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Identification of Multiracial Adolescents in Research Samples: An Examination and Critique of Existing Practices

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Abstract

This study examined caregivers' longitudinal reports of adolescent multiracial categorization across the ages of 9.5, 10.5, and 14 years, and adolescents' reports of their own multiracial categorization at the age of 14 years. A portion of caregivers' reports of adolescent multiracial status were inconsistent across the years of the study; some adolescents' and caregivers' responses differed when questions assessing multiracial status were phrased in different ways; and adolescent and caregiver reports did not always align when adolescents were 14 years old. Given these findings, we recommend that researchers consider using multiple methods of racial data collection and collapsing the results to report *estimated ranges* of racial representation in samples, rather than specific percentages. Furthermore, when racial data must be provided by a single informant in the context of early adolescence,

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we suggest that researchers should think critically about which group's perspective, adolescents' or caregivers', is more relevant to the research questions at hand.

Keywords
race/racial issues, identity, at-risk/high-risk populations, identity processes

Early adolescence is a time of dramatic reorganization in the caregiver–child relationship (Granic et al., 2003). On one hand, during this time, adolescents and caregivers may not always agree on day-to-day matters, and young adolescents normatively attempt to individuate from their caregivers (Lanz et al., 2001). On the other hand, caregivers remain important socializing forces during adolescence, transmitting a variety of core values and world-views, including perspectives on race (Barni et al., 2011; Neblett et al., 2009). Critically, early adolescence is a time of profound self-discovery and identity formation, particularly with respect to racial/ethnic identity development (Erikson, 1968; Marcia, 1980; Phinney, 1989). Thus, the ways in which caregivers perceive and communicate information about race may have a uniquely strong impact on adolescents' identity formation and self-concept during this time.

The objectives of this study were twofold: primarily, we sought to understand how caregivers ascribe racial categories to their children across this remarkably dynamic period of development, and to examine this in relation to adolescents' own racial self-categorization. We also sought to consider the methodological complexities of collecting race-related data in samples of multiracial youth and their caregivers, and to consider findings from our sample in relation to current and potential methodological practices.

It is important at the outset of this article to distinguish between a number of constructs related to racial identification and categorization. *Racial identity* refers to an individual's broad self-understanding of their race; this may include values, beliefs, and sense of group belonging (Rockquemore et al., 2009; Umaña-Taylor et al., 2014). *Racial identification*, which is distinct from identity, refers to the way in which an individual labels their own race, or how others may label an individual's race. In the realm of research, individuals may not have the opportunity to label their own race in an open-ended manner. Rather, they may be asked to select one or more races from a provided list of racial categories. *Racial categorization* is what occurs when an individual is asked to identify their race, or the race of another, using provided categories. Although identity, identification and categorization may overlap and influence one another, they ultimately represent distinct

constructs (Rockquemore et al., 2009). In this article, we examined adolescent racial self-categorization, as well as racial categorization of the adolescent by their primary caregiver. To facilitate ease of reading, adolescent racial self-categorization is referred to as categorization-by-adolescent and categorization of the adolescent by their primary caregiver is referred to as categorization-by-caregiver. In addition, we operationally defined *multiracial* as the simultaneous selection of two or more racial categories. We recognized that there were multiple ways to operationalize subdivisions within the construct of multiraciality (e.g., two vs. three racial categories selected) but we did not have the power to examine such fine-grained variations in multiraciality, given our sample size.

Racial Categorization in the Context of Multiracial Youth

Racial categorization is separate from, but influenced by, racial identity. Developmental shifts in the broad construct of identity may correspond with shifts in the ways in which individuals choose to categorize their race on forms, surveys, and questionnaires (Umaña-Taylor et al., 2014), such as those used in a school or research context. In the adolescent years, both caregivers and their children might be required to categorize the children's race. For example, when adolescents enter a new junior high or high school, caregivers may be required to submit paperwork classifying adolescents' racial background, in addition to providing other demographic information. In many states, adolescents are required to take standardized achievement tests at the end of each school year, which may also require adolescents to select the racial/ethnic categories to which they belong. In a research context, adolescents or their caregivers may be asked to provide the adolescent's racial categorization, depending upon the study design. Despite the frequency with which adolescents and/or their caregivers may be asked to provide racial information, critical questions about this process remain unanswered: how do caregivers *categorize* their children's race across the early adolescent years? And to what extent might a caregiver and their adolescent agree on the categorization of the adolescent's race? This question becomes increasingly complex when considered in the context of a multiracial family. While racial identity may be in flux for most adolescents, multiracial adolescents' racial self-categorization may be particularly inconsistent across context and development (Harris & Sim, 2002; Herman, 2004; Hitlin et al., 2006). In addition, if a caregiver and adolescent do not fully share the same racial background—for example, if a caregiver of monoracial parentage is raising a child of multiracial parentage—there may be more opportunities for caregiver and child perceptions of the adolescent's racial categorization not to overlap.

Racial identity development may unfold in different ways depending on messages from the socializing forces, such as caregivers or parents, in an adolescent's life (Umaña-Taylor et al., 2009; Umaña-Taylor et al., 2006). There is evidence that parental racial socialization practices play an important role in developing significance and meaning to membership in a racial group, which can lead to a number of important positive psychological outcomes (Neblett et al., 2009). For example, Neblett et al., (2010) suggest that racial socialization increases positive self-concept and racial identity, which may buffer the effects of discrimination. Caregivers' categorization of their children's race may influence the ways in which caregivers tailor intentional racial socialization messages. Researchers rarely consider the overlap between self-categorization and categorization by others (Rockquemore et al., 2009) and given the influence of caregivers in youth's racial socialization it is imperative that researchers understand how caregivers categorize their children's race as a first step to understanding how they might approach their children's racial socialization.

The Long-Standing Challenges of Capturing Racial Categorization Data

The collection of racial categorization data has long presented a daunting challenge—and multiracial populations in particular have historically been overlooked, or subject to bias. For example, in the U.S. census prior to 1960, census enumerators categorized individuals based on hypodescent assignment, which is the practice of determining the race of a child by assigning the race of his or her more socially subordinate parent's race, that is, "the one-drop rule" (Hitlin et al., 2006). In addition, multiracial and Hispanic/Latinx individuals have often been classified as and show a tendency to choose the category of "other" on demographic forms assessing race (Brown et al., 2006). With regard to Hispanic/Latinx populations, the selection of "other" may have to do with the separation of race from ethnicity. Since 1970, Hispanic/Latinx status has been evaluated in the U.S. census with a question separate from that about race; however, a draft of the 2020 census proposed including "Hispanic, Latino, or Spanish" as one of the racial/ethnic categories that an individual could select (Wang, 2017). It seems possible that the inclusion of "Hispanic, Latino, or Spanish" as a racial category could lead to higher percentages of multiracial-identified individuals in the U.S. (e.g., by a given individual now selecting both "Hispanic, Latino, or Spanish" and "White"). Ultimately, the U.S. Census Bureau kept the question about racial identification separate from the question of Hispanic or Latinx identification for the 2020 census (U.S. Census Bureau, 2020). A number of researchers

have denounced the Census Bureau's failure to update the format of census questions (see Alba, 2018; Manning & Ruggles, 2018; Prewitt & Alba, 2018). As Umaña-Taylor and colleagues (2014) have noted, "Distinctions that North American researchers have historically made between racial identity and ethnic identity may be outdated and overly parochial relative to new generations of youth whose experiences regarding their identities may reflect a more global perspective" (p. 23).

How best to elicit and report racial categorization is an increasingly challenging and pressing issue, not only in the context of academic research, but also on the broader national stage. In the United States, Census Bureau projections suggest that by 2044 there will be a "minority majority" (U.S. Census Bureau, 2017)—that is, the majority of the population will be non-White. Moreover, the group of individuals who identify as "two or more races" is expected to be the fastest growing population, tripling by 2060 (Colby & Ortman, 2015). Unfortunately, the multiracial population is often treated as a monolith, and in public policy and in research we often fail to reflect the nuances and diversity of the multiracial population. It is imperative that we think critically about how best to approach racial self-categorization in an ever-changing world.

Challenges of Capturing Racial Categorization Data in Developmental Research

Seminal work by Maria Root (2002) discusses the difficulties inherent in even the first step of a research study involving multiracial samples—the *recruitment* of multiracial individuals. Given the relative diversity in multiracial individuals' identification, Root notes that studies explicitly seeking to recruit multiracial samples may exclude individuals who do not *describe* themselves as multiracial, but whose parentage might indicate that their parents were of different races. Beyond this initial step of recruitment, challenges of capturing racial categorization data, especially among multiracial individuals, abound.

Questions assessing race, and especially those assessing biracial or multiracial categorization, can be phrased in many different ways. For instance, some researchers might provide a list of possible racial backgrounds and ask participants to "check all that apply," while others might ask, "do you identify as biracial/multiracial?" In one study (Rollins & Hunter, 2013), researchers assessed adolescent racial categorization using multiple reporters and question types and noted the groups identified as multiracial via the different methods/reporters were not always the same. Such findings highlight a number of methodological considerations. For instance, in the same study, is it

possible that some adolescents and/or their caregivers might categorize the adolescents as coming from multiple racial backgrounds, but would not endorse the label "multiracial," or vice versa?

Longitudinal studies may collect demographic variables at multiple time points, and the specific phrasing of demographic questions may change over time. To draw a parallel example from a different literature, researchers who began asking participants about *dichotomous* gender in the first years of a longitudinal study would be remiss not to add nonbinary or other options as more extensive knowledge about gender identity has accumulated (Bilodeau, 2005; Hird, 2000). Likewise, the separation or combination of racial versus ethnic questions, and the racial or ethnic options available to participants, could change based on sociopolitical context and developing theories of race (Umaña-Taylor et al., 2014). However, while these changes in demographic questions over time are certainly warranted, they are likely to complicate the categorization of race in longitudinal studies.

Longitudinal studies that do not focus specifically on issues of race, ethnicity, or culture often do not report when, how, or how often demographic information is collected. One need only browse the developmental literature to find examples of such practices. Fortunately, several long-running studies do collect racial/ethnic data across multiple waves (e.g., Add Health, Bearman et al., 1997; and Maryland Adolescent Development In Context Study [MADICS], Eccles et al., 1997). Working with these data sets, researchers have demonstrated that across waves, categorizations-by-adolescents are inconsistent (Harris & Sim, 2002). Interestingly, the same researchers have speculated that *caregiver* reports of their child's racial categorization might also be inconsistent across time, but this question has yet to be investigated. Most researchers would assume that racial categorization-by-caregiver is time-invariant, meaning that researchers should not expect inconsistencies in caregiver report across waves. To our knowledge, no studies have critically examined the assumption that caregivers are always consistent in their reports of their children's race.

The challenge of capturing racial categorization data becomes particularly salient in adolescent research for two reasons: (a) in studies with children or adolescents, researchers must decide whether to collect data on race from caregivers, youth, or both and (b) adolescents undergo major shifts in racial identity development (Herman, 2004), likely heightening the instability of racial categorization-by-adolescent. The matter of racial categorization among adolescents becomes even more complex when multiracial populations are involved. Multiracial adolescents may not identify with the racial categories that research questionnaires provide. Moreover, their racial identity is subject to change across context (i.e., school, neighborhood, and sociopolitical

climate) and development (Harris & Sim, 2002; Herman, 2004; Hitlin et al., 2006). It seems likely that commonly used methodologies for capturing racial categorization would fall short of capturing these complexities.

Typically, researchers rely on caregivers' categorization of their children's race in early childhood (e.g., Roberts & Gelman, 2017) and switch to youth self-categorization of race in adolescence (e.g., Bracey et al., 2004). From a cognitive standpoint, this switch makes sense as adolescents are more capable than young children of understanding and reporting on the construct of race (Byrd, 2012). However, researchers speculate that racial categorization-by-caregiver and categorization-by-adolescent may not align (Hitlin et al., 2006; Rollins & Hunter, 2013). Campbell and Eggerling-Boeck (2006) found incongruent responses between categorization-by-adolescent on a "check all that apply" item and caregiver reports of the adolescent's racial parentage (i.e., race of the adolescent's biological mother and race of the adolescent's biological father). Potential discrepancies in measurement leave researchers with the question of how best to determine the race of adolescent participants. Should determination of race be based on adolescent report, caregiver report, or some combination of both reports?

This Study

While extensive research has demonstrated the complexity in capturing racial categorization and identity data (Schwartz et al., 2014), we sought to add to this literature (Harris & Sim, 2002; Rollins & Hunter, 2013) by conducting an exploratory study examining how adolescent multiracial categorization might change (a) in caregiver reports across waves, (b) between question types, and (c) between reporters. The aims of this study were as follows:

(1) *Assessing consistency in categorization-by-caregiver across waves*: Longitudinal consistency in racial categorization-by-caregiver has yet to be examined. We explored whether categorization-by-caregiver was consistent across three waves of a study, spanning 5 years. For the present aim, consistency was defined as caregivers reporting the same number of races from one wave to the next, when presented with identical options for racial categorization at all three waves. Inconsistency was defined as caregivers' reporting of different numbers of races from one wave to another. Based on the working assumption that racial categorization-by-caregiver is time-invariant, and the lack of data to suggest otherwise, it is possible that caregivers would categorize their children in the same way across waves of the study, with consistency of less than 100% considered inconsistent.

However, given the previous literature on adult self-categorization fluidity (see Cohn, 2014; Saperstein & Penner, 2012), it is also possible that caregivers may change the categorization of their children's race across waves.

(2) *Assessing within-reporter equivalence in categorization between different questions*: We sought to establish whether, within the same wave, reporters' responses to differently phrased questions about adolescents' multiracial categorization were equivalent. For aim two, equivalent reports were defined as the reporter (caregiver or adolescent) endorsing the same multiracial status when responding to two different racial categorization questions. We hypothesized that some adolescents would provide inequivalent racial categorization between differently phrased questions: one study which used Add Health data (Harris & Sim, 2002) found that, of the participants who responded to different questions in different contexts, 10.52% of adolescents demonstrated inequivalent categorization.[1] We expected rates of inequivalent categorization-by-adolescents in our sample to be the same; that is, 10.52% inequivalent and 89.48% equivalent. A 95% confidence interval built around these values yields a range of expected equivalence of 86.74%–92.22%. Therefore, we considered a degree of equivalence below 86.74% to be less equivalent than previously found, and a degree of equivalence above 92.22% to be more equivalent than previously found. Although there is a working assumption that racial categorization-by-caregivers would be equivalent even when asked in two different ways, to our knowledge, this has yet to be investigated. It is possible that caregivers would report equivalent categorization between questions, but it is also possible that, like adolescents, they would provide inequivalent categorization between questions.

(3) *Assessing congruence in categorization between reporters*: Within the same wave, and in response to the same question assessing categorization-by-adolescent and categorization-by-caregiver, adolescents' and caregivers' responses may not align. For this aim, congruence was defined as adolescents and their caregivers reporting the same number of races when responding to the same racial categorization question. Given the existing literature on caregiver–adolescent informant discrepancies or incongruence in reports about the same behaviors (see Achenbach et al., 1987; De los Reyes & Kazdin, 2004; De los Reyes & Kazdin, 2005; Krenke & Kollmar, 1998), we hypothesized that there would be incongruence between categorization-by-caregiver and categorization-by-adolescent.

In sum, this study was unique in examining, in the same article, inconsistency across waves of a longitudinal study, inequivalent categorization between questions, and incongruence between reporters in primarily low-income, racially diverse families. In addition, in alignment with previous researchers (e.g., Umaña-Taylor et al., 2014), we propose that the rapidly evolving nature of society's understanding of race warrants updated strategies for investigating racial categorization-by-adolescent and categorization-by-caregiver. Therefore, seeking to reflect one of the most recent assertions about racial categories (Umaña-Taylor et al., 2014; Wang, 2017), we included Hispanic/Spanish/Latinx as a unique racial category in this study.

Method

Participants

Participants were 705 families in the Early Steps Multisite project, a randomized controlled trial of the Family Check-Up intervention (see Dishion et al., 2008 for a detailed description). Caregiver–child dyads were initially recruited in 2002 when the child was between 2 years 0 months and 2 years 11 months of age from Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in the metropolitan areas of Pittsburgh, PA; Eugene, OR; and the city of Charlottesville, VA; and their respective surrounding counties. Primary caregivers were typically the target children's mothers (i.e., 96% of primary caregivers were mothers at Wave 1), but could be any adult acting as the main provider of childcare. Participating families were at increased risk for either child behavior problems, family problems or sociodemographic risk at recruitment. Of the 731 families (49% female children), 188 (26%) were recruited in Charlottesville, 272 (37%) in Pittsburgh, and 271 (37%) in the Eugene site.

Like many studies drawing on longitudinal samples (e.g., Harris & Sim, 2002; Rollins & Hunter, 2013), the Early Steps Multisite project reported race of target children based on categories selected by primary caregivers at the initial screening. At screening, caregivers were asked to report their children's race and Hispanic/Latinx status. The resulting racial breakdown was 27.9% African American, 50.1% European American, 13.0% biracial, and 8.9% other races (e.g., American Indian and Native Hawaiian). Hispanic/Latinx status was endorsed by 13.4% of the sample.

Of note, in this article we choose to follow the suggestions of numerous scholars (Campbell & Eggerling-Boeck, 2006; Harris & Sim, 2002; Umaña-Taylor et al., 2014) to include Hispanic/Latinx with racial categories. Scholars note that separate questions about Hispanic/Latinx and racial categories are

misleading and impact the ability to make meaningful comparisons, such as those between Hispanic/Latinx and non-Hispanic/Latinx multiracial individuals (Harris & Sim, 2002). Hirschman, Alba, and Farley (2001) note that separate questions about Hispanic/Latinx categorization lower the threshold for individuals to categorize themselves as Hispanic. Therefore, we chose to design our study in alignment with Campbell and Eggerling-Boeck's (2006) assertion that the optimal way to address questions about Hispanic multiracial categorization is to include a "combined race and Hispanic ethnicity question" in the study (p. 169).

This study utilized data collected at the ages of 9.5, 10.5, and 14 years (Waves 7, 8, and 9, respectively). The research team collected data for Waves 7 through 9 between 2009 and 2016. We limited the sample to families that had the same primary caregiver at all three waves (N = 705; 96.4% of the original sample). For Aim 1, we limited the sample to families that participated at all three waves and had the same primary caregiver who completed the Age 9.5, Age 10.5, and Age 14 assessments (N = 458, 64.96%). For Aim 2, we used data from 526 (74.6%) primary caregivers and 482 (68.4%) target children who completed the Age 14 assessment. For Aim 3, we used data from 498 (70.6%) participantdyads who completed Question I (see description below) and 471 (66.8%) participantdyads who completed Question II (see description below).

Measures

A semi-structured interview was administered at each assessment to determine demographic characteristics of the family, such as gender, race, household annual income, parent education, and household composition. At the ages of 9.5 and 10.5 years, only caregivers were given demographic assessments, while at the age of 14 years, demographic assessments were conducted with both caregivers and adolescents. The study utilized a number of methods to ask about race, which are reflected in each of the aims (see Table 1).

Primary caregivers (at all three waves) and adolescents (at Wave 3/Age 14) were asked to indicate the adolescent's race by responding to two questions. First, they were asked the question: "What do you identify as your child's race? Please select all that apply" (Question I). The options available were the following: "Asian, Black/African American, Hawaiian or Pacific Islander, Native American, White, Spanish/Hispanic/Latino, Unknown, Other." For the purpose of analyzing responses to Question I, and consistent with our aforementioned operationalization of multiraciality, we define multiracial youth as those with more than one race selected.

Table 1. Questions Analyzed in Each Aim.

Demographic question	Aim 1: Assessing consistency in categorization-by-caregiver	Aim 2: Assessing equivalence in categorization between different questions	Aim 3: Assessing congruence in categorization between reporters
Question I caregiver: "What do you identify as your child's race? Please select all that apply."	X	X	X
Question II caregiver: "Do you consider your child to be biracial?"		X	X
Question I adolescent: "What do you identify as your race? Check all that apply."		X	X
Question II adolescent: "Do you consider yourself to be biracial?"		X	X

Of the 565 primary caregivers and the 562 adolescents that answered this question, the one primary caregiver and the 17 adolescents that endorsed "Unknown" in their racial categorization were excluded from analyses. For both primary caregivers and adolescents, those that selected "Unknown" did not significantly differ from those that selected a racial category by study site location, target child gender, education level, or family income ($p > .1$).

The second question probing adolescent racial categorization was, "Do you consider yourself/your child to be biracial?" (Question II). This question was asked of both caregivers and adolescents at Age 14. Available responses were "Yes," "No," or "Prefer not to answer/not applicable." For the purpose of analyzing responses to Question II, we define multiracial youth as those for whom "Yes" was selected. Of the 552 primary caregivers and 561 adolescents that answered this question, the two primary caregivers and the 45 adolescents that selected "Prefer not to answer/not applicable" were excluded from analyses. For both primary caregivers and adolescents, those that selected "Prefer not to answer/not applicable" did not significantly differ from those that selected "Yes" or "No" by study site location, target child gender, education level, or family income ($p > .1$).

In examining multiracial categorization over time (Aim 1), we looked at caregiver responses to Question I at Ages 9.5, 10.5, and 14. We first coded

whether participants were reported as monoracial (defined as only one race selected) or multiracial (defined as more than one race selected) at each of the three waves. We then calculated the number of times (Min = 0, Max = 3) caregivers reported more than one race across the three assessment points. Consistency was defined as a value of either zero (0) or three (3). A value of zero indicated that the caregivers endorsed only one race across the three waves (consistently *monoracial*). A value of three indicated the caregivers endorsed multiple races across the waves (consistently *multiracial*). Anything in between (i.e., a one [1] or two [2]) indicated inconsistent reports across waves of the study.

We also determined whether each reporter (caregiver and adolescent) showed inequivalent responses to Questions I and II at Wave 3 (Aim 2). In our analysis of inequivalence between questions, equivalent results were defined as either of the following: (a) reporters endorsed only one race at Wave 3 and responded "No" to the question of whether they considered the child/themselves to be biracial (equivalent categorization of *monoracial* status) or (b) reporters endorsed more than one race at Wave 3 and responded "Yes" to the question of whether they considered their child/themselves to be biracial (equivalent categorization of *multiracial* status). Inequivalent results were defined as either of the following: (a) reporters endorsed more than one race at Wave3, but responded "No" to the question of whether they consider their child/themselves to be biracial (inequivalent categorization between questions) or (b) reporters endorsed only one race at Wave 3, but responded "Yes" to the question of whether they consider their child/themselves to be biracial (inequivalent categorization between questions).

In our examination of congruence between reporters (Aim 3), we probed for differences in how caregivers and adolescents responded to Questions I and II at Wave 3. We separately examined whether adolescents and caregivers differed in the number of races endorsed in Question I, and whether they differed in the answer selected for Question II. When comparing responses to Question I, results were considered congruent when adolescents and caregivers did one of two things: (a) both endorsed only one race (congruent reporters of *monoracial* status) or (b) both endorsed multiple races (congruent reporters of *multiracial* status). Results for Question I were considered incongruent when caregivers and adolescents endorsed different numbers of races (incongruent between reporters). Finally, when comparing responses to Question II, results were considered congruent when one of the following occurred: (a) caregivers and adolescents both responded "No" (congruent reporters of *monoracial* status) or (b) caregivers and adolescents both responded "Yes" (congruent reporters of *multiracial* status). Results for

Table 2. Sample Demographics for Families Participating at Waves 7, 8, and 9.

Sample Demographic	*N*	%
Intervention status		
Treatment group	229	48.5%
Control group	243	51.5%
Child gender		
Male	235	50.8%
Female	225	48.7%
Transgender	2	.4%
Primary caregiver gender		
Male	20	4.2%
Female	451	95.8%
Primary caregiver relationship to adolescent		
Biological parent	448	94.9%
Other relative	24	5%
Primary caregiver education level		
Partial high school or less	72	15.3%
High school or GED	138	29.3%
Partial college	119	25.3%
Associate's degree or specialized training	115	24.4%
4 years of college or more	27	6%
Site location		
Charlottesville, VA	111	23.5%
Eugene, OR	170	36.0%
Pittsburgh, PA	191	40.5%

GED = General Educational Development.

Question II were considered incongruent when the adolescent and caregiver selected different responses (incongruent between reporters).

Results

Sample Demographics

Families included in this study had an average gross monthly income of US$2,420.19 with a standard deviation of US$1,524.37. For additional sample demographics, including adolescent gender, caregiver gender, caregiver education level, family living location, intervention status, and primary caregiver relation to adolescent, see Table 2.

Aim 1: Assessing Consistency in Categorization-by-caregiver Across Waves

Contrary to the working assumption in research methodology that categorization-by-caregivers would demonstrate 100% consistency across waves of a longitudinal study, inconsistencies were found in categorization-by-caregiver across preadolescence to early adolescence. Specifically, 13.76% ($N = 63$) of the sample was inconsistent in the number of races they reported across the three waves (labeled *inconsistent across waves* in Table 3). Results regarding consistency were as follows (labeled *consistent across waves* in Table 3): 77.29% of caregivers ($N = 354$) endorsed one race at all three waves (*monoracial* status) and 8.95% ($N = 41$) endorsed more than one race at all three waves (*multiracial* status). Of the reporters that were inconsistent across waves, 52.38% ($N = 33$) endorsed more than one race only at one assessment point and 47.62% ($N = 30$) endorsed more than one race at two assessments. These numbers reflect 7.21% and 6.55% of the overall sample examined in Aim 1, respectively. The number of caregivers who were inconsistent in their reporting of their adolescent's race, combined with the number of caregivers who were consistent in reporting multiracial status, indicates that 22.71% of adolescents ($N = 104$) were categorized as multiracial at least once. Overall, depending on the approach selected to assess multiracial status within this aim, as few as 6.55% or as many as 22.71% of the 458 adolescents could have been categorized as multiracial.

Post hoc analyses. After determining the levels of consistency found in caregivers' reports of their children's race over time, we sought to conduct post hoc analyses to determine whether inconsistent caregivers reported particular racial categorizations over time. Much of our work was guided by research on discrepancies in data from the 2000 and 2010 U.S. Census, which found that Hispanics, Native Americans, and multiracial Americans were the racial groups most likely to switch their racial categorization from one census to the next (Cohn, 2014). In contrast, relatively few Americans who categorized themselves as non-Hispanic White, Black, or Asian switched their racial categorization from 2000 to 2010. Due to the potential for change in racial categorization over time, we first sought to examine whether Native American or Hispanic racial categorizations were especially common in inconsistent caregivers' categorization choices. We examined two categories of caregivers: (a) caregivers who categorized their child as a single race at two time points and multiple races at one time point and (b) caregivers who categorized their child as multiple races at two time points and a single race at one time point. Of the caregivers who categorized their child as a single race at

Table 3. Frequency of Consistent and Inconsistent Responses for Each of the Research Aims.

Research Aims by Categorization Status	Aim 1: Assessing consistency in categorization-by-caregiver ($N = 458$)	Aim 2: Assessing equivalence in categorization between different questions (PC[a] $N = 526$, AD[b] $N = 482$)	Aim 3: Assessing congruence in categorization between reporters (Question I $N = 498$, Question II $N = 471$)
Monoracial status			
Consistent across waves	354 (77.29%)		
Equivalent between questions		PC: 394 (74.90%) AD: 357 (74.07%)	
Congruent between reporters			Question I: 377 (75.70%) Question II: 332 (70.49%)
Multiracial status			
Consistent across waves	41 (8.95%)		
Equivalent between questions		PC: 79 (15.02%) AD: 51 (10.58%)	
Congruent between reporters			Question I: 49 (9.84%) Question II: 59 (12.53%)
Inconsistent across waves	63 (13.76%)		
Inequivalent between questions		PC: 53 (10.08%) AD: 74 (15.35%)	
Incongruent between reporters			Question I: 72 (14.46%) Question II: 80 (16.99%)

[a]PC = primary caregiver. [b]AD = adolescent.

two time points and multiple races at one time point ($N = 33$), 48.48% ($N = 16$) categorized their child as Native American at some point and 30.30% ($N = 10$) categorized their child as Hispanic at some point. For such caregivers, Native American categorization was most often exhibited by parents selecting a Native American categorization at later waves, in addition to another single race category. However, there were no discernable patterns among parents who categorized their child as Hispanic. For some, Hispanic was selected at later waves in addition to the previously mentioned categories, while others selected additional racial categories at later waves as an addition to an existing Hispanic categorization.

Furthermore, of the caregivers who categorized their child as multiple races at two time points and a single race at one time point ($N = 30$), 46.67% ($N = 14$) included Native American as one of the races when the youth was categorized as multiracial at some point and 23.33% ($N = 7$) included Hispanic in a multiracial categorization at some point. Of the caregivers who included Native American in a multiracial categorization at least once, only one caregiver also selected Native American at the single-race time point. In contrast, the majority of caregivers who included Hispanic as a multiracial categorization at some point ($N = 6$) also selected Hispanic at the single-race time point.

As Black/African American and White were the two largest racial groups represented in the research study's overall sample, we also sought to examine patterns among caregivers who simultaneously selected both White and Black/African American in at least one wave of the study, but not consistently across all three waves ($N = 22$). At Age 9.5, 59% ($N = 13$) of these parents categorized their children as *either* Black or White, while by Age 14, only 4% ($N = 1$) categorized their children as either Black or White. That is, these parents were more likely to select both races as their children grew older. We also found that 50% ($N = 11$) of parents categorized their children as only Black at least once, 23% ($N = 5$) of parents categorized their children as only White at least once, and 27% ($N = 6$) of parents categorized their children as only Other at least once. Therefore, when parents did not categorize their children as multiracial, they were most likely to categorize their children as Black.

Finally, we investigated whether specific monoracial categories endorsed by caregivers in the consistently monoracial group matched over the three waves, as changing monoracial status could be another indicator of a multiracial background. We found that only 1.41% ($N = 5$) of caregivers in the consistently monoracial group endorsed different categories over the three waves of the study.

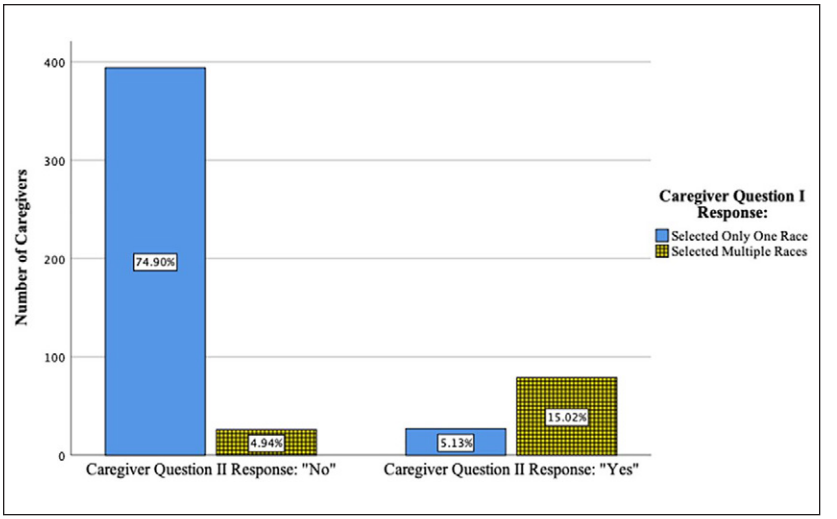

Figure 1. Aim 2: Examining equivalence in caregiver responses to different questions.[a]

[a]Percentages are calculated using the total sample size for this aim ($N = 526$).

Aim 2: Assessing Within-Reporter Equivalence in Categorization Between Different Questions

Contrary to the working assumption that caregivers would demonstrate equivalent categorization between two different questions, inequivalent categorizations were found. Results regarding equivalent categorization-by-caregiver between questions (labeled equivalent between questions in Table 3) were as follows: 74.90% ($N = 394$) of adolescents were equivalently reported as *monoracial* between questions and 15.02% ($N = 79$) of adolescents were equivalently reported as *multiracial* between questions. Conversely, we found that 10.08 % ($N = 53$) of caregivers responded differently to the two questions (labeled inequivalent between questions in Table 3). It does not appear that a particular question type was driving the effects. We found that 4.94% ($N = 26$) of caregivers checked more than one race, but responded "No" to the question of whether their child was biracial. We additionally found that 5.13% ($N = 27$) of adolescents' caregivers checked only one race, but responded "Yes" to the question of whether their child was biracial (see Figure 1 for a depiction of inequivalent categorization-by-caregiver between questions). The number of caregivers whose

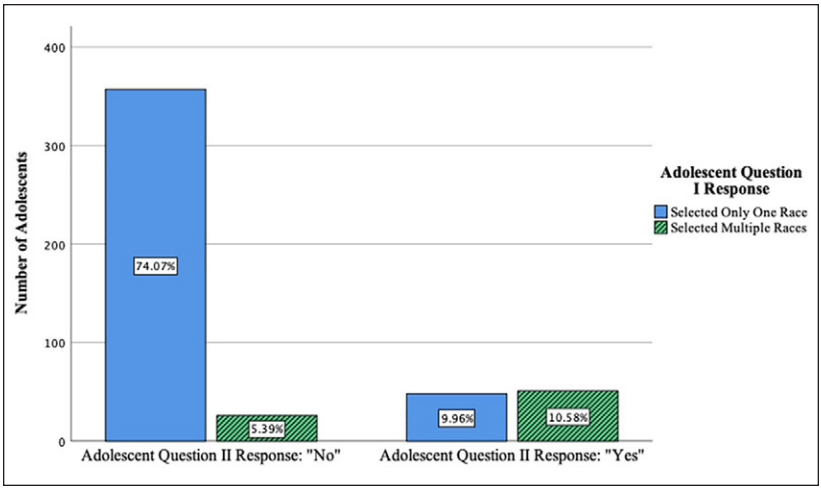

Figure 2. Aim 2: Examining equivalence in adolescent responses to different questions.[a]
[a]Percentages are calculated using the total sample size for this aim ($N = 482$).

reports were inequivalent between questions, combined with the number of caregivers whose reports were equivalent between questions assessing multiracial status, indicated that 25.07% of adolescents ($N = 132$) were categorized as multiracial at least once.

Contrary to our hypothesis, we did not find that categorization-by-adolescent equivalence between questions fell in the 86.74%–92.22% range. Rather, we found that only 84.65% ($N = 408$) of adolescents provided equivalent reports between the two different questions (labeled equivalent between questions in Table 3), with 74.07% ($N = 357$) of adolescents providing equivalent *monoracial* categorization between questions and 10.58% ($N = 51$) of adolescents providing equivalent *multiracial* categorization between questions. We found that 15.35% ($N = 74$) of adolescents provided inequivalent categorization between the two different questions (labeled inequivalent between questions in Table 3). It does not appear that a particular question type was driving the effects for adolescents. Among the adolescents that provided inequivalent categorization between questions, 5.39% ($N = 26$) of adolescents checked more than one race, but responded "No" to the question of whether they consider themselves to be biracial. In addition, 9.96% ($N = 48$) of adolescents checked only one race, but answered "yes" to the question of whether they considered themselves to be biracial (see Figure 2 for a depiction of inequivalent categorization-by-adolescent between questions). The

number of adolescents who provided inequivalent categorization between questions, combined with the number of adolescents who provided equivalent categorization between questions assessing multiracial status, indicates that 25.93% ($N = 125$) categorized themselves as multiracial at least once.

Overall, based on categorization-by-caregiver, as few as 4.94% of adolescents or as many as 25.07% of adolescents could have been categorized as multiracial within this aim. Based on categorization-by-adolescent, as few as 5.39% of adolescents or as many as 25.93% of adolescents could have been categorized as multiracial within this aim.

Aim 3: Assessing Congruence in Categorization Between Reporters

As hypothesized, we also found incongruence between categorization-by-caregivers and categorization-by-adolescents when utilizing the same questions. Overall, for Question I, 14.46% ($N = 72$) of caregiver–child dyads reported different numbers of races (labeled incongruent between reporters in Table 3) and for Question II, 16.99% ($N = 80$) of caregiver–child dyads did not select the same answer (labeled incongruent between reporters in Table 3).

We first examined whether adolescents and caregivers differed in the number of races they endorsed in the "check all that apply" question (Question I). Overall, 85.54% ($N = 426$) of caregiver–child dyads provided congruent categorization (labeled congruent between reporters in Table 3), with 75.70% ($N = 377$) of caregiver–child dyads reporting only one race (*monoracial* status) and 9.84% ($N = 49$) reporting more than one race (*multiracial* status). However, we found that 9.04% ($N = 45$) of caregivers endorsed more than one race while their adolescents selected only one, and 5.42% ($N = 27$) of the adolescents endorsed more than one race, while their caregivers selected only one. See Figure 3 for a depiction of incongruent categorization between reporters using Question I. The number of dyads that provided incongruent categorization, combined with the number of dyads that provided congruent multiracial categorization, indicated that 24.30% ($N = 121$) of adolescents were categorized as multiracial by at least one reporter. Overall for Question I, as few as 5.42% of adolescents or as many as 24.30% of adolescents could have been categorized as multiracial, depending on which reporters (caregiver and/or adolescent) were used to indicate multiracial categorization.

Next, we examined whether adolescents and caregivers differed in how they responded to the question of whether they considered themselves or their child to be biracial (Question II). Overall, 83.01% ($N = 391$) of caregivers and adolescents responded the same way with 70.49% ($N = 332$) of

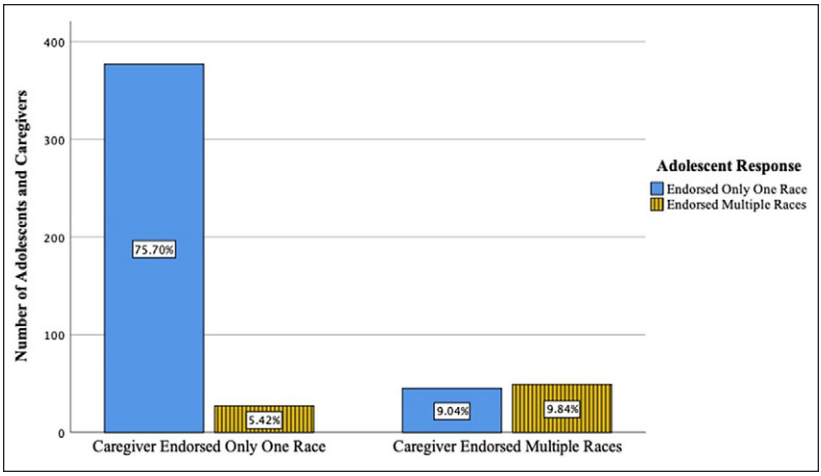

Figure 3. Assessing congruence between reporters using Question I.[a]
[a]Percentages are calculated using the total sample size for this aim ($N = 498$).

caregiver–child dyads both responding no (congruent categorization of *monoracial* status) and 12.53% ($N = 59$) of caregiver–child dyads responding yes (congruent categorization of *multiracial* status). However, we found 8.28% ($N = 39$) of the caregivers endorsed their child as biracial, while the adolescent reported they were not, and 8.70% ($N = 41$) of the adolescents endorsed themselves as biracial, while their caregivers reported they were not. See Figure 4 for a depiction of incongruent categorization between reporters using Question II. Overall for Question II, as few as 8.28% of adolescents or as many as 29.51% of adolescents could have been categorized as multiracial, depending on which reporters (caregiver and/or adolescent) were used to indicate multiracial categorization.

Discussion

Data from the most recent U.S. Census projects a threefold increase in the multiracial population over the next half century (U.S. Census Bureau, 2017). It is imperative that researchers develop better strategies for capturing the nuances of racial categorization, especially among multiracial individuals. Previous work suggests that multiracial adolescents' racial self-categorization may be particularly inconsistent across context and development (Harris & Sim, 2002; Herman, 2004; Hitlin et al., 2006) and may not align with their parentage (Campbell & Eggerling-Boeck, 2006).

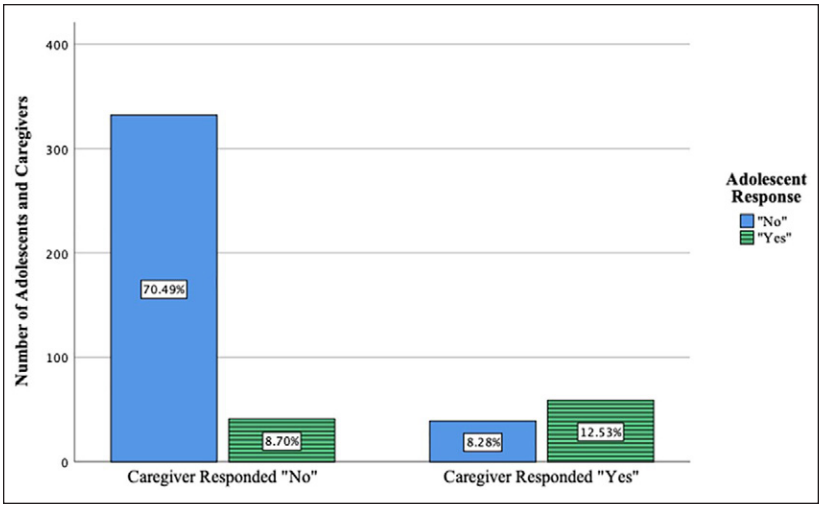

Figure 4. Assessing congruence between reporters using Question II.[a]
[a]Percentages are calculated using the total sample size for this aim ($N = 471$).

However, consistency of categorization-by-caregiver across time had yet to be investigated in the literature though researchers have found that adults are sometimes inconsistent in reporting their own race over time (Cohn, 2014). Caregivers' categorization of their children's race is likely to determine the ways in which caregivers tailor intentional racial socialization messages, which has been shown to help develop significance and meaning to membership in a race (Neblett et al., 2009). In demonstrating inconsistent categorization-by-caregiver across waves of a longitudinal study, inequivalence in categorization between different questions, and incongruence in categorization between different reporters all in one study, these findings highlight some of the major limitations in common strategies used to assess multiracial categorization in research.

When attempting to examine participants of a particular racial categorization, researchers may find that group numbers fluctuate depending on how they choose to define race and whom they choose to ask about race. For example, at Age 14 alone, the estimated proportion of multiracial participants varied from as little as 4.94% of the sample to as much as 29.51% of the sample, depending on which methods (reporter, question type) of racial categorization were used. In contrast, 13.0% of adolescents were reported to be biracial by primary caregivers at initial screening, which is how the sample has been traditionally described in other publications using this data set.

Contrary to the common assumption that caregivers would be 100% consistent in their reporting of children's race, our results suggest that caregivers of multiracial children may, in fact, be inconsistent in reporting children's race across waves of a longitudinal study. While 9% of primary caregivers reported their children to be biracial at all three waves, 13.76% reported their children to be biracial at one or two waves. It is worth reiterating that these were the same caregivers responding to the same question across waves.

Changes in racial categorization-by-caregiver may be indicators of a *developmental process* by which caregivers' perceptions of their children's racial categorization change over time. We know that children's multiracial identity development unfolds over time (Herman, 2004); it is possible that caregivers undergo a parallel, albeit clearly not identical, process as yet unexplored in the literature. Building on earlier work by Kerpelman, Pittman, and Lamke (1997), Koepke and Denissen (2012) have proposed a dynamic systems perspective of identity development, conceptualizing children and parents as "two interrelated identity systems" (p. 69). When one individual experiences a change in self-view, both systems are disturbed and must adjust. Through this dynamic interaction, both entities experience changing perceptions of themselves and of the other. For example, Koepke and Denissen note that as early adolescents seek increasing autonomy, parents must reassess their roles as the "unquestioned authorities" (p. 82). Optimally, a parent should "adapt their view of the child to the child's own self-view," (p. 82) though this process can take some time. Thus, in the case of autonomy development, parents might initially resist children's bids for increasing independence, but ultimately adjust power boundaries appropriately. Perhaps children's and caregivers' racial self-perceptions can also be conceptualized in terms of interrelated identity systems. That is, as an adolescent's racial self-categorization changes, her caregiver's racial categorization of her may shift accordingly. How long this shift would take, and whether her caregiver would experience any change in their *own* racial self-perception as a result of the adolescent's changed self-categorization are intriguing questions for future investigation. Future research should also investigate if there are differences in this process for caregivers and children who do not share the same racial background (e.g., a monoracial parent of a multiracial-identified child).

Furthermore, contrary to the working assumption that caregivers would provide equivalent categorization between questions, we found that 10.08% of caregivers provided inequivalent categorization of children's multiracial status. Meanwhile, the level of inequivalence in categorization-by-adolescent between different questions exceeded that previously reported in the literature (Harris & Sim, 2002).

Differences in the phrasing of questions may contribute to inequivalent patterns in multiracial group membership in a given data set. Future research should further explore the internal validity of items assessing multiracial status and ensure that researchers and participants are interpreting the items in the same way. It is possible that participants in this study did not interpret questions as the researchers had intended. For example, when responding to Question I, participants may have interpreted "Native American" as meaning "born in America." Similarly, it is possible that participants were unfamiliar with the definition of the term "biracial," as some communities may use alternative terms.

We also found incongruence between categorization-by-caregiver and categorization-by-adolescent when using the same question assessing multiracial status. Across the two items (Question I and Question II), adolescents and their caregivers maintained a similar degree of incongruence (15% and 18%, respectively). As adolescent and caregiver reports may not fully align, it behooves researchers to carefully consider who should report adolescent racial categorization. For studies that have already asked both adolescents and caregivers to report demographic information, researchers should grapple with the question of how they might reconcile incongruent reports.

Previous research suggests that racial categorization and self-concept are shaped by neighborhood composition (Herman, 2004), school composition (Herman, 2004), and changes in cognitive development (Roberts & Gelman, 2017), among other factors. In this study, we found that *methodology* (i.e., question type and reporter) may influence the way that racial categorization is reported. It is important that researchers are able to tease apart the effects of methodology from the effects of genuine developmental changes in racial categorization.

Limitations

Our study is novel in using one data set to map inconsistency of categorization-by-caregiver across waves, inequivalence in categorization between different questions, and incongruence in categorization-by-caregiver and categorization-by-adolescent that arise as a result of variation in methodologies. Nonetheless, a few limitations must be acknowledged. First, within this type of descriptive study, we cannot conduct significance tests to determine whether proportions are significantly different from one another (e.g., is 15% different from 18%?). Nonetheless, our findings provide compelling evidence that researchers need to identify more nuanced

ways of assessing multiracial status. Such methods should be guided by the specific research questions of the study and the terminology used should be familiar to participants.

Second, in Aim 2, one type of inequivalent categorization between questions was defined as reporters endorsing more than one race to Question I, but responding "No" to Question II (biracial yes/no). It is possible that some of the individuals who were coded as "inequivalent" were not, in fact, *bi*racial, but rather *multi*racial (e.g., they had selected three or more races in response to Question I). However, we examined this possibility post hoc and found that it was only the case for four participants in our data set.

Our study tracked primary caregiver reports of adolescent racial categorization from preadolescence through early adolescence. Since we had access to only one wave of categorization-by-adolescent data, at Age 14, we were not able to investigate the inconsistency in categorization-by-adolescents across waves. The literature would certainly benefit from studies that concurrently track both categorization-by-adolescents and categorization-by-caregivers across early adolescence.

Finally, given the locations of the multisite study and low-income sample, the results of this study may not be generalizable. Previous work with this study's sample suggests these families move more frequently than nationally representative samples (Womack et al., 2018). Context and neighborhood demographics influence racial self-categorization (Herman, 2004). Moving frequently may influence the fluidity of categorization by both caregivers and youth. However, patterns of categorization-by-adolescent inconsistency across waves of a longitudinal study have been documented in nationally representative studies (e.g., Add Health, Harris & Sim, 2002). Thus, we have no reason to believe these results would differ in other sociodemographic groups or locations. Future work is necessary to investigate this assumption.

Practical Recommendations/Implications

The results of this study have a number of practical implications for social science researchers, and in particular, for those conducting longitudinal research with early adolescents. First, researchers must understand that race is not stable over time and context, and that this issue appears to be very salient for multiracial-categorized adolescents. Therefore, researchers must draw on theory relevant to their specific research questions when establishing their methods for collecting racial categorization data. Furthermore, researchers must be aware that early adolescents and their caregivers may not report adolescent race in a consistent manner over time and context and their reports may not align. When

using multiple informant reports, researchers should consider whose perspective is most relevant to the specific research question of the study.

As we identified inequivalent categorization between different questions assessing multiracial status by both adolescents and caregivers, we propose that open-ended questions may provide a more nuanced and accurate reflection of adolescents' racial identity at any given time. For example, an open-ended question could be, "Describe how you identify your/your child's racial background." Such questions have the added benefit of allowing research participants to express their full and complex identities without having to "put themselves in a box," which has been demonstrated to be challenging even for multiracial adults (see Jackson, 2012; Kellogg & Liddell, 2012). If open-ended questions are not feasible, researchers should employ multiple methods for assessing race. Utilizing multiple methods would allow researchers to collapse findings from various methods and report estimated ranges of racial representation in their samples. For example, if one method yields an estimate of the proportion of multiracial participants at 10% and another yields an estimate of 14%, "% multiracial" would be reported as a *range* of 10%–14%.

Conclusion

Capturing early adolescents' racial categorization, particularly in the context of a multiracial sample, presents a substantial challenge to researchers. In line with earlier research (Campbell & Eggerling-Boeck, 2006), we found that adolescents and their caregivers may not respond in the same way to questions about adolescents' racial categorization, and that both parties may provide inequivalent responses to questions about race when these questions have different phrasing. Moreover, we contributed a unique perspective to the literature, in longitudinally examining caregivers' responses to questions about adolescent racial categorization. Results indicated that across the early adolescent period, caregivers are not necessarily consistent in reporting on their adolescents' race or multiracial status. It is possible that these inconsistencies hold implications for important parental practices, such as providing their adolescents with racial socialization messages. This should be explored in future work. It is worth noting that as little as 4.94% of this sample and as much as 29.51% of this sample could have been categorized as multiracial at the age of 14 years, depending on variations in methodology. It is important for researchers to approach the collection of adolescent racial data with this knowledge in mind. It may be appropriate for researchers to present broader estimates of racial breakdowns in their research samples, rather than specific numbers. Alternatively, researchers may consider collecting data from only

adolescents, only caregivers, or both, depending upon whose perspectives seem most relevant to their specific research questions.

Author's Note

Victoria Mauer is now affiliated with University of Nebraska-Lincoln, USA.

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Note

1. Harris and Sim (2002) reported their findings as follows: 87.6% consistent, 10.3% inconsistent, and 2.2% refused to answer. This means that only 97.9% of Harris and Sim's sample could be defined as "inconsistent" or "consistent" in reporting. To estimate our expected range of consistency we needed to transform their percentages to reflect values out of 100%. To do this, we multiplied each of their percentages by 1.02145. Thus, 10.3% was transformed into 10.52%, and 87.6% was transformed into 89.48%.

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