritized children and families to be more culturally sensitive? The objective of this essay is to offer a culturally responsive perspective on executive functions for minoritized children and their families, while also identifying myths and counterarguments to advance the research in this field for the benefit of minoritized populations.

## KEYWORDS

culturally responsive, executive functions, minoritized children

## 1 | INTRODUCTION

Research suggests that children from lower socio-economic homes and environments demonstrate poorer executive functions than their peers in higher socio-economic status homes (e.g., Raver, Blair, & Willoughby, 2013). Executive functions or the interrelated cognitive processes of holding information in memory and manipulating it for later use, ignoring distractions, inhibiting inappropriate responses, and shifting between tasks (e.g., Best, Miller, & Naglieri, 2011) is associated with a host of outcomes, including academic performance (e.g., Nguyen, Duncan, & Bailey, 2019), native and foreign language acquisition (e.g., Baddeley, Gathercole, & Papagno, 1998), learning-related disabilities (e.g., Peng, Wang, & Namkung, 2018), and attention deficit/hyperactivity disorder (e.g., Willoughby, Wylie, & Blair, 2019). While professional associations recognize the need to better understand children within their context, much of the research on executive function to date has discussed this need using a deficit narrative, or discusses children in a way that presents them as lacking skills or talent, when explaining the executive functions of children living in poverty (e.g., Ellwood-Lowe, Whitfield-Gabrieli, & Bunge, 2020), as well as comparing the executive functions of Black and Latino children (referred to as minoritized children henceforth) to White children. Indeed,

there is a long-standing history of decontextualizing minoritized children's experiences by using a deficit-based lens. This often concludes with assumptions that minoritized children are lacking because they and their environments are unlike their White upper middle-class counterparts culturally (García Coll et al., 1996; Perez-Brena, Rivas-Drake, Toomey, & Umaña-Taylor, 2018). It is notable that executive function research has often focused on perceived needs or problems with student executive functions and has often made assumptions including that executive functions develop consistently across all populations and that all populations respond to assessments of executive functions in similar ways. Thus, it is assumed that any noticeable difference in performance must be because of an inherent deficit in a subpopulation like minoritized children.

We argue that reframing how we discuss cognitive processes for minoritized children, especially as they relate to academic outcomes, can provide a better starting point to understanding the development of executive function and self-regulatory skills in minoritized children and then make meaningful recommendations on how to assess and interpret performance on related cognitive measures. In this essay, we provide a series of common beliefs, often using deficit-based framing, regarding executive functions, and offer an asset-based and contextually-responsive perspective on each of these beliefs to advance the research in this field when studying minoritized populations in cognitive development. First, we provide a brief review of the literature on executive functions as it relates to development, poverty, and culture. We also provide a summary of the ways that executive functions are often measured. Then, we provide a series of commonly cited beliefs about executive functions and minoritized children and offer alternative perspectives for each using a culturally sensitive lens. We conclude with recommendations for future research.

## 2 | EXECUTIVE FUNCTIONS

Executive functions, broadly defined, are a subset of skills under the umbrella term of self-regulation that relate specifically to goal-directed and regulatory processes housed within the prefrontal cortex (e.g., Olson & Luciana, 2008). Executive functions involve three main sub-components: working memory (holding and manipulating information in short-term memory), inhibitory control (controlling attention to override impulses), and cognitive flexibility (being flexible to changed demands or strategies) (e.g., Diamond, 2013; Dowsett & Livesey, 2000; Miyake et al., 2000). These sub-components of executive function are inextricably linked and together make up a set of higher-order skills including planning, problem-solving, and perspective taking (e.g., Diamond, 2013). Executive functions have been associated with a wide range of academic, (e.g., Blair & Razza, 2007; Nguyen et al., 2019; Schmitt, Geldhof, Purpura, Duncan, & McClelland, 2017), social (e.g., Caporaso, Boseovski, & Marcovitch, 2019), and educational attainment (e.g., McClelland, Acock, Piccinin, Rhea, & Stallings, 2013).

### 2.1 | Executive function development

Executive functions improve due to several factors, including the normal course of development (Best & Miller, 2010; Bull & Lee, 2014), formal education (Brod, Bunge, & Shing, 2017), and more. Executive functions in early childhood (defined here as ages 3–8 years) may be best explained by a single underlying factor (e.g., Hughes, 2011; Wiebe et al., 2011). This factor is believed to grow and differentiate over childhood, maturing into at least three factors that can be observed as early as middle childhood (around the ages of 8–13 years old) (Hartung, Engelhardt, Thibodeaux, Harden, & Tucker-Drob, 2020; Lehto, Juujärvi, Kooistra, & Pulkkinen, 2003). For students in middle childhood and above, neuroimaging evidence supports that the three components of executive functions engage overlapping but separable neural networks, similar to the networks engaged by adults (Engelhardt, Harden, Tucker-Drob, & Church, 2019). This may suggest that executive functions may be one construct in early childhood and then become three as children age (Wiebe et al., 2011).

Though the above is a popular view of executive functions, some insights have more recently been offered to better understand executive function development. Several prior studies have suggested that executive function may be impacted by characteristics of children's environments, positing that exposure to such forces as poverty, neglect, poor parenting, or low-quality food might diminish children's executive functions (e.g., Blair, Raver, & Berry, 2014; Ellwood-Lowe et al., 2018; Raver et al., 2013). Doebel (2020) argued that this conceptualization of executive functions wherein environmental characteristics can explain deficits in executive functions has had ramifications on approaches to measurement and theoretical approaches to improving executive function through exercising different components (i.e., task switching, manipulating numbers in a math task, practicing inhibitory control). The problem with this view, Doebel argues, is that (a) it is unlikely that executive functions can simply be reduced to a few components as evidenced by the lack of transfer on cognitive training tasks; (b) poor correlations between executive function measures and self-regulation questionnaires; and (c) correlations between executive function measures and particular outcomes alone do not provide support that executive functions are recruited in these tasks. Instead, Doebel argues that the development of executive functions is likely the development of processes to address specific tasks in one's environment. That is, executive functions develop in service of one's specific task environmental goals. This perspective renders executive functions as a contextually-contingent process in which individual and group differences in executive functions may actually reflect the development of skills that are adaptive for one person but not another. Thus, a child's executive functions emerge from task-environment demands and their exertion of control in reaching contextually-responsive goals through the use of knowledge, beliefs, and norms, all of which are also contextually bound.

## 2.2 | Executive functions and poverty

It has been frequently asserted that children exposed to poverty often demonstrate poorer executive functions than their peers in higher-income homes (e.g., Ellwood-Lowe et al., 2018), though some work indicates that enrollment in school helps to reduce inequities in opportunities related to growth in some aspects of executive functions, such as working memory (e.g., Finch, 2019).

However, it is important to note that much of the current research on executive functions has over-represented students from higher-income, White households (Henrich, Heine, & Norenzayan, 2010). Even studies that consider the development of executive function in the context of poverty (e.g., The Family Life Project, Raver et al., 2013; Early Childhood Longitudinal Study-Kindergarten cohort (ECLS-K), Conway, Waldfogel, & Wang, 2019; National Institute of Child Health and Human Development (NICHD), Hackman, Gallop, Evans, & Farah, 2015) tend to do so in comparison to a higher-income counterfactual. Thus, more research is needed to better understand the role of culture, socio-economic contexts, and other factors in the development of executive functions (e.g., Howard et al., 2020; Lewis et al., 2009).

## 2.3 | Executive functions and culture

Though the literature frequently cites the role of poverty and executive functions, some literature, though limited, offers insights on the role of culture and cognition more generally. Gomez-Lavin (2021) argued that working memory, a component of executive function, was a cultural invention because there is no evidence that it exists in any specific brain region. Relatedly, Heyes (2018) argued that many psychological mechanisms that are studied in cognitive psychology are merely what she terms 'cognitive gadgets', or human neurocognitive processes that have been shaped by culture rather than genetic evolution. Examples of cognitive gadgets include imitation, reading, and mindreading, which are formed through social interactions. Indeed, these interactions signal to others what is deemed important to extract from the environment and what can be ignored or devalued. Despite executive

function's existence across various species, the extent to which it has developed in human beings is largely due to nurture and culture (e.g., Diamond, 2013).

Other work in cognitive and developmental psychology suggests that humans are born with similar human cognitive architecture, and how that architecture develops depends on the environments in which they are exposed. That is, environments with high poverty, adversity, chronic stress may alter children's development (e.g., Hair, Hanson, Wolfe, & Pollak, 2015), which would include working memory (e.g., Fitzpatrick, McKinnon, Blair, & Willoughby, 2014). It is reasonable then to assume that working memory, like imitation, reading, and other cognitive mechanisms, would develop depending on culture. Poor performance in an environment that is distinctly different from the one the participant has been reared in might indicate that working memory is culturally dependent, much like it has been observed with intelligence. As an analogy, Sternberg (2004) argued that intelligence should be contextualized within an individual's culture. Sternberg cites Brazilian children who can do the mathematics needed to run their street businesses are often little able or unable to do school mathematics. In fact, the more removed from real-world contexts the problems are in their form of presentation, the worse the children performed on these problems. Otherwise, we run the risk of imposing a Westernized view of intelligence on a given group. This often results in the assumption that individuals who share characteristics with the researcher are more competent than individuals who do not share the same cultural background. Given the regular imposition of such a Westernized view, we often find ourselves 'surprised' at the so-called 'hidden talents' of children who grow up in non-Westernized households when in fact researchers may have been testing the wrong set of skills—or the right set of skills but in the wrong ways—all along (Ellis et al., 2020). Differences in context can have a powerful effect on performance on tasks, and the same is likely the case for executive functions.

## 2.4 | Measurement

The inherent relations among sub-components of executive functions mean that few tasks are able to measure a single dimension of executive function—a problem known as task impurity. Instead, most tasks measure two or more dimensions of executive function; some tasks measure multiple dimensions of executive functions, whereas another might measure working memory alone. One common way to measure working memory, for instance, is the reverse digit span. In this task, the individual is required to first attempt to remember the number string, manipulate the number order mentally, and repeat the numbers aloud in the reverse order.

Inhibitory control and cognitive flexibility are often measured together. One common way that inhibitory control and cognitive flexibility have been measured is a Stroop test where an individual is asked to read a series of names of colours that are printed in font colours that do not match their name (e.g., the word purple would be in blue, the word yellow would be in pink). The individual must ignore the colour of the word and simply read the word. Some individuals with poor inhibitory control cannot complete this task successfully (see Swanson & Alloway, 2012 for a review). Another example of inhibitory control is a flanker task, where the individual must use the arrows on a computer keyboard to determine what direction the middle arrow in a linear series of other arrows is pointing. During this task, it is not uncommon for the middle arrow to be pointing in one direction and all the other arrows are pointing in the opposite direction. Again, the individual must override their natural response to choose the arrow that is consistent with most of the arrows and choose the one in the middle.

However, measuring executive functions has posed many challenges. Many of the above tasks do not resemble any activity in the real world; that is, children rarely need to remember a string of numbers in the reverse order, nor do they need to delineate between the direction of arrows. Executive function measures have come into question because they do not resemble a real-world task and thus begs the question of what researchers are really measuring and why it has any bearing on so many outcomes (e.g., Willoughby, Wylie, & Little, 2019; Willoughby, Kupersmidt, & Voegler-Lee, 2012). Furthermore, these 'acontextual' measures may systematically downwardly bias the approximation of skills among minoritized children who may be less familiar with performing novel tasks with researchers and

in spaces who do not look like themselves or their regular settings. Instead, Doebel (2020) argued that executive function measures should resemble ecologically valid tasks and do away with typical laboratory measures. In this way, we might get away from having tasks that demonstrate different correlations with various outcomes depending on the executive function task.

It is also worth noting that some traditional executive function tasks may be valued in different communities over others. For instance, remembering items and costs before being rung up at the grocery store may be a task someone is exposed to regularly, whereas playing double-dutch, which certainly requires executive functions, may be valued and practiced more frequently in another. Thus, even when we decide what executive function tasks might be ecologically valid, we may find that some individuals have more experience, and thus likely perform better, on some tasks more than others, depending on the context in which they were reared in. Comparisons on these tasks, tasks for which one is not familiar, would tend to make anyone seem deficient, and thus, is worth considering. Thus, another example of the cultural embeddedness of executive functions and example of how the temptation to remove culture from assessments of executive functions may, intentionally or unintentionally, perpetuate a deficit-based approach.

### 3 | OFFERING AN ASSET-BASED, CONTEXTUAL LENS

The objective of this essay is to offer a culturally responsive perspective on executive functions for minoritized children and their families while also identifying common beliefs about these children in the literature and offering counter-narratives. In the next section, we offer a number of these beliefs and provide a new lens to better understand executive function development for minoritized children.

#### 3.1 | Belief #1: Ethnic/racial minority children frequently demonstrate poor executive function skills relative to their White peers

It appears to be well documented that children living in high-poverty neighbourhoods, including minoritized children, demonstrate poorer executive functions than their peers in higher socio-economic status homes (e.g., Nesbitt, Baker-Ward, & Willoughby, 2013; Raver et al., 2013). Nesbitt et al. (2013) assert that this can be explained by exposure to early life trauma, such as chronic stress, and supported by observed elevation in stress hormones for these children (Blair et al., 2011; Blair, Granger, & Razza, 2005). A normative interpretation of the above statement would suggest that minoritized children have poor executive functions, and that there is something inherent about them, their environment, or their development that is qualitatively different from their White peers.

#### 3.2 | Counter-narrative #1: Ethnic/racial minority children perform worse on executive function tasks that were originally normed on White children

The conclusion of differences alone is not dangerous, but rather, the assumption of inferiority and qualitative meaning of those differences is what creates deficit-based conclusions. An analogous example involves intelligence, which has also been used, like executive functions, to test children of colour in ways to rank them in terms of relative ability. Sternberg (2004) argued that while children in remote areas did not perform well on American created intelligence tests, they did demonstrate sophisticated calculation ability, which was not captured on any intelligence test, likely because they needed to perform quick calculations to sell goods in their towns. Thus, measures and constructs previously created and operationalized for all children may not have much predictive utility when making claims about minoritized children. Indeed, the literature reviewed at this point suggests that cultural embeddedness of

executive functions offers an opportunity for Westernized ideologies to further marginalize and skew our understanding of executive functions (likely via ‘culture-free’, deficit-oriented, and/or bias-laden approaches). By repositioning executive functions as skills developed through task–environment exchanges, we can more accurately assess the opportunities, demands, and beliefs surrounding the development and deployment of executive functions. This will ultimately shift how we operationalize these terms for subpopulations, which has a cascade effect on the way we assess, interpret, and intervene to support the executive functions of students who are not White and upper-middle class.

### **3.3 | Belief #2: The association between executive functions and other factors exacerbated by positive and negative parenting and household risk characteristics**

Sosic-Vasic et al. (2017) investigated the relationships of various aspects of parenting and children's executive function skills. These aspects included positive involvement, supervision, monitoring, positive discipline, consistency with discipline, use of corporal punishment, and authoritarian parenting. For children aged 9–14 in the study, results suggested that high parent involvement was associated with better executive function skills, regardless of socio-economic status. Additionally, household chaos, defined by confusion, ambient noise, clutter around the home, and neighbourhood characteristics (Matheny, Wachs, Ludwig, & Phillips, 1995; St. John & Tarullo, 2020), has been associated with executive function, through parenting behaviours (e.g., Vernon-Feagans, Willoughby, & Garrett-Peters, 2016). That is, a chaotic home—one in which there is more happening at a given time, less adherence to a consistent daily schedule, and a lack of routines—often predicted parenting practices that negatively impacted behaviour regulation and executive functions. Of course, these factors are highly tied to high-poverty homes, not specific to being a minoritized child, and are difficult to disentangle from hardships associated with a lack of resources. Further, studies that have examined mediators of intergenerational transmission of executive functions (e.g., Distefano, Galinsky, McClelland, Zelazo, & Carlson, 2018) demonstrate that commonly found mediators of intergenerational transmission (e.g., autonomy support, sensitivity) centre children in middle-income White families, further suggesting that what we call executive function is promoted by things valued by groups in power. A normative but incomplete interpretation would be that poor parenting practices are associated with poor executive function development. This interpretation would lead to a potentially faulty conclusion and would reinforce the deficit-based approach of synthesizing research results.

### **3.4 | Counter-narrative #2: Distinguishing proximal and distal factors clarifies the development of executive function skills and acknowledges the role of stress in these environments**

Given that it has been established through this paper that executive functions are developed through interactions between a child's cultural environment and task-goal structures that must be met developmentally, it follows that an understanding of the cultural environment should give insight into marginalized children's executive function development. Indeed, much of the research that has led to deficit-based thinking has focused on distal factors as opposed to proximal factors. Cokley and Awad's (2013) recommendations on how to more appropriately infuse social justice in quantitative research on marginalized populations help frame our counter-narrative to claims of parenting and home environment factors as being deterministic, or predestined, in the development of executive functions for children. In fact, we agree that quantitative research methods will continue to be a priority for public policy and uphold their importance in our field. However, similar to their claims for psychology overall, we suggest that the way in which quantitative research designs have been utilized for exploring executive functions for minoritized children is currently leading to perpetually deficit-oriented conclusions. In particular, when we attempt to understand parenting

and home environment outside the context of the larger ecosystem and sociopolitical histories, we blame distal factors for poor executive functions instead of more proximal, and appropriate, areas of influence.

Furthermore, by over-relying on variables of household chaos, familial stress, and other normative responses to structural and institutional oppression, we not only further privilege the picture of a middle-class White family but also begin to pathologize and scrutinize marginalized populations for meeting their survival needs and developing their resilience. Consistent with an ecological systems model (Bronfenbrenner, 1992; García Coll et al., 1996; Spencer, Dupree, & Hartmann, 1997) that considers position variables, universal human vulnerability and the availability of protective factors and supports, many families at the intersection of various levels of sociopolitical oppression adapt in ways not often considered in traditional research in executive functions. What remains left from the conversation of household chaos and parenting that occurs within that context is the availability of individual, familial, and community resources and stressors. It is worth noting the realities of household chaos when it is operationalized as lack of parental warmth and the presence of abuse and neglect; however, a slippery slope occurs when transient household structures, clutter, and confusion are centred without the context of the utility these factors have within the home. To elucidate this example, consider a marginalized child who is within a traditionally termed 'overcrowded' home context. Overcrowding is seen as a marker of household chaos in our Westernized view of normative family structures; however, many families of colour and/or those in closer proximity to poverty tend to have multi-generational living arrangements to preserve family resources and cultural assets (e.g., Chase-Lansdale, Brooks-Gunn, & Zamsky, 1994; Jahromi, Guimond, Umaña-Taylor, Updegraff, & Toomey, 2014; Pearson, Hunter, Ensminger, & Kellam, 1990; Updegraff, Umaña-Taylor, Zeiders, Bravo, & Jahromi, 2018). This often means that parenting is not merely reduced to the interactions between a child and their mother and/or father, but rather, older kinship networks within and outside of the home (e.g., grandparents, uncles, etc.). This is even more vital when considering child outcomes given that research shows that much of the childhood socialization that occurs for younger children also occurs outside of the nuclear family unit (e.g., Updegraff et al., 2018). A research design that only acknowledges the challenges of 'overcrowding' and not the culturally-specific assets of multi-generational home contexts and extended kinship networks will inevitably perpetuate a deficit-oriented approach.

As potential criticisms to our claims are considered, we want to emphasize that we are not suggesting that existing research on family/parenting variables that have deleterious impact on child executive functions (and other developmental outcomes) be ignored. In fact, these findings are important information that has helped us get to this point of awareness. Research cannot stop there. Instead, we are imploring the field to be more thoughtful and comprehensive in weaving resilience (at individual, family, and community levels) into a picture that has become too narrow. This is a noteworthy point because by minimizing parenting to traditional, Eurocentric childrearing, the assessment of the social interactions that lead to executive function development misses potential key socializing agents. To this end, it is important that both the assessment, interpretation and intervention, for any executive functions take a more phenomenological approach; in that, the subjective experiences of the specific populations should be weighted equally, if not more, than the objectivity that research has traditionally emphasized. Furthermore, research designs that infuse bidirectional socializing processes will be paramount due to the awareness that environment shapes behaviour and environment adjusts to previous behaviour (e.g., Kuczynski & Parkin, 2007; Rodas, Chavira, & Baker, 2017).

### **3.5 | Belief #3: Interventions should target children living in poverty, particularly minoritized children, to promote positive emotional supports to bolster their executive function skills**

As previously noted, it is believed that minoritized children living in poverty frequently demonstrate lower performance on current measures of executive functions relative to their White peers (e.g., Nesbitt et al., 2013; Raver et al., 2013). This is notable because executive functions predict a plethora of outcomes, including mathematics and reading skills (e.g., Byrnes, Wang, & Miller-Cotto, 2019; Nguyen et al., 2019), two topics that are paramount to

thriving academically. Although some research suggests that executive function training infrequently demonstrates transfer to executive function tasks (e.g., Blair, 2016), there is some hope that training may be fruitful (e.g., Diamond & Lee, 2011; Traverso, Viterbori, & Usai, 2015). Interventions to promote executive functions in appropriate contexts may help children who struggle with executive functions demonstrate improved skills in these domains and subsequent long-term success on academic achievement measures.

### **3.6 | Counter-narrative #3: Interventions that seek to improve executive functions for minoritized children should first aim to understand what poor performance on these tasks means in the context of the White/Eurocentric society**

Given the importance of executive functions as it relates to academic outcomes, it seems plausible that improving executive functions might lead to improved academic outcomes as well, though the causal role of executive functions in academic outcomes has yet to be determined (e.g., Miller-Cotto & Byrnes, 2019). However, before attempting to design interventions to improve executive functions, it is worth considering whether measures used to assess executive functions can account for the cultural nuances discussed throughout this essay. Consider first that, for minoritized children, most executive functions are assessed within the school context. A culturally responsive perspective would question ways in which these two contexts (i.e., home and traditional educational spaces), or values within these contexts, do not align. Assessment of learning in a context that is fundamentally distinct from one's home would inevitably produce different outcomes. For instance, an incorporation of a cultural asset of Black populations, Afrocentrism, may provide insights. It has been well established that learning is socially situated, and that culture influences our approach to the learning process (Vygotsky, 1978). For Black children, Afrocentric styles of verve (receptiveness for heightened levels of physical stimulation), communalism (a commitment to social connectedness, including an awareness that social bonds transcend the individual), affect (an emphasis on emotion and the ability to be emotionally expressive), movement (an emphasis on the interconnectedness of movement, dance, rhythm, and percussiveness), and orality (emphasizing oral and aural modes of communication) have been shown to be inconsistent with traditional classroom structures (e.g., bureaucracy, individualism, and competition) and that a value of these Afrocentric styles sometimes leads to better academic engagement and outcomes (e.g., Boykin & Bailey, 2000; Okagaki, 2001; Rouland, Matthews, Byrd, Meyer, & Rowley, 2014). In fact, Carter, Hawkins, and Natesan (2008) found that in a sample of Black and White middle school children, the Black students displayed higher level of verve in the classroom and that higher levels of verve were negatively associated with academic performance. By not incorporating minoritized children's funds of knowledge into a typical classroom (i.e., Black children's cultural socialization to the Afrocentric value of verve or learning through physical encounters and connection with others), this might have an impact on how Black children are performing in schools and even on cognitive measures like executive functions. This begs the question for current executive function trainings and assessment: are we training and assessing minoritized children's skills in service of their own goals, or how to be more like White children?

## **4 | CONCLUSION**

Executive functions and their development have rightfully received extensive attention in recent years, as it is becoming increasingly clear that executive functions and related self-regulatory skills support the development of academic and social skills. However, much of the research has positioned minoritized children as an outgroup in an attempt to explain gaps in performance on standardized tests between White children and children of colour at the expense of the latter. We argue in agreement with Doebel (2020) that executive functions must be

re-conceptualized from the current deficit lens to a more assets-based approach that centres the context of the developing child rather than the average child.

To this end, we offer three considerations for the field. We first suggest that measurement of executive function be re-examined, both in terms of the tasks themselves and contexts in which executive function is being measured. Widely used tasks of executive functions have been normed with data from predominantly White children in predominantly White spaces in sessions run by predominantly White researchers. A culturally relevant re-conceptualization of executive functions will take into consideration the unique strengths of minoritized children and will celebrate children's ability to persist through real-world distractions and perform complex, planful actions in rapidly changing environments. Second, we suggest re-examining the role of parenting and environmental characteristics in the development of executive functions. Current ideas of executive function development posit that busy, crowded households in which biological parents may play a different role than in a prototypical middle-class White family are deleterious to executive function development. A culturally relevant re-conceptualization of executive functions will take into account the benefits of multi-generational family structures, which might include non-parental and sibling care, and will extend beyond considerations of the nuclear family to include considerations of systemic inequities facing minoritized children, which—at least in the United States—have dictated payment structures and work schedules (i.e., economic policy), close-quartered living (i.e., housing policy), and insufficient access to health care (i.e., health policy) and educational opportunity for all children. Finally, we suggest a reconsideration of the many interventions that target the executive function skills of minoritized children. Beyond the fact that most intervention efforts assume a deficit orientation from the start (as articulated by the presumed need to improve children's skills), they also proscribe an outcome that makes a child perform more like a prototypical White, middle-class student. A culturally responsive re-conceptualization of executive functions will develop interventions that allow children to leverage their assets to build executive functions in ways that are meaningful to them rather than a Eurocentric norm.

This critique and these suggestions are not to disparage the important research on executive functions and their development, nor do we mean to undercut the assumption that executive functions play a role in the development of characteristics critical to success in modern society. On the contrary, we recognize the importance of past research for laying the groundwork to allow for a more nuanced consideration of what successful executive functions look like in different populations rather than assume some unattainable universal. Successful executive functions might look different from one group to the next, and that is why it is time to re-conceptualize the role of context in executive functions.

## AUTHOR CONTRIBUTIONS

**Dana Miller-Cotto:** Conceptualization; methodology; supervision; writing – original draft; writing – review and editing. **Leann V. Smith:** Conceptualization; methodology; visualization; writing – original draft; writing – review and editing. **Aubrey H. Wang:** Conceptualization; methodology; writing – original draft; writing – review and editing. **Andrew D. Ribner:** Conceptualization; writing – review and editing.

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