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Beyond Discrete Categories: Studying Multiracial, Intersex, and Transgender Children Will Strengthen Basic Developmental Science

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Developmental research on social categorization has overwhelmingly focused on perceptions about and experiences of individuals who are clear or prototypical members of discrete and usually dichotomous social categories. For example, studies of social categorization, stereotyping, prejudice, and social identity have generally explored how children reason about others who are gender-typical boys or girls or monoracial White or Black children. Similarly, research participants have generally been gender-typical and monoracial. However, our efforts to build theories that account for the true range of variation require acknowledging the increasing visibility of children who do not fit into these discrete categories and raise the question of whether existing theories can capture the dynamics that arise for them. Focusing on race and gender/sex, the social categories that have received the most attention in the developmental literature, we review research that has gone beyond simple dichotomies by including multiracial, gender-nonconforming, or intersex children, either as the targets of social perception or as participants themselves. We argue that this emerging work reveals problematic assumptions built into our theories and methods and highlights the value of building a more inclusive science.

One way to reduce the dizzying complexity of the social world is to place individuals into discrete categories: Black or White, man or woman, American or foreign. We do this not only as naïve perceivers, but also as scientists. In our research focusing on social groups, for example, we routinely ask children to report their preferences for people who are Black or White or male or female (e.g., Aboud, 1988; Raabe & Beelmann, 2011); our consent forms frequently include boxes for parents to check indicating which race or gender describes their child; and we theorize about the experiences of children in these categories, thus treating each individual as an exemplar of a broader category within which we have determined they reside. This focus on discrete categories has been the foundation for much work on intergroup cognition, as well as the majority of our own work, and it has taught us many useful things. But in this article, we would like to raise the concern that it has—often unintentionally—excluded many people's

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experiences, limited the generalizability of our findings, and, perhaps most importantly, limited the ability of our theories to adequately explain real-world social phenomena. On the basis of these considerations, we argue for the importance of broadening existing work on social categorization to include the perceptions and experiences of people who do not reside within our most studied categorical spaces. In particular, we focus our discussion here on individuals who are *multiracial* (people with lineage from more than one racial group), *transgender* (people whose sex and gender diverge), and *intersex* (people whose sex is not clearly male or female). We argue that considering these diverse identities necessitates broadening our theoretical framework and, at least in some cases, reflecting on whether the methods we employ do justice to the phenomena of interest.

One question we should address at the outset is why this article is housed in a special issue focused on integrating work from typical populations (traditionally studied by cognitive developmentalists) with work on atypical populations (traditionally studied by developmental psychopathologists). Do we mean to imply that the populations we focus on here (transgender, intersex, multiracial) are atypical in any sense analogous to, for example, developmental disabilities like Down syndrome or Williams syndrome? To be clear, we do *not* believe these populations are "atypical" in the sense of, for example, experiencing an impairment that may require specialized education or intervention. Rather, here we mean "atypical" in a strictly statistical sense—samples that are less often represented in the literature and, at least in most of the cases we discuss, statistically less common in the population. Thus, while *atypical* in a different sense, we argue that these populations have been neglected in the literature and that their inclusion will benefit our science. Finally, we do hope that, although outside the scope of our argument here, some of the considerations we take up (e.g., whether to think of variation in terms of categories or continua, or the tendency to pathologize atypicality) will resonate with similar debates that have occurred in the case of developmental disability (Wing & Gould, 1979) and will resonate with several other themes introduced in this special issue (Burack et al., this issue; Landry et al., this issue).

Although we discuss these three groups (intersex, transgender, multiracial people) together and separately throughout this article, *we do not mean to simplistically equate them*. There are profound differences between biracial or multiracial identities, gender-nonconformity or transgender identities, and intersexuality—differences that likely outweigh similarities. Indeed, there are divergent views about the relative "legitimacy" of each, including the reasons why each group might be treated discretely (e.g., evolutionary vs. more social or cultural reasons), and reasonable people can disagree about the ways in which each group is or is not relevant to broader discussions about cognitive development. We also acknowledge that these groups can intersect, as in the case of multiracial transgender individuals or people who are intersex and identify as transgender (for more on intersectionality, see Cole, 2009). Thus, the connection we draw attention to here is at a more formal level: The social, cultural, and even medical discussions around each are affected by a psychological tendency to make complex and diverse individuals conform to discrete categories that, as it happens, many do not fit. This tendency affects both lay people and professionals and has had a range of problematic consequences for those who are nonprototypical group members, as well as for our efforts to build a psychological conception of human variation. We note that gender, sex, and race are likely the *most* studied social categories, making consideration of the way in which they have been conceptualized a particularly critical matter even if one sees few commonalities between them.

The Focus on Discrete Categories

There are several reasons why the field of cognitive development tends to focus on discrete categories and, specifically, the most prototypical members of familiar social categories. Some are straightforward practical reasons such as the logic of experimental control in which we seek to eliminate confounding or confusing aspects of the stimuli to home in on the single contrast in which we are most interested. In other cases, it reflects the desire to maximize the size of a possible effect and/or to start with the clearest cases before moving to the more ambiguous middle. For example, if we are not sure whether children can distinguish racial categories in the first place, it is reasonable to begin an investigation by seeing if children can categorize images of people who are, by adult judgment, the cleanest examples of each category. But although an understandable first step, work all too rarely goes on to widen the focus to encompass a fuller range of variation.

In addition, these choices sometimes reflect structural properties of our methods. For example, the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998), the most common measure of implicit attitudes in both children and adults, requires a pair of category labels and involves making dichotomous categorization decisions about individuals. To be clear, there is nothing intrinsically unreasonable about many of these decisions; indeed, we ourselves regularly make them in our own work (Dunham, Newheiser, Hoosain, Merrill, & Olson, 2014; Dunham, Srinivasan, Dotsch, & Barner, 2014). But we have begun to worry that when these decisions come to predominate, the assumptions embedded within them can become obscured by habit. As a result, the use of these measures may begin to reinforce an assumption that is incorrect (in at least some cases)—namely that *the categories themselves*, rather than just their operationalization within our methods, are essentially discrete.

The Allure of Discreteness

Why worry about the field's focus on discrete social categories? A central reason comes from the provocative evidence that thinking in terms of discrete categories—and in particular, dichotomies—is a less-demanding cognitive default that—due to the simplification it entails—promotes higher degrees of stereotyping and less sensitivity to real gradations within categories. Such effects may emerge quite early in development, thereby representing an interesting aspect of our basic approach to variation. In one recent demonstration with preschool-aged children, Master and colleagues (Master, Markman, & Dweck, 2012; for a conceptually similar example with adults see Rothbart, Davis-Stitt, & Hill, 1997) induced a dichotomous versus graded encoding of the same individuals by introducing children to characters who varied continuously along a dimension (in this case, the dimension of niceness) but were described either via binary category labels (e.g., "this one is nice"; "this one is mean") or graded trait descriptors (e.g., "this one is a little nice"; "this one is really nice"; "this one is a little mean"; "this one is really mean"). In the former case, each nice character was described via a trait adjective irrespective of the degree to which they embodied the trait. In the latter case, each character was described via their position on the underlying continuum. While the properties of the actual characters were held constant, children in the category condition as compared with the graded condition tended to *overestimate* intercategory differences between the characters by considering the "a little mean" and "a little nice" character to be more different from one another, while also *underestimating* intracategory

differences by treating, for example, the "little mean" and "really mean" characters to be more similar to one another. Thus, appreciation of continuous variation was powerfully curtailed when that variation was *described* using dichotomous category labels. In a follow-up study in which stimuli were presented neutrally, withholding both category labels and graded trait terms, children's judgments paralleled those in the categorical condition, suggesting that the default mode of construal is categorical. Applied to, for example, the gender domain, there is evidence that using the labels "boy" versus "girl" does in fact accentuate the differences between boys and girls, thereby promoting stronger stereotyping (Hilliard & Liben, 2010) and thus obscuring the fact that there are some girls whose preferences and behaviors are closer to some boys than to other girls. Insofar as this involves children being tacitly encouraged to see themselves as prototypical boys or girls, rather than as children toward the middle of the gender spectrum, this tendency toward dichotomization could have consequences not only for categorization, but even for mental health and well-being.

Related work has long suggested that category labels themselves enhance similarity judgments in both children and adults, either by serving as an additional feature that binds category members together (Sloutsky, 2003) or by suggesting to children that the categories represent deep, essentialized distinctions that can support novel inferences about shared properties (Gelman & Heyman, 1999). Taken together, these findings suggest that categorical thinking enhances stereotypical reasoning and obscures perception of potential similarities among those who do not belong to the same category, a potentially self-reinforcing effect that could raise unwarranted confidence in the reality of the discrete conception itself. Indeed, for both adults (Eidelman, Crandall, & Pattershall, 2009; Kahneman, Knetsch, & Thaler, 1991) and children (Tworek & Cimpian, in press), there is a pervasive tendency to believe that the way things are (including the way they are described and categorized) is the way things ought to be. Thus, once we have conceptualized categories as dichotomous or have decided that the dichotomous options are normative, departures from that dichotomy may come to be seen as deviant and therefore bad, just as other contingent and even arbitrary decisions come to acquire normative weight merely by being presented as settled fact (Eidelman et al., 2009). If so, individuals who deviate from these normative poles might be perceived as deviant or problematic. As we will discuss in greater detail, it is in fact the case that multiracial, transgender, and intersex people have all, at one time or even today, been considered deviant in this way.

Some of these effects of categorical thinking can be conceived of as cognitive heuristics making it less mentally taxing to represent complex spaces. Abstractly speaking, representing a whole group of individuals as belonging in one of two groups requires just a single bit of binary data, while representing them as lying on a continuum requires more cognitive resources to make graded decisions and more mnemonic resources to store those distinctions. This "heuristics" account has been supported in the adult literature, where individual-differences tendencies to prefer simpler, more "black and white" solutions has been linked to greater category-based stereotyping (e.g., Crawford & Skowronski, 1998; Webster & Kruglanski, 1997), greater dislike for category-ambiguous social stimuli (Dickter & Kittel, 2012), and greater *essentialism* of social categories (Roets & Van Hiel, 2011; i.e., greater belief that category membership is based on deep, enduring internal properties). While it is not as well explored in children, Gaither, Schultz, et al. (2014) found that children who more strongly endorsed social category essentialism tended not to use a multiracial categorization option, suggesting they favored a simpler dichotomous category space. These findings are

consistent with the idea that reducing complex and continuous spaces to discrete categories (and especially dichotomies) can be a means of reducing uncertainty and simplifying complexity for social perceivers.

Why Go Beyond the Discrete?

The tendency to focus on discrete categories, and the most prototypical members of those categories, reflects not merely a limiting tendency in the psychology of our participants, but in ourselves as well and thus a potential trap into which our science can fall. Problematic consequences can take several forms. First, many people do not fit binary identities, and thus, their experiences may not be captured by the field. In fact, the number of people falling outside binary identities is growing in the United States, making this is an increasingly large problem for our field. For example, multiracial children grew from 1% of all American infants in 1970 to 10% of American infants in 2013 (Pew Research Center, 2015). Transgender people are coming out at younger and younger ages and are increasingly visible and vocal about this identity (through media, lawsuits, etc.), meaning more people are becoming familiar with the existence of transgender individuals (Halloran, 2015). In addition, genetic testing is making it clear that many more people might be intersex than originally believed (Ainsworth, 2015), and these diagnoses are now being made at earlier and earlier ages, even before birth in some cases (Casey & Gomez-Lobo, 2015). We assume it is uncontroversial to insist that our theories of the kinds of people populating the social world should adequately capture the variation that characterizes that world. This statement represents the first and foremost reason for a more inclusive science. There has been some important movement in this direction (including one recent piece consistent with the argument here, Kang & Bodenhausen, 2015). For example, we have seen an uptick in research on social groups focusing on biracial children as targets and participants (e.g., Gaither, Chen, et al., 2014, Roberts & Gelman, 2015) as well as those focusing on transgender participants (Olson, Key, & Eaton, 2015).

Second, and perhaps less intuitively, moving beyond the dichotomous conceptions we have highlighted will also spur theoretical gains. As we alluded to earlier, we believe that the reliance on discrete categories in our methods has a tendency to reify or reinforce those categories within our theories. For example, discrete and dichotomous views of gender have been taken for granted to the point that we benchmark normative development with it, most often by asking a child, "Are you a boy or a girl?" and "Will you be a man or a woman?" and assuming that understanding gender is synonymous with an answer that aligns with one's sex at birth (Zucker & VanderLaan, 2016). Further, those who deviate from normative views on these items (e.g., transgender children) are thought to show a cognitive deficiency or delay (e.g., Zucker et al., 1999). Thus, by focusing on the most prototypical members of groups, the field may be overstating or oversimplifying our theories about social categorization in early childhood. We will discuss these and other issues in more detail in the following sections, but the upshot is that a sufficient theoretical account of social categorization must have the resources to capture the true range of variation that constitutes those category spaces.

BEYOND DISCRETE CATEGORIES: THE CASE OF RACE

Children of multiracial descent are the largest-growing youth population in the United States (Saulny, 2011). An estimated 1 of every 10 children born in the United States today is

multiracial (Pew Research Center, 2015). Despite this dramatic increase, at least until recently, our science has paid scant attention to multiracial individuals. We begin with a brief background concerning why categorical models of race are limited and then move to discussing two ways in which research should move beyond dichotomies—namely, research focusing on the perception of multiracial individuals on the one hand and research incorporating multiracial participants on the other.

Race as Continua Versus Category

Any discussion concerning categorical treatment of race should acknowledge the modern scientific consensus, which has largely rejected the notion of discrete racial categories or real racial essentialism (reviewed in Cosmides, Tooby, & Kurzban, 2003; Goodman, 2000; Maglo, 2011). Rather, most contemporary views of race stress continuous variation across a large number of genetically transmitted but independent phenotypes, so-called "clines" (e.g., Lieberman, Stevenson, & Reynolds, 1989). Thus, even to say that race should be conceived of as a *continuum* is an inadequate corrective to categorical thinking; rather, race is a space defined by a large number of orthogonal continua within which we have contingently imposed a system of discrete categories. Of course, categories have psychological power: Once we are accustomed to them, discrete race categories appear obvious or even natural, and thus, multiracial people can become difficult or ambiguous perceptual objects, at least to monoracial perceivers (Chen & Hamilton, 2012).

Even in countries with large multiracial populations, such that dichotomous conceptions of race seem inadequate, the tendency to impose discrete categories frequently still emerges through the addition of a third discrete category term that encompasses multiracial individuals, such as "Coloured" in South Africa (Dunham, Newheiser, et al., 2014; Newheiser, Dunham, Merrill, Hoosain, & Olson, 2013) and "Pardo" in Brazil (Telles, 2002). We suspect that many of the problematic aspects of dichotomous categories will also appear in these cases. A third category goes only a very small way toward capturing continuous variation and still imposes a need to discretely classify "boundary" cases in ways that will not always be obvious or accurate.

Multiracial Individuals as Targets of Social Perception

Until quite recently, the vast majority of research on the social perception of race has focused on how (predominantly White) participants view monoracial others. Thankfully, during the last several years, new work has finally begun to more systematically address the omission of multiracial targets (e.g., Gaither, Chen, et al., 2014; Gaither, Schultz, et al. 2014; Roberts & Gelman, 2015). By revealing tensions in several aspects of previous models of racial perception and demonstrating that categorization of multiracial individuals is affected by ideological concerns, this work presents clear evidence of the importance of a conception of social categorization that goes beyond a dichotomous treatment of race. For example, and as we detail further in the following sections, more recent work has suggested that previous claims concerning young children's understanding of racial categories have been exaggerated and also that existing notions of racial identification can be insufficient to capture the dynamic unfolding of social identification in multiracial children.

We have suggested that the tendency to perceive even multiracial others as belonging to discrete racial categories is widespread. Anecdotal support comes from the fact that even

individuals known to be multiracial are frequently described or conceived of in monoracial terms. For example, President Obama is widely considered the first Black president of the United States, only infrequently the first multiracial president, and never a White president; Ann Curry, a well-known American news anchor, is widely considered Asian American, despite having a biological parent who is not Asian American; and British author Zadie Smith tops many international lists of top Black authors despite also being multiracial. Of course, some multiracial individuals choose to self-identify in terms of one specific racial identity, and such self-identifications may affect how others see them. But beyond these anecdotes, there is abundant evidence that when asked to categorize unfamiliar multiracial targets, monoracial perceivers frequently place them into discrete racial categories even when a multiracial category is available (Chen & Hamilton, 2012; Roberts & Gelman, 2015) despite the fact that many multiracial individuals actually prefer to identify and be seen as multiracial (Townsend, Markus, & Bergsieker, 2009; Udry, Li, & Hendrickson-Smith, 2003).

Broadly speaking, the tendency to prefer a single discrete category is consistent with psychological essentialism (i.e., with the assumption that each individual "really is" a member of one specific racial group). But the specific *direction* in which these classifications play out suggests that essentialism cannot be the only factor. In particular, categorizations of multiracial targets frequently exhibit the phenomenon of *hypodescent* (i.e., the tendency to classify mixed-race individuals via the lower status or more stigmatized category)—a phenomenon that emerges in childhood (Roberts & Gelman, 2015) and remains stable into adulthood (Ho, Sidanius, Levin, & Banaji, 2011; Peery & Bodenhausen, 2009). This outcome cannot be derived from essentialism alone, because both parental essences should, absent other considerations, contribute to the child's category membership equally. Hypodescent suggests, then, that racial categorizations are influenced by ideology—for example, a tendency to police the boundary of higher-status racial categories a la the "one-drop rule" in which even a small degree of Black ancestry yields Black category membership. Supporting this contention in adults, political conservatism, racial essentialism, and social dominance orientation have all been linked to the tendency to categorize multiracial faces as Black rather than White (Ho, Roberts, & Gelman, 2015; Ho, Sidanius, Cuddy, & Banaji, 2013; Krosch, Berntsen, Amodio, Jost, & Van Bavel, 2013; see also Kang, Plaks, & Remedios, 2015). And at least one of these links—that between essentialism and the perception of multiracial or racially ambiguous faces—emerges quite early, with White children who more strongly essentialize showing worse face memory for both Black and White-Black ambiguous faces (Gaither, Sommers, & Ambady, 2013).

Another aspect of the historic reliance on monoracial targets is also important to mention. Much of that work used as stimuli photographs of individuals who would be considered very characteristic or "prototypical" members of racial categories. In so doing, previous work has artificially simplified the perceptual landscape by removing the real range of variation from the stimulus space. This simplification becomes problematic when racial classification is used as an index of whether or not children "understand" race (e.g., as reviewed in Aboud, 1988). Thus, while work in this vein has suggested adultlike classification performance in children as young as 4 years, because this conclusion is based almost exclusively on children's ability to correctly classify highly prototypical racial exemplars, it appears to have overestimated what children actually understand about the perceptual underpinnings of racial variation. Indeed, when stimuli encompassing a full range of variability are introduced, the picture looks very different (Alejandro-Wright, 1985). One series of recent studies, for example, asked children to categorize

faces drawn from a large set in which skin color and other aspects of facial physiognomy were independently varied across the White-Black and White-Asian category boundaries (Dunham, Dotsch, Clark, & Stepanova, 2016; Dunham, Stepanova, Dotsch, & Todorov, 2014). Thus, children were presented with highly prototypical faces as well as faces that were near the category boundary or that were prototypical in one but not another dimension. On this more complex task, children's performance was substantially different from adults, and the evidence suggested their knowledge of the specific physiognomic cues that mark category boundaries was in fact not in place until at least the upper elementary school years. Given the range of actual variation to which children are exposed, as well as the proportion of the population who would reject a unitary classification into a single racial category, equating racial understanding with the ability to classify an extremely limited set of maximally prototypical stimuli is problematic on both conceptual (because racial categories are not discrete entities) and perceptual grounds (because even the most prototypical features vary independently, creating a very complex perceptual learning problem for the developing child).

The Experiences of Multiracial Individuals

In addition to underemphasizing perception and cognition *about* multiracial individuals, we have also, until recently, given insufficient attention to the social cognition of multiracial individuals themselves. This is critical, because much of what we assume to be the case about emerging social cognition and social identity does not apply to children who themselves do not neatly fit within a single race category (for reviews, see Gaither, 2015; Poston, 2011). By revealing tensions in previous models of race-related cognition, this work presents clear evidence of the importance of broader conceptions of social categorization and racial identity. Further, multiracial individuals also appear to face some additional psychological burdens relating to how they are perceived by themselves and others. For example, multiracial individuals are sometimes judged more negatively than their monoracial counterparts (Sanchez & Bonam, 2009), and multiracial individuals are sometimes called upon to define or defend their racial identity in ways that monoracial individuals are not, a process that can come with psychological costs (Sanchez, Shih, & Garcia, 2009; Townsend et al., 2009). It appears that identifying with more than one racial category is associated with more positive well-being in adolescents (Binning, Unzueta, Huo, & Molina, 2009), suggesting that an overemphasis on discrete racial categories may have negative consequences for at least some multiracial individuals, for whom having their identity accurately recognized can be important. That is, being perceived as multiracial is, for some multiracial individuals, an important aspect of being understood by their social partners (Remedios & Chasteen, 2013).

Thus, it seems clear that biracial and multiracial children are traveling along developmental trajectories that may differ in critical ways from their monoracial peers, with distinct implications for the development of social categorization and social identity (Rockquemore, Brunsma, & Delgado, 2009). Some research has begun to characterize these trajectories, suggesting, for example, that biracial children possess more sophisticated knowledge of race-related perceptual cues as well as more flexible racial identification (Chiong, 1998; Poston, 2011). Some of these differences may appear remarkably early; a study of 3-month-old infants revealed that multiracial babies exhibited different patterns of visual attention to faces than did monoracial babies, suggesting they were engaging different processes to build a broader representation of the faces

around them (Gaither, Pauker, & Johnson, 2012). More broadly, work with non-monoracial children provides reason to think that central constructs in intergroup social cognition, including notions of "ingroup preference" or "outgroup derogation," must be considered in a new light when individuals do not fit within a single category and can thus identify in complex ways (e.g., considering oneself to belong to more than one or neither monoracial category and/or to belong to a different biracial or multiracial category).

Indeed, there is now an emerging body of evidence suggesting that both multiracial adults and children flexibly shift their social identities in response to contextual demands. For example, one recent study primed biracial children with one racial identity (Gaither, Chen, et al., 2014) and then had them engage in a learning task modeled after the testimony literature (Koenig, Clement, & Harris, 2004) in which they had the opportunity to learn from a monoracial individual who matched or did not match the primed identity. Children showed a tendency to preferentially learn from individuals who matched the primed identity as well as, at least in some cases, enhanced social preferences for "matched" individuals. Conceptually similar findings have been observed with biracial adults (Gaither et al., 2013; Pauker, Ambady, & Freeman, 2013). These findings suggest that for multiracial individuals, social contexts activate different components of racial identity in a highly flexible manner. No monolithic conception of group identity can account for this flexible and contextually contingent form of racial identification.

Contributions to Developmental Science: Present and Future

Overall, we take this emerging body of work as a powerful demonstration that notions of group and identity must be broad and flexible enough to actually encompass the true range of variation that increasingly characterizes our society. Research that has embraced greater complexity in category boundaries has benefitted the field by providing a more accurate picture of racial perception (Dunham, Stepanova, et al., 2014; Roberts & Gelman, 2015), racial socialization (Rockquemore et al., 2009), and the dynamics of racial identification (Gaither, Chen, et al., 2014). Future work can build on these findings by continuing to build more of the world's real complexity into research designs. Indeed, we would argue that even when a study does focus on monoracial children, either as participants or targets of perception, the researchers would do well to explicitly acknowledge it as a limit to generalizability and include at least some discussion of the potential implications findings might have for a more diverse sample. Of course, we recognize that multiracial participants are more prevalent in some regions of the world than in others and that practical demands can sometimes work against their inclusion, but we are hopeful that the field will move toward a more thorough documentation of their experiences.

Many questions remain. Do multiracial children conceive of racial constancy in the same way as monoracial children, or might they conceptualize racial identity in a more fluid manner, something that can be changed or adopted with changing circumstances? In one sense, this could reflect the early emergence of "code switching," in which individuals adopt linguistic or behavioral patterns that match their interaction partners (Auer, 2013). Conversely, for children growing up in diverse environments, how is racial variation itself understood? Might early experience with diversity lead them to reject dichotomous or overly essentialist views of racial variation? In addition, how can measures be adapted or developed to assess the full spectrum of racial diversity? For example, might researchers interested in implicit social cognition consider

less categorical measures, such as priming measures, rather than more categorical ones, such as the Implicit Association Test (IAT)? More broadly, we suspect that as our science becomes more inclusive, researchers will discover new questions that are derived specifically from considering the experiences of multiracial people, rather than merely extending theories focused on monoracial individuals to accommodate them.

BEYOND DISCRETE CATEGORIES: THE CASES OF GENDER AND SEX

While multiracial individuals have been vastly understudied within social cognition and cognitive development, our next categories—individuals who are transgender (have a gender that does not match their sex) and individuals who are intersex (have a biological sex that is neither fully male nor female)—are not only rare in that they are understudied in mainstream cognitive development, but they are also statistically rare. With that said, these identities are actually more frequent than many people believe. Although comprehensive epidemiological studies of transgender identities in childhood are needed, some initial studies suggest that at least a broader category of gender nonconformity is quite common. Somewhere between 2% and 3% of school-aged children both "behave like the opposite sex" and "wish to be the opposite sex" with regular frequency (Van Beijsterveldt, Hudziak, & Boomsma, 2006; see Zucker & Lawrence, 2009, for a review), suggesting that an unexpected "mismatch" between sex and gender likely occurs within nearly one in every two classrooms. And a recent representative study of New Zealander high school students showed that 1.2% of them identified as transgender, with 94.7% identifying as nontransgender (the remainder was unsure or did not understand the question; Clark et al., 2014). Depending on the specific definition one uses of intersex, these children are also more common than many believe as they represent 0.02% to 1.7% of children (Ainsworth, 2015; Fausto-Sterling, 1993; Sax, 2002). Thus, although rare, these intersex and transgender children are at least as common as children who are blind (Foster & Gilbert, 1992) or who have Williams syndrome (Stromme, Bjomstad, & Ramstad, 2002), and both of these groups have received considerable attention in the mainstream developmental literature (e.g., Bedny & Saxe, 2012; Johnson & Carey, 1998; Landau, Gleitman, & Landau, 2009; Meyer-Lindenberg, Mervis, & Berman, 2006).

Sex and Gender as Continua Versus Categories

While in most Western cultures we tend to think of gender and sex as discrete, outside of the Western, middle-class "WEIRD" (Western, Educated, Industrialized, Rich, and Democratic) context (Henrich, Heine, & Norenzayan, 2010), conceptions of nonbinary gender and sex abound. For example, in India, a group of individuals called the Hijra is fully recognized as a third gender, roughly mapping onto our category of "transgender" (Nanda, 1986). Similarly, in Samoa, there is a group of people, identified early in development, as being fa'afafine, a recognized alternative to male and female (Bartlett & Vasey, 2006). There are regions of the world where intersex births are especially common, as is the case with children with 5α-reductase deficiency in Papua New Guinea (Imperato-McGinley et al., 1991) and the Dominican Republic (Thigpen, Davis, Gauthier, Imperato-McGinley, & Russell, 1992). Scientific advances in genetics and human biology more broadly are also increasingly leading

to the conclusion that a large number of people fall outside the male/female distinction (Ainsworth, 2015). Thus, experiences of gender or sex "atypicality" are occurring all over the world, yet nearly no cognitive developmental psychologists are examining these children nor are they discovering the ways in which they can contribute to our theories of gender development.

Gender and Sex-Diverse Individuals as Targets of Social Perception

Gender and sex are primary lenses through which we view ourselves and others (e.g., Blau & Kahn, 2006; Lytton & Romney, 1991; Money & Ehrehardt, 1972; Raley & Bianchi, 2006). Common examples include asking about the sex of a baby immediately upon learning that a friend is pregnant and giving gifts that are gendered in various ways (e.g., even liberal academics are unlikely to give the parent of a baby boy a pink dress). These assumptions continue to structure our lives into adulthood, from our designation of male versus female bathrooms to the decision of which Transportation Security Administration agent will pat us down on our way through airport security (e.g., Notaro, 2015). Further, research has clearly indicated that there are consequences to the categorizations we make: We treat others differently as a function of their (presumed) gender. To give just one example, parents report their boys are stronger/better crawlers than their girls, yet objective raters, blind to the gender of the baby, do not (Mondschein, Adolph, & Tamis-LeMonda, 2000). What these examples make clear is that in most cases, most of us assume that gender and sex align from birth, that these categories are binary, and that they have a clear impact on children's behaviors and dispositions—in particular, our tendency to see them through the lens of familiar gender stereotypes.

Much like we discussed in the last section with the case of race, these assumptions can bleed into our research. With few exceptions, the study of perceptions of gender and sex within developmental psychology has focused on the perceptions of prototypical boys and girls—those with clear sex assignment at birth and whose sex aligns with their gender. One exception has been an occasional study of children's responses to peers with gender counter-stereotypical preferences (e.g., Carter & McCloskey, 1984; Martin, 1989; Theimer, Killen, & Stangor, 2001), but even here the children are presumed to match a stereotype of the "other" gender rather than being conceived of as nonbinary. Of course, focusing on typical boys and girls is reasonable in many cases; they are, after all, the overwhelming majority. However, as more and more transgender and gender-nonconforming children become visible and vocal about their identities, and school districts, sports teams, and clubs respond, it is increasingly likely that even gender or sex-"typical" children will hear about and know such children, making it no longer appropriate to leave them out of our research programs entirely. Against this backdrop, it must be acknowledged how little we know about children's perceptions of transgender children. Thus, we encourage researchers to assess children's perceptions of such children and encourage researchers of applied cognitive development to consider how, for example, teachers or parents might best introduce the concept of transgender children to other children, so as to make the inclusion of these children more positive and less stigmatizing (e.g., McGuire, Anderson, Toomey, & Russell, 2010).

Aside from the practical issue of understanding how children conceive of transgender and gender-diverse children because they are now visible parts of children's everyday social world, there is also considerable theoretical value in considering the implications of the true range of variation as well. Assessing how children reason about transgender targets can speak to existing theories about essentialism (e.g., when children are essentializing "gender," are they actually

essentializing sex or gender? Are they essentializing biological features or some other aspect of fixed internal identity? What behaviors would a child assume a target has if that child reports feeling he was a boy since infancy, despite doctors saying he was a girl?) as well as ingroup and outgroup preferences (e.g., does sex at birth or gender identity influence the degree to which a child sees a transgender peer as an ingroup or outgroup? If the former, what aspects of gender identity are most relevant for child perceivers?). Similarly, we can ask whether knowing that transgender children exist changes cisgender (nontransgender) children's understanding of gender stability or constancy.

Another way in which the acknowledgement of the existence of gender- and sex-diverse children might influence the way cognitive developmentalists conduct research is by reexamining our own assumptions in the development of our measures. For example, "passing" many of our tasks often requires that a child comes to "believe" or "understand": that one's gender is determined by one's sex, that one's gender in childhood will be one's gender in adulthood, and that people can be divided into mutually exclusive categories of male or female (e.g., Bem, 1989; Ruble et al., 2007; Slaby & Frey, 1975). Children are not said to understand gender until they understand these "facts" (e.g., Kohlberg, 1966)—yet the scientific and political understanding of the truth of these claims is changing. We now know that there are people whose gender is in fact different than their sex, we now know that there are some people whose gender changes during the course of their development, and we know that there are people who are neither male nor female by standard criteria, yet our studies require that children endorse these empirically false claims about gender and sex to be granted the "correct" understanding of gender (e.g., Zucker et al., 1999). Imagine, for example, a child who personally knows a transgender child—would he or she be wrong to state that a child's sex and gender can diverge? On this point, we think the field is especially behind. Of course, it is reasonable that children should come to learn large-scale statistical regularities relating to gender categories, such as that most people's sex and gender align. But at the very least, it seems clear that children who provide answers that deviate from this norm are not necessarily incorrect and that a child who has a different gender experience or knowledge of a different experience (e.g., the sibling of a gender-nonconforming child) than most is not automatically disordered or confused in some way (e.g., Fast & Olson, under review). As way of analogy, most children favor members of their social groups, even arbitrarily assigned ones (e.g., Dunham, Baron, & Carey, 2011)—this response is statistically the most common response—yet we would not argue that a child who violates this norm—for example, a child who showed no group bias—is incorrect, deviant, or otherwise problematic.

The Experiences of Individuals With Gender- and Sex-Diverse Identities

In general, the experiences of children who identify as the "opposite" gender, children who identify as somewhere between male and female or as neither male or female, children who show major discordance between their sex and gender expression, or children whose sex does not appear to be neatly male or female have fallen within the purview of developmental psychopathology rather than mainstream cognitive development (e.g., Ehrensaft, 2010; Wallien & Cohen-Kettenis, 2008; Zucker, 2005). Not surprisingly, therefore, much of the work with these children as participants has focused on clinically relevant questions (e.g., rates of psychopathology among these groups), rather than questions about basic developmental science (though see Zucker et al., 1999). Even when the existence of these children is mentioned in reviews of gender development (e.g., Martin, Ruble, & Szkrybalo, 2002; Ruble, Martin, &

Berenbaum, 2006), their experiences rarely make it into broader discussions of gender development (Liben, 2016). This separation occurs despite the fact that focusing on these less common populations may be especially insightful to our theory development.

Our theories about the development of gender identity, gender roles, and gender presentations are based nearly exclusively on gender-"typical" children, our stimuli nearly exclusively focus on prototypical exemplars of boys and girls, and our theories often assume that to understand gender is to understand "typical" gender development (Ruble et al., 2006). The inclusion of children with diverse gender and sex identities—in particular, transgender and intersex identities—will benefit basic research in cognitive development in several ways. First, by systematically studying a wider swath of children with more diverse gender and sex identities, we can provide additional tests of our theories. As an illustrative example, we take the case of gender constancy. Some cognitive theories of gender development argue that a key (if not *the* key) gender milestone is coming to understand that a person's gender is stable across time and situations (e.g., Kohlberg, 1966; Ruble et al., 2007). Children begin to show evidence that they understand this principle around 5 to 7 years of age, with younger children believing, for example, that if a boy grows out his hair or wears a skirt he becomes a girl (Slaby & Frey, 1975). Researchers have pointed out that this understanding often occurs at the same time as, and may even lead to, other aspects of gender cognition (e.g., Ruble et al., 2007; Slaby & Frey, 1975; though see Arthur, Bigler, & Ruble, 2009; Levy & Carter, 1989, for some counterexamples). For example, children who show an understanding of gender constancy show greater preference for gender-stereotypical toys as well as greater distortions in gender-typed memory (Stangor & Ruble, 1989).

However, relevant to the present context, there is a subset of children who report that their gender identity is nonbinary (neither fully male nor female) and even some who report that their gender identity wavers or changes over time (e.g., Ehrensaft, 2010, 2011). Given the existence of such children and the increasing attention to gender-nonconforming children, is it accurate or appropriate to equate responses indicating variation over time with a deficient understanding of how gender functions? We do not think so, at least absent evidence that gender constancy is a necessary precursor to other aspects of gender understanding in gender-nonconforming children. For example, if such children do not believe that gender is stable but still show high levels of gender stereotyping—similar to their gender-"typical" peers—it would provide some (additional) evidence against the claim that gender constancy is a precursor to stereotyping. In some ongoing work, we are testing exactly this question in a group of transgender preschoolers (Fast & Olson, under review). Including these children in such a study could provide convergent or divergent evidence contributing to ongoing theoretical debates on this issue (Bandura & Bussey, 2004; Martin et al., 2002).

Not only will including gender-atypical children in our research provide important test cases for current theories, but it will also help us to answer deep questions we simply cannot answer with gender-typical children. As an example, in "typically" gendered children, nearly all factors that might contribute to the development of a child's gender identity, gender role, and gender presentation (e.g., parental input, peer socialization, genetics, anatomy, etc.) are highly correlated and overlapping. That is, a "typical" boy not only has male genes, but he was raised as male, reinforced for his malelike behaviors, and has the expected male body, and likely, his parents purchased clothes and toys that signal to even strangers that he is a male. Determining what roles each of these factors plays in each aspect of his gender development is nearly impossible (does he feel like a male because of his genes or the way he was raised or some combination?). By

studying gender and sex in more diverse children, however, especially as we learn and document more about their lives and upbringings, we can begin to separate the possible influence of these factors in determining gender identity. For example, many transgender children receive clear parental input and peer socialization about what their gender identity should be, yet they develop gender identities starkly at odds with that environmental input. Insofar as existing theories of gender identity development emphasize the contributions of parental and community socialization (e.g., Bussey & Bandura, 1984, 1992; Mischel, 1966), these theories may not be able to account for transgender children's identity (at least insofar as differential socialization practices can be ruled out). At the very least, such theories will need to be expanded to accommodate the experiences of these children.

Similarly, including the experiences of intersex children may help our understanding of the ways in which biological forces such as hormones at different times in development contribute to children's sense of gender roles and gender identity. For example, one study of women with congenital adrenal hyperplasia (CAH), a type of intersex condition, showed that the degree of androgen exposure in utero (caused by various mutations leading to varying degrees of masculinization of genitalia) was correlated with having more male-dominated occupations, more interest in male-stereotyped activities (e.g., interest in motor vehicles), and sexual interest in the same sex (Frisen et al., 2009), suggesting a possible influence of prenatal hormones on gender role, gender identity, and sexual orientation. Similar findings have been observed with female children who have CAH (e.g., Meyer-Bahlburg et al., 2004). Critically, however, even with maximal androgen exposure, there was considerable variability, leaving open the important role of socialization or other less understood biological processes as influences beyond early hormonal exposure.

Some number of children with ambiguous genitalia (one type of intersex condition) are raised as boys and some as girls, some are aware they were born intersex, some are not, yet within each group, some later identify as male, some as female, and some as something in between (e.g., Slijper & Drop, 1998). Although not a true experiment, this configuration of environments, perhaps in combination with the study of transgender children who, for example, are or are not allowed to "socially transition" to live as the "other" gender, could allow researchers to better separate the impact of gender socialization on gender outcomes. By including a broader range of gender and sex experiences, developmental psychologists will be able to revise their theories about the emergence of different aspects of gender identity, ultimately creating what is likely to be a more accurate (by virtue of explaining a wider range of children's experiences) as well as potentially more parsimonious theory of gender identity development (if it turns out that some factors, such as an understanding of gender constancy, may not be so central).

Contributions to Developmental Science: Present and Future

We believe it is crucial moving forward for researchers to consider transgender, gender-nonconforming, and intersex people, both as targets of perception and as participants. Although admittedly, including them as participants is hard given their relatively small representation in typical participant pools, we believe that doing so is feasible especially through partnerships. Transgender children are increasingly visible and can be identified through support groups, camps, conferences, and gender clinics (which have begun emerging throughout the United States and Europe at an increasing rate). In addition, in our experience, clinicians who

work with young transgender and gender-nonconforming children are open to collaborations and discussions with researchers of basic gender development. Likely the same is true for pediatricians who work with young intersex children.

Even when these particularly unusual groups (e.g., transgender and intersex children) cannot be recruited, researchers can more easily recruit gender-nonconforming children and can come to think of gender identity as a less discrete identity. Further, even when such children cannot be recruited in large enough volume as participants, authors can theorize or make predictions about how their existing theories of gender may or may not hold for these groups, thereby highlighting that such children are in fact integral to testing theoretical predictions. Regardless of access to these participants, everyone has the ability to contribute to discussions about perceptions and understanding of transgender, gender-nonconforming, and intersex people, which in turn will advance the goal of moving beyond thinking of gender and sex as discrete categories.

Contributions to Developmental Psychopathology: Present and Future

So far, we have focused almost exclusively on what cognitive developmentalists can gain from studying a broader array of gender and sex minorities, but might clinically oriented researchers also benefit from collaboration with cognitive developmentalists on issues of gender categorization? We cautiously suggest that the answer is "yes." Most notably, several pediatricians and psychologists working in gender clinics have specifically stated a desire to know more about basic development among gender-diverse youth and a desire to collaborate more with researchers of basic gender development (e.g., Hidalgo et al., 2013). We focus here on two examples of how more knowledge about basic development in gender-diverse youth could influence clinical practice.

A critical issue in contemporary work on gender identity in developmental psychopathology concerns the likelihood that children who are "gender-nonconforming" in childhood will be transgender in adulthood. This question is important because of the direct implications for treatment (e.g., Byne et al., 2012; Steensma & Cohen-Kettenis, 2011). On the one hand, if these children will desist in their behaviors and identities anyway, some argue, why not try to make that behavior desist earlier (e.g., Meyer-Bahlburg, 2002) and therefore reduce anxiety and/or peer maltreatment that results from the gender nonconformity (Wilson, Griffin, & Wren, 2005)? On the other hand, if a gender-nonconforming child is highly likely to be a transgender adult, one might suggest providing familial (Hidalgo et al., 2013) and medical (de Vries, Steensma, Doreleijers, & Cohen-Kettenis, 2011) support, especially given that both have been linked to better mental health among transgender adults (e.g., de Vries et al., 2011; Hill, Menvielle, Sica, & Johnson, 2010; Olson, Durwood, DeMeules, & McLaughlin, 2016). Thus, increasing the ability to identify which children will (or will not) identify as transgender adults is of utmost importance. How can developmental psychologists help? One clear way is in documenting the pathways of different gender identities—at what ages do we see differences that predict which children will identify as transgender and which will not? For example, if signatures of gender behavior and cognition emerge early in development among a group of transgender children (e.g., Olson et al., 2015) and these same children retain their gender identity into adulthood, their responses at this earlier age can be one contributing piece of the complex clinical and parental decision regarding how and when to support children in social transitions.

Similar considerations apply to the case of intersex children. If developmentalists are clearer about what patterns of gender cognition are most common for children who identify as male, female, or (increasingly) another gender early on, they might also be able to help parents and clinicians identify signs that an intersex child is being raised as the "wrong" gender. That is, the medical establishment has reported many cases where parents of intersex children were told to raise their children as a particular gender or even conducted surgery to "assign" a gender, but then later it became apparent that the child's assigned gender did not feel authentic to the child (e.g., Dessens, Slijper, & Drop, 2005; Reiner, 2005). Indeed, a current lawsuit in South Carolina focuses on the very issue of wrongful or erroneous early assignment (Greenfield, 2014). Although there are now pushes to delay or even stop surgeries for intersex children altogether (e.g., Frader et al., 2004), research on early childhood development among intersex children could contribute by helping us to understand, at an earlier age, the nature of the child's gender identification and will therefore increase the likelihood that if the intersex child has a more binary identity, that child is raised as that identity insofar as possible (e.g., the roster at school or the child's passport lists the correct gender). This understanding in turn can be linked to better support strategies and can hopefully prevent some of the mental health challenges that emerge among misgendered intersex people (Slijper & Drop, 1998).

DISCUSSION

Rates of children who can be described as multiracial are increasing faster than any other racial group in the United States. Transgender children are increasingly visible and supported, and more parents are letting their intersex children live as intersex (rather than male or female) or switch their gender presentation if the initial "guess" was inaccurate. Yet despite the intense attention given to the development of social identity and social categorization with respect to race, gender, and sex, the experiences of all of these diverse individuals have largely been overlooked by cognitive developmentalists. At least until recently, we have known very little about how children perceive members of these groups as well as how members of these groups themselves experience their early social realities. This lack of knowledge is a problem for several reasons. First, surely our ultimate goal as cognitive developmentalists is to accurately account for (all of) human development, which requires focusing our attention on the true forms that variation takes. Indeed, a version of this very argument should be familiar from the recent calls to move beyond wealthy Western samples (e.g., Hernich, Heine, & Norenzayan, 2010). Second, as we reexamine our methods and theories, it becomes clear that the tendency to simplify complex spaces into simple dichotomies taints not just *our participants'* social perception, but ours as well. That is, in striving to make generalizable discoveries, we have simplified the world into categories that, in actuality, do not always exist in the forms in which we study them and in some cases even use endorsement of those false dichotomies as criteria for attributing understanding to children. Although a range of basic cognitive tendencies may help explain why we do so, it is worth attending to the biases that have occurred in our own and others' work.

For child clinical researchers, we hope this review will be a useful reminder that because developmentalists have not often considered the experiences of people who do not fit into a single category, it is unclear whether the theories and methods developed will be appropriate for them. Instead what might be necessary is collaboration between individuals who have thought

considerably about the theories of basic (or modal) development and those who actually know the experiences of nonbinary individuals. Together, we are optimistic that both cognitive development and developmental psychopathology will benefit from such intersections and potential collaborations.

Such an approach is likely to not only advance our existing theories, but also to yield interesting new research questions. For example, because of our tendency to place individuals in discrete categories, there are many cases where an outside observer may view an individual as a member of a category with which the individual himself or herself does not actually identify (e.g., a child who sees himself as male but whom other people see as female; a person who seems herself to be biracial but whom others see as Black). What are the psychological implications of this mismatch between one's own and others' group perceptions? Might this mismatch in and of itself impact a child's view of his/her own group membership or even groups in general, to say nothing of the influence on how that individual is treated by others? In what ways might this experience be different from the experience of someone who also does not fit a discrete group membership but who is actively seen by others as defying categorization (e.g., a visibly gender-nonconforming individual)? Some of these questions have begun to be fruitfully examined in the case of multiraciality (for reviews, see Gaither, 2015; Shih & Sanchez, 2005), and we hope that the general approach will continue to be pursued there as well as in the other areas we have identified here.

Although we have in some cases emphasized conceptual commonalities uniting the study of race, sex, and gender, we want to reiterate that this emphasis should in no way be taken to imply that we think the same issues arise with each. Surely each needs to be studied with an appreciation of its distinct context and demands. For example, while transgender and intersex people are often considered the purview of developmental psychopathology, multiracial people are generally not. Similarly, the former two groups sometimes seek medical interventions related to their social identities, while the latter quite clearly do not; some of these identities are more concealable than others and affect how they are conveyed and how they impact the everyday life of those who hold them. Further, public knowledge about the existence of these groups, the history behind the treatment of each, and the general acceptance of their identities by society are clearly quite varied. What is more, while sex is widely considered a biological construct, race is not, at least not by experts, and while all societies include members who have different sexes and genders, many do not vary in racial makeup. Thus, although we have combined these diverse experiences into one article, we want to be clear that these experiences likely have more differences than similarities in daily life.

With that said, it was nonetheless interesting, in doing research for this piece, to discover some surprising similarities in the ways in which these groups have been treated, especially historically. In particular, it has raised for us the possibility that the impact of a societal emphasis on discrete categories may itself contribute to the pathologizing of other experiences. Indeed, the history of all three cases on which we focus here (and for one of the cases, the currently dominant view) includes a period during which they were widely discussed—including in the field of psychology—as problematic or deviant, needing to be "fixed" or eliminated through treatment or avoidance.

Presently, intersex children are still considered in formal diagnostic manuals for pediatricians and clinicians to have a "*disorders* of sexual development," and many clinics conduct surgical or hormonal treatments to "correct" these "problems" (e.g., Slijper & Drop, 1998), with others

working to prevent the birth of intersex babies in the first place (New et al., 2001). Thus, intersex children continue to be seen through a lens of "atypicality as pathology" though there is a growing movement to change this perception (Dreger, 1998). Turning to gender, until 2013 (3 years ago, as of this writing), transgender children were considered to have "gender identity *disorder*" and thus would have been included in the pathological sense of "atypical" according to common practice in both developmental psychology and psychiatry. Even now, although the diagnostic label "gender dysphoria" no longer carries the charged term "disorder," it still appears in the *Diagnostic and Statistical Manual of Mental Disorders*-Fifth Edition and is still deemed by many in psychology and beyond to necessitate therapy to remove or reverse it (e.g., McHugh, 2014; Zucker, Wood, Singh, & Bradley, 2012), though this view too may be falling out of favor (Hidalgo et al., 2013).

What about multiraciality? Despite relatively high levels of acceptance today, multiraciality was also often characterized as a disorder historically. Arguments against interracial marriage in venues as prominent as state supreme courts frequently asserted that children born of mixed-race parents were problematic or even deviant (Perez v. Sharp, 1948; Scott v. Georgia, 1869), visible in, for example, arguments before those courts: "The amalgamation of the races is not only unnatural, but is always productive of deplorable results. Our daily observation shows us, that the offspring of these unnatural connections are generally sickly and effeminate …" (Eggers v. Olson, 1924). Although such sentiments are thankfully rare today, they are not absent entirely, and while old-fashioned racism is no doubt the dominant contributor, it is possible that a general unease with moving beyond categorical thinking may also play some role.

Conclusion

In summary, we have suggested a large number of ways in which our science has been restricted by both the societal and scientific dichotomization of complex social landscapes. While we have focused on some of the most central social categories with which the field has occupied itself, the considerations we have raised likely play out in other social distinctions as well. Rich or poor, urban or rural, liberal or conservative: In so many cases, we reduce continuous or multifaceted dimensions to a single either/or, and we suspect that a similar, though context-specific, set of problems will emerge in each of these cases. Thus, we suggest that an increased focus on multiracial, transgender, and intersex people will benefit nearly all aspects of our research, from the details of our stimuli, tasks, and methods to the theories those tools allow us to develop. It is past time that we expand our efforts to account for and embrace the true complexity that characterizes our social world.

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