

ABSTRACT

Title of Dissertation: PSYCHOLOGICAL ADJUSTMENT, BEHAVIOR
AND HEALTH PROBLEMS IN MULTIRACIAL
YOUNG ADULTS

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This study: (1) examined whether multiracial young adults reported lower levels of well-being relative to their White and monoracial minority peers and whether these outcomes were moderated by college attendance or racial identification; and (2) investigated factors, drawn from Root's (2003) ecological model of multiracial identity development, during adolescence that could predict better well-being outcomes for young adults. Participants were 18-26 years old and drawn from the Wave III archival data of the National Longitudinal Study of Adolescent Health (Bearman, Jones, & Udry, 1997), a nationally representative school-based probability sample of participants initially surveyed in 1994-1995, with the Wave III follow-up conducted six years later in 2001-2002. Using a subset of 14,644 participants (615 multiracial, 4,686 monoracial minority, and 9,343 White) the multiracial young adults reported statistically higher levels of depression, drug abuse and physical limitations, and lower levels of self worth than their monoracial counterparts. Effect sizes (partial eta squared), however, were so small, varying between .001 and .003, that these statistical findings did not represent meaningful

differences. Therefore, the current study found evidence of fewer difficulties of multiracial young adults relative to their monoracial peers, when compared to previous researchers who studied the same sample as adolescents and found consistent patterns of negative well-being (Milan & Keiley, 2000; Udry et al., 2003). In part this may be because previous researchers did not present effect sizes. Using a second subset of 8,978 participants (402 multiracial, 2,617 monoracial minority, and 5,959 White) a two phased, multi-group structural equation model examined the relationship between adolescence and young adulthood factors and found that multiracial participants had the highest path coefficients for depression and living with both biological parents in comparison to their monoracial counterparts. College attendance was found to not change the relationship of multiracial young adults on reported well-being outcomes in comparison to their monoracial counterparts. In the area of multiracial identification, there was no evidence that multiracial young adults who reported their racial category as multiracial versus monoracial exhibited higher well-being outcomes. Implications for practice and future research are discussed.

PSYCHOLOGICAL ADJUSTMENT, BEHAVIOR AND HEALTH
PROBLEMS IN MULTIRACIAL YOUNG ADULTS

by

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Dedication

To Jillian and Natalie. You are my pride and joy.

To Phyllis, my love and life long partner, we've done this together.

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There are many people who deserve my thanks. First, pursuing my academic goals and this research would not have been possible without the support and opportunity provided in my professional life by Linda Clement to whom I owe a great deal. Without her commitment to my seeing this through it would not have happened. I want to thank Richard Stimpson for his mentorship, wise counsel and steady guidance over the years of my program. I am indebted to William Thomas, Jr. for his steadfast support and strong encouragement to pursue my passion for psychology.

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Chapter 1 - Introduction

The number of multiracial adolescents and young adults is growing rapidly in the U.S. The 2000 Census reported more than 6 million people identifying as multiracial or 2.4% of the U.S. population. While this population is growing, research to better understand the experiences of multiracial people has been slow to develop as a coherent body of knowledge. The literature is fragmented, and the psychological well being and adjustment of adolescents and young adults is not well understood.

Several recent, national studies have indicated more problematic psychological adjustment, behavior and health characteristics for multiracial adolescents when compared to their monoracial peers. Udry, Li and Hendrickson-Smith (2003) studied 3,539 multiracial adolescents ages 12 to 18 and found they had increased psychological adjustment, health and behavior risks when compared to monoracial adolescents. The researchers used data from the National Longitudinal Study of Adolescent Health (Add Health; Bearman, Jones, & Udry, 1997), a nationally representative school-based probability sample of 90,118 children in grades 7 through 12 conducted initially in 1994-1995. Milan and Keiley (2000) found similar results, also using the same Add Health data.

Udry, et al.'s (2003) analysis showed that self-identified multiracial adolescents in comparison to their monoracial counterparts reported higher levels of depression, more health problems such as sleep problems, skin problems, headaches, aches/pains, and greater levels of smoking and drinking. These higher levels were still evident after controlling for age, sex, GPA, two-parent households, and family education. Their analysis also indicated that these higher levels applied in a general way and were not

distinctive to any particular race combination (e.g., Black/White). Further, it was not limited to any particular type of risk, but to a number of psychological adjustment, health and behavior risks. Milan and Keiley (2000) also found multiracial adolescents had elevated risks for depression, somatization, conduct problems, school behavior, and self worth in comparison to their monoracial peers. Cooney and Radina (2000), also using the Add Health data, studied intact families with biological parents and found these multiracial adolescents were better adjusted than the findings of Udry et al. (2003) and Milan and Keiley (2000); however, there was still evidence of more school related problems (e.g., grade retention, suspension) among multiracial boys and greater use of counseling services among multiracial girls than monoracial adolescents.

What is unclear is whether these risks reflect a temporary phase of development during the stormy adolescent period (i.e., ages 12 through 18) and that they decline after that, or whether these risks are chronic and continue into young adulthood? Some studies suggest these difficulties are not as prevalent in young adulthood (e.g., Brown, 1995), while other studies reflect continuing adjustment problems in the multiracial young adult population (e.g., Twine, 1996). Second, if these problems are chronic and widespread in the young adult population, are there environmental factors (e.g., family, school) and choices (e.g., resolving one's racial identity, going to college) that are associated with better outcomes in terms of psychological adjustment, behavioral conduct, and health by the time multiracial adolescents become young adults? Does the college experience make a significant difference in terms of these outcomes?

These questions are important because the answers provide educators and help providers who are interested in assisting multiracial clients a better understanding of the

developmental path and adjustment outcomes for multiracial young people. Many help providers indicate the importance of being aware of the developmental tasks of multiracial individuals in order to understand where they are in relation to these tasks (Deters, 1997; Fong & Spickard, 1995; Winn & Priest, 1993). However, their developmental path is not known. There are also few studies with sufficient numbers of multiracial people to elucidate their developmental experiences in comparison to their monoracial peers.

The existing literature about multiracial people only provides limited insight into answering these questions. There has been little focus on general adjustment and well being including psychological, behavioral and health outcomes. Further the literature is fragmented and does not lead to generalizable observations. Almost all of the studies draw participants from limited local areas, using convenience samples, making it difficult to make inferences across studies or to reach conclusions about the multiracial population. As a result there has been little coherent knowledge building.

A major focus of the existing literature has been on how multiracial people develop their racial identity. Many multiracial identity models emphasize a stage approach, generally consisting of developmental stages from racial innocence moving to the internal and external pressures to affiliate with one or the other racial identity of the parents, and eventually to self acceptance of a multiracial heritage (Kerwin & Ponterotto, 1995; Kich, 1992; Jacobs, 1992; Poston, 1990). These models are conceptually consistent with Erikson's (1968) eight stages of psychosocial development and Helm's (1990) model of monoracial identity development. Some recent multiracial identity models have emphasized a concurrent and situational approach where multiracial

individuals can identify with several choices including monoracially, with both races, biracially, or with no race (Rockquemore & Brunsma, 2002; Root, 1990). These concurrent models view identity as more fluid, changing with situations and time. Neither the stage or concurrent multiracial identity models readily explain the adjustment difficulties found by Udry, et al. (2003), Milan and Keiley (2000) and Cooney and Radina (2000). Root (2003) proposes a broader model that recognizes the ecological forces that influence identity development and psychological adjustment, including the family, the school environment, friends/peers, and the local community. These proximal environments are in turn encompassed within class, gender, sexual orientation socio-political contexts as well as geographical and generational history. Root's model enables a wider lense through which to view issues of identity and healthy adjustment of multiracial young adults and is consistent with, and supported by, Bronfenbrenner's (1986) ecological systems theory of child development and by the work of Jones and McEwen (2000) and their conceptual model of the multiple dimensions of identity. Root's model is further supported by clinical experience with the multiracial population (Gibbs, 1998), and more generally by research into environmental risk and protective factors that impact outcomes of adjustment and well-being in young people (Gerard & Buehler, 2004).

The studies of the multiracial population by Udry et al. (2003), Milan and Keiley (2000), Cooney and Radina (2000) using the national, Add Health database offered a unique opportunity to compare and contrast their results, and to extend the knowledge base that they have created. These studies collectively begin to address several of the serious flaws in the existing literature. First, they can report generalizable results.

Second, they have addressed gaps in the literature about psychological adjustment, behavior and health problems related to multiracial young people. Their use of the same database and their questions focused in the same areas, serve to advance knowledge in a coherent way. The Add Health database itself provides environmental data concerning family systems, friends, schools, and neighborhoods and, through a framework like Root's (2003) ecological identity model, can add contextual data to the adjustment, behavior and health problems. All three studies, Udry et al., Milan and Keiley, Cooney and Radina, however, use data from one point in time (1994-1995) and do not improve our understanding of the developmental experience of these adolescents as they mature into young adults.

The Add Health project collected data in a six year, follow-up to its original surveys conducted in 1994-1995. The follow-up was conducted in 2001-2002 and the original adolescents, ages 12-18, had aged to young adults, predominantly ages 18-24. Data about the psychological adjustment, behavioral and health experiences of these young adults were collected in the follow-up. Since the Add Health data are not limited to multiracial young adults it provides the opportunity to compare them with their monoracial counterparts.

The current study was not a longitudinal design, rather it used the Add Health database to examine the multiracial experience at two points in time. The current study sought to answer two primary questions. First, it used the Add Health follow-up study (Wave III) to compare multiracial young adults with their monoracial counterparts across a number of outcomes of overall well-being that were found to be problematic by Milan and Keiley (2000), Cooney and Radina (2000) and Udry et al. (2003) as adolescents (at

Wave I) to see if they continued to exhibit lower well-being. Second, this study sought to examine the relationship between factors such as family, school, friends, neighborhood and psychological adjustment (depression, self worth) during adolescence (Wave I), with outcome factors such as psychological adjustment, behavior and health as young adults (Wave III). The influence of the college experience, and racial self-identity choices on these outcomes was also assessed. Root's (2003) ecological model was used as the theoretical basis for structuring this analysis.

Chapter 2 - Review of the Literature

Several recent, national studies have indicated more problematic psychological adjustment, behavior and health characteristics for multiracial adolescents when compared to their monoracial peers. Studies such as those conducted by Udry et al. (2003), Milan and Keiley (2000) and Cooney and Radina (2000) are central to the current study since they collectively present a picture of higher levels of psychological adjustment, behavior and health problems among multiracial adolescents in comparison to their monoracial counterparts. This literature review focused on three objectives concerning these problems that were relevant to the current study.

First, it examined multiracial identity models and their empirical support to see if they can help to explain, or at least lead to a better understanding, of the greater problems reported by multiracial adolescents. Root's (2003) ecological model was used as an overarching framework for the current study to examine major themes within the multiracial literature.

Second, this review examined the role of these themes, including family, school, friends, neighborhood environments, and generational/societal acceptance on the adjustment and well being of multiracial young adults. Evidence of changes in adjustment and well being from adolescence to adulthood were explored as well as experiences particular to the college environment.

Third, a goal was to examine the literature on psychological adjustment, behavior and health problems among multiracial adolescents based on research by Udry, et al. (2003), Milan and Keiley (2000), and Cooney and Radina (2000). These problems include higher levels of depression, lower self worth, more conduct and school behavior

problems, greater levels of smoking and drinking, and more health problems such as difficulty sleeping and skin problems. Also, a review of other research that has used the Add Health archival data was done, to understand how the current study could make the best use of the Add Health data to investigate both the environmental predictors and problem outcomes related to multiracial young adults.

Defining What it Means to be Multiracial

An important first step was to define the multiracial population. While this may seem a straightforward question there are several aspects that make it complicated. There is clear evidence that a substantial number of multiracial individuals self identify as monoracial people (Brown, 1995; Rochequemore & Brunnsma, 2002; Twine, 1996). There is also substantial evidence that many multiracial people identify differently in different situations. Harris and Sim (2002) analyzed how respondents reported their race in the Add Health Wave I database. The authors wished to examine the fluidity of race identity for multiracial individuals. As a nationally representative sample of adolescents, 11,531 students completed a questionnaire at school, and later were interviewed at home. In both environments they were asked using the same questions to report their race. As an overall measure among all respondents 6.8% identified multiracially at school and only 3.6% identified multiracially at home. The authors noted that because home interviews were most often in the company of family members, the school interviews offered more anonymity. The authors also examined the reported race of biological parents and determined, based on parents of different races, 4.8% of the respondents would have been classified as multiracial. Further attesting to the situational dynamic of multiracial identity, 5% of respondents identified as multiracial in school and then identified

monoracially at home. In the reverse direction, 2% identified monoracially at school, but then multiracially at home. In examining respondents whose biological parents reported being of different races, they found that one-third of these respondents self identified monoracially. They conclude that having parents of different races is not a sufficient condition for expressing a multiracial identity. Harris and Sim's study, while limited to adolescents, provides the clearest evidence to-date about the extent racial identity is fluid in the multiracial population. Ideally, one would gather multiple self reports of racial identity in different situations as a way to gain a more accurate picture of a multiracial person's self identity.

An additional consideration related to how the federal government has classified race versus how society has viewed race as a distinguishing difference among groups. Historically, race related literature in the social sciences has tended to treat Hispanic/Latino as a mutually exclusive and equivalent category to the race categories of Black, White, Asian and American Indian (Bracey, Bamaca & Umana-Taylor, 2004; Cruz-Janzen, 1999; Salgado de Snyder, Lopez & Padilla, 1982). For the purpose of interpreting diversity in the U.S., the overwhelming preponderance of literature treats Hispanic/Latino as equivalent and mutually exclusive to race. In multiracial terms, then, someone who is Hispanic and White or Hispanic and Black would be considered multiracial.

However, the U.S. Census treats Hispanic as an ethnicity and distinct from race categories. This approach for collecting ethnic and race data was followed by the Add Health project. Therefore, studies that use race data collected in this way essentially ignore the Hispanic category and focus exclusively on the race category. This means, for

example, if a respondent to Add Health reported Hispanic as their ethnicity and White as their race, then for race purposes they would be categorized as monoracial White as opposed to being considered multiracial Hispanic/White. However, someone who checks Hispanic, then under race checks both Black and White, would be included as a multiracial person of Black and White heritage, i.e., the Hispanic category would be ignored in his or her racial definition.

In the multiracial literature, however, a number of studies have treated Hispanic/Latino as a category equivalent to race. Salgado de Snyder, et al., 1982 studied conflict regarding multiracial heritage in 63 multiethnic students, aged 12-18 with one Mexican parent and one non-Hispanic parent. Cruz-Janzen (1999) interviewed 10 bi-ethnic, principally Hispanic and another race, 20 to 30 year olds, asking them to reflect on their experiences in K-12 school. Bracey, et al. (2004) included Latinos as a separate racial group in her study. She noted that even though Latinos are an ethnic, not racial, group she observed that they are socially grouped separate from Whites and Blacks. In a clinical example, Aldarondo (2001) reported on a White & Puerto Rican (dark skinned) male client who experienced significant stress when leaving his racially/ethnically diverse home in California and attending school in a much less diverse Midwest community.

In summary, deciding who to include as multiracial is not a straightforward choice. The current study used archival data from Add Health that followed the U.S. Census approach; therefore, Hispanic/Latino was treated as a separate category from race and not used in defining people with multiracial backgrounds. Note, however, that studies reviewed in the literature that used Hispanic/Latino in multiracial/multiethnic research are reported since they are part of the knowledge base on the multiracial topic.

The term multiracial was generally used in the current study to encompass various terms used in the literature including biracial, mixed race, and mixed heritage. In some circumstances, however, the phrase used in other articles (e.g., biracial) was maintained if it seemed pertinent in reporting their results. The convention for monoracial groups in the current study was White, Black, American Indian and Asian. It is interesting to note that the 2000 Census used six race categories: White; Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; and Some other race (Jones & Smith, 2001). The complexity of defining who is multiracial is reflected in the literature related to multiracial identity models. This important dimension will be reviewed next.

Multiracial Identity Models

Do multiracial identity models help us understand the psychological adjustment, behavior and health problems among adolescents that were found in large, national studies such as those conducted by Udry et al. (2003), Milan and Keiley (2000), and Cooney and Radina (2000)? General identity theories such as Erikson (1968) clearly suggest, that adolescence is a time of struggle and transition. This section will examine multiracial identity models to see if they provide more specific clarity about the nature of these identity issues for multiracial young people.

Multiracial identity development models have evolved from a lineage that starts with the general identity theories (Erikson, 1968), extends to racial identity models (Cross, 1987; Helms, 1990) and then moves to the development of identity models specifically applicable to multiracial people (Jacobs, 1992; Kerwin & Ponterotto, 1995; Kich, 1992; Poston, 1990; Rockquemore & Brunnsma, 2002; Root, 1990, 2003).

General Identity Development

Identity development theories look at how our identities develop over time and over our lifespan. Identity development was popularized by Erik Erikson's theory on psycho-social development. Erikson (1968) considered the development of a positive sense of identity to be a major task of moving from childhood to adulthood. He saw this identity formation influenced by the child's internalized self definitions coming from significant others and from the larger society. Erikson related racial identity development as an aspect of the development of ego identity and recognized the potential for internalizing negative self-images due to differential treatment by the larger society.

While Erikson's theory applies to all adolescents, it is not too difficult to imagine that adolescents with special identity challenges may exhibit additional stressors. Erikson coined the terms identity crisis and identity confusion, which revolved around his perspective of the establishment of an identity during our adolescent and young adult periods (Hall, Lindzey, & Campbell, 1998). Through the motivating energy of the ego, our identity jells during this period as our sense of uniqueness and our inherent characteristics become clearer.

Marcia (1980) defined four stages, or ego identity statuses, that extend from a theoretical grounding in Erikson's theory of ego identity formation. These stages revolve around the ideas of crisis and commitment and included identity diffusion; foreclosed identity; moratorium, achieved identity. The identity diffusion stage is characterized by the lack of an identity crisis, with little evidence of identity exploration or movement toward commitment. Foreclosed identity occurs when the adolescent has made a commitment not based on their own exploration but rather on the desire of some external

influence (e.g., parent). The moratorium stage reflects an active identity crisis, with the adolescent still exploring but no commitment yet reached. The achieved identity stage reflects the outcome after an identity crisis, exploration and the arrival at a commitment. Phinney (1990) found that the more advanced identity stages of Achieved and Moratorium were correlated with higher levels of psychological functioning.

Identity confusion ensues as the young person struggles with the transition into greater independence. Identity crisis is the label for the experience of resolving the crisis, leading in general to a more stable form of identity. It is important to note that identity confusion and crisis were normal phases of the development process in forming one's unique psycho-social identity. Often, studies of multiracial people involve adolescents who, according to Erikson's theory, would naturally be in a particularly acute phase of identity formation.

General identity development theory would suggest that adolescents go through a particularly challenging time of identity turmoil, and that they grow through this period toward more stable identity formation as an adult. This would suggest that if identity problems are behind the evidence of lower psychological adjustment, behavioral and health related well being in multiracial adolescents that these should improve as these adolescents mature into young adults. However, there is little empirical basis in the multicultural literature to support this assumption.

Multiracial Identity Development

While multiracial identity theories do not directly predict lower psychological adjustment, behavior, and health well being in adolescents, they do indicate that multiracial adolescents face unique identity development challenges that could give rise

to unique challenges. Within the last two decades more attention has been paid to examining the special dimension race can play in the development of an individual. Out of this several models have evolved which focus on monoracial (both minority and majority) racial identity development (Helms, 1990). These racial identity models were the precursor for models developed to reflect the multiracial experience.

The earliest theories of multiracial identity actually extend back to the early 20th century. These were deficit models, which focused on the limitation and difficulties of a multiracial experience and established the framework for future models that are still in existence today. Stonequist's (1937) marginal person theory was based on the premise that mixed heritage people would inevitably suffer from marginalization and this would exacerbate development of a normal identity due to the insecurity and self-ambiguity caused by the lack of racial clarity. The deficit perspective has been the dominant one until only recently. Gibbs (1987) continued the deficit theory in her conceptualization of multiracial children as particularly vulnerable to: conflicts about their mixed heritage identity; conflicts about their social marginality; conflicts about their sensuality and choice of sexual partners; conflicts about separation from their parents; and conflicts about their educational or career aspirations.

More recent models which have evolved out of the monoracial identity development models tend to not start out from the theoretical perspective that multiracial people are at an inherent identity disadvantage. While marginalization is not ignored, it is seen more as a society imposed ill versus an intra psychic difficulty (Kerwin & Ponterotto, 1995).

Of these recent models, the first were stage models, much like Erikson's general

theory. They follow the same concept behind monoracial identity models (Helms, 1990) in that a person moves through various stages of racial identification that eventually lead to an integrated sense of self. Within the last five years, several models have emerged that emphasize the concurrent, situational and dynamic nature of multiracial identification (Rockquemore & Brunson, 2002). More recently, an ecologically based model has been developed (Root, 2003).

Of all the multiracial identity models, Root's (2003) ecological approach seems to offer the best framework through which to examine the overall well being and adjustment of a multiracial person, within micro and macro contextual domains and environmental influences. Her framework encompasses concurrent identity models and identity development over the life span. Her model will be examined in more detail later. First, several stage and concurrent models will be reviewed to see how they might also inform the issues being addressed in the current study. First, all of the stage, concurrent, and ecological models will be reviewed, followed by any empirical literature that supports these models.

Stage Models

The stage models are characterized by having an emphasis on a chronological/linear process of selecting one race, feeling guilt about, and alienation from, the other parent, and eventually integrating both races. These theories would support the notion that adolescents, already struggling with identity development generally, would face the additional developmental challenge of parent race affiliation, and heavy needs for belonging with significant monoracial peer groups. Models often cited in the literature include Poston (1990), Jacobs (1992), Kich (1992), and Kerwin and

Ponterotto (1995). These models will be briefly reviewed to see if they help put the psychological adjustment, behavior and health problems of multiracial adolescents (Cooney & Radina, 2000; Milan & Keiley, 2000; Udry et al., 2003) within a developmental perspective and provide some basis to make predictions as to whether or not these problems resolve as young people mature.

Poston (1990) is cited as the first multiracial identity model in recent times. He developed a five stage model beginning with the young child having no particular affiliation with a racial group; then being pushed to identify with one racial or ethnic group; followed by an enmeshment/denial stage characterized by confusion and guilt at having chosen one identity over the other; then a stage of beginning to appreciate a mixed heritage; and finally integrating and recognizing the full value of his or her heritage. Poston's model is useful in laying the groundwork to view the psychological, behavior and health problems among multiracial adolescents as transitional, perhaps associated with the enmeshment/denial stage, and better adjustment as the young person matures toward the final, integrated phase. Poston, however, did not assign age ranges to his stages so this association is only conjecture.

Jacobs (1992) proposed a three stage model which focuses mostly on development through pre-teens: (a) child realizes that color is an enduring characteristic but there is usually no evaluative component, (b) child becomes ambivalent about her color and may vacillate between choosing one race or ethnicity and then the other; (c) child realizes that color is not the sole determinant of racial identity, and she can choose to be multiracial because of her heritage. Jacob's model supports the developmental concept that multiracial young adults may have resolved identity challenges experienced as

adolescents, however, similar to Poston, Jacob fails to associate ages with his model.

Kich (1992) developed his model based on a qualitative study he completed involving Japanese/White adults, aged 17-60, and includes three main stages: (a) awareness of difference and dissonance (ages 3 to 10); (b) struggle for acceptance (ages 8 through late adolescence or young adulthood) (c) self-acceptance and assertion of an interracial identity (typically occurs after high school). Kich's model identifies age ranges, and the hardest phase, struggling for acceptance, would coincide with the difficult teenage years and support the evidence of adjustment problems during adolescence. The model would further suggest that these problems would begin to resolve in young adulthood.

Kerwin and Ponterotto's (1995) model is the most recent and most well developed stage model. There are six phases with the first three covering preschool through preadolescence. The next phase is adolescence with significant pressure felt to belong, and to choose one group or race over the other, with dating becoming an issue; In the next phase, college/young adult, there may be a continuing immersion in one culture and a resultant rejection of the other, however, usually a more secure personal identity develops and the initial stages of integrating both parents' heritages. The last phase, adulthood, reflects a lifelong process of continuing to integrate different facets of identity, continuing interest in different cultures, and being able to function effectively in varying situations with different cultures. Kerwin and Ponterotto's model suggests that the adolescent period is particularly full of turmoil and associated with the greatest adjustment difficulties. According to this model, these problems should start to mitigate during the college/young adult stage. The strength of Kerwin and Ponterotto's model is the age

specificity and development of each stage.

Summary of stage models. Generally these stage models theorize an identity development that eventually integrates and acknowledges the full mix of one's heritage. For example, Phinney (1990) concluded that the more advanced identity stages of Achieved and Moratorium (Marcia, 1980) were correlated with higher levels of psychological functioning. This would suggest that those who have achieved the final stages in any of these models are the most psychologically well-adjusted. If the stress of multiracial identity issues underlies the increased adjustment and well being difficulties as adolescents then these problems should decrease as they grow into young adults according to the stage models. The stage models offer a useful perspective on the potentially temporal nature of the problems found by Udry et al. (2003), Milan and Keiley (2000), and Cooney and Radina (2000). However, the relatively rigid stage models have been questioned and criticized on several fronts. Renn (2000) found the need to "...depend on an orderly progression through developmental stages..." (Renn, p 402) inconsistent with her research into the fluid, situational, identity experiences of multiracial college students. Rockquemore and Laszloffy (2003) criticize the "...one size fits all..." (p. 120) nature of these stage models and disagreed that an ultimate multiracial identity is necessary for healthy adjustment.

Concurrent Models

More recent work (Rockquemore & Brunsma, 2002; Root, 1990) has de-emphasized stage models in favor of more fluid identity dynamics and recognition of situational influences. Since these are not stage models they do not address how identity might change over time. In order to describe these models, the current study labels these

as concurrent models, given that their most salient characteristic is the ability for the individual to choose among several concurrent identity options, independent of stage progression.

Root (1990) developed a non-linear model which provides for situational flexibility and recognizes the importance of social, political and family systems. This approach reflects a departure from the previous stage oriented models. Root conceptualizes the multiracial identity process as circular and fluid and involving four potential strategies. (a) Passive acceptance of the identity society assigns; (b) Intentional identification with both racial groups, (c) Intentional identification with one racial group (which may or may not be the one society assigns); and (d) Identification as a new racial group. Root does not envision these as mutually exclusive, stating that they may co-exist simultaneously or that one may move among them.

Brunsma and Rockquemore (2002) developed similar categories through empirical research of Black/White biracial college students. Since their research was integral to their model, it will be reviewed here. Other empirical research that supports the models will be reviewed in a later section. Brunsma and Rockquemore undertook a three-phase study beginning with a qualitative in-depth interview of 14 Black/White college students (based on race reported of biological parents), ages 18-22, raised in 10 different states and attending a Midwest catholic university. The results of these interviews were used to develop an instrument that was then used in the phase-two, mailed survey that included two large universities in urban/suburban environments, with a resulting sample of 177 respondents. These results of this survey were analyzed and led to phase-three, a semi-structured, in-depth interview with 25 of the 177 phase-two

respondents. Their work resulted in concluding that there were five categories used by multiracial young adults. The percent of the sample in each category is also included: 1) border identity - a biracial identity, neither Black or White (61.3%). This category is further defined as being either unvalidated in that more than half (38.7% of the whole sample) said they felt biracial but the world treats them exclusively like a Black person. Only 22.6% (of total) felt their biracial identity was validated by others. 2) singular identity - identifying exclusively White or Black, with 13.1% identifying Black, and 3.6% identifying White. 3) Protean identity, sometimes affiliating Black, sometimes White, and sometimes biracial, depending on the social context (4.8%) and 4) Transcendent identity, with these respondents contending that they have no definable racial identity, so they opt out of racial classifications altogether (13.1%).

Summary of concurrent models. The concurrent models address two significant weaknesses of the stage models, first in the clear evidence that multiracial people identify in ways that are much more complex than either choosing one race or the other in lockstep fashion (Renn, 2000), and second in that many dynamically change their sense of racial identity depending on situations and context (Harris & Sim, 2002). The concurrent models lack a developmental grounding (e.g., is the identity experience for a child the same as an adult?), and while providing some contextual framing (e.g., the unvalidated multiracial identity observed by Brunsma & Rockquemore, 2002), the factors that might cause the elevated psychological adjustment, behavior and health problems among adolescents is not addressed by these models.

Summary of stage and concurrent models. Both stage and concurrent models, taken together, seem to reflect two major aspects of the multiracial identity experience:

this identity evolves over time, and can be fluid depending on the situation and the person. These are useful perspectives. However, they fall short of providing a comprehensive framework for understanding the overall adjustment difficulties found among multiracial adolescents (e.g., Cooney & Radina, 2000; Milan & Keiley, 2000; Udry et al., 2003) and potentially predict adjustment outcomes as young adults. The stage models may in fact partially explain the difficulties experienced during adolescence, however, there is ample empirical evidence of continuing identity related stressors among multiracial young adults (Brown, 1995; Renn, 2000; Twine, 1996), which is contrary to expected resolution of these issues predicted by the stage models. What other factors, not addressed by the stage models, are coming into play? The concurrent models seem more grounded in the reality of the lived multiracial experience, i.e., the fluidness of one's racial identity and variety of racial identity choices, however, the absence of a developmental aspect leaves them unable to predict if adjustment and well being difficulties continue for young adults. One model, Root's (2003) ecological approach, seems to encompassing the full and complex interaction of the immediate environments (family, friends, neighborhood) and broader contexts (class, geographic region, generational/societal acceptance) as well as identity across the lifespan and dynamic concurrent identity choices. Her model will be explored next.

Root's Ecological Model

Observing that current multiracial identity concepts do not consider all of the ecological factors such as inherited influences (e.g., language, name, phenotype), traits (e.g., temperament, social skills, coping skills), social interactions within the community (e.g., school/work; friends, community), identity choices (e.g., monoracially,

multiracially), Root (1999; 2003) further broadened the notion of multiracial identity initially presented in her earlier concurrent model (Root, 1990). Root proposes a complex, ecological model that recognizes a number of micro and macro level dimensions as influences on the multiracial person. She also recognizes how these factors can change over the life-span. At the macro level, the regional and generational history of race and ethnic relations comes into play. For example how a multiracial person experiences their identity will be effected by the region in which they live and the generation (e.g., baby boomers, generation X) they affiliate with. More locally, there are significant environmental influences. The family provides an immediate context. Whether the parents are available and supportive, and create an environment of acceptance and belonging, and whether both biological parents are present matter to the identity development and well being of the child. School environments are important in the lives of multiracial children. Do they feel socially accepted and safe in school, do they have friends and spend time engaged in social activities? These are important aspects of their social lives. Is the school environment racially diverse, and do students interact with each other across cultural boundaries? The neighborhood also matters. Are the child and his or her parents comfortable in the neighborhood, do they know people and feel safe? Root's ecological model emphasizes the potential variety of ethnic/racial self identity choices open to the child. Other factors such as physical characteristics (phenotype), gender, sexual orientation are significant determinants of identity and well being.

Root's model is consistent with Bronfenbrenner's (1986) ecological systems theory, a widely cited model of a contextual approach to development (Bukatko &

Daehler, 1995). Depicted as concentric rings, at the core of his model is the child's biological and psychological make-up. The next ring is the immediate environment called the microsystem and comprised of the family, school, peers, the physical neighborhood and community. Next, is the mesosystem, concerned with the interrelationships among the various settings of the microsystem. A broader context is reflected in the next ring called the exosystem including social, economic, political, religious and other settings in which the child takes no direct part but which can influence the child in significant ways. The final ring is called the macrosystem which includes major historical events, for example famines and wars, as well as the broad cultural values and norms of a society. While Root makes reference to Bronfenbrenner's work she does not explicitly attribute her theory as being grounded in his model. However, it is easy to see Root's model as the application of Bronfenbrenner's approach to a specific population, multiracial people.

Root's emphasis on the significance of the environment and multiple aspects of multiracial identity is reflected in the approach of Jones and McEwen's (2000) multiple dimensions of identity model. Jones and McEwen conceptualize a central and personal, core sense of self surrounded by more externally defined dimensions of identity such as race, culture, sexual orientation, and class. These dimensions intersect with each other and can be more or less salient to identity depending on their distance or proximity to the core sense of self. The identity dimensions and core exist within, and is significantly influenced by, a broader contextual environment that includes family background, sociocultural conditions, and current life experiences. Jones and McEwen's model, like Root's model, views identity and identity development within a rich interplay of personal,

social and contextual dimensions, changing over time, that belies the oversimplification of single identity categories.

Root's model, applying ecological principles similar to Bronfenbrenner's theory to a specific population and mirroring aspects of Jones and McEwen's (2000) multiple dimensions of identity model, provides a useful framework through which to analyze the environmental factors influencing psychological adjustment, behavior and health problems in multiracial young people.

Literature Support for Multiracial Identity Models

Little direct research has been conducted to test the stage models. Aikins (as cited in Mukoyama, 1998) investigated the multiracial identity development and alienation in 83 Black and White multiracial adults, using Poston's (1990) model as a guide. She developed the Biracial Identity Development Inventory to empirically apply Poston's model. The Inventory included the following factors: 1) lack of salience; 2) conflict; 3) monoracial identity; 4) appreciation; and 5) interaction. She found that alienation varied by the identity development stage of the respondent. She also found that those respondents exhibiting stage 2 (conflict), correlated to higher levels of expressed powerlessness. Higher measures on stage 3 (monoracial identity) correlated to higher social isolation scores. In general she observed evidence of Poston's stages.

One study that supported the developmental sequence of the multiracial stage models, of moving from monoracial identity to multiracial identity was conducted by Brown (1995). She investigated the relationships between racial identity, conflict, and self-esteem among multiracial adults. As part of her study she asked participants to recall certain aspects of their experience as children and adolescents. Participants included 119

young adults, aged 18-35 years old, mostly from middle class backgrounds, with one Black and one White parent. Most were college students (61.3%), and all lived in the Northeast. Participants were obtained through the snowball method. A semi-structured interview using the Brown (1991) Interracial Young Adult Interview was used consisting of 67 questions with measures including demographics, racial identity, resolution of the racial identity question, and social experiences. She found that the percentage that identified primarily as multiracial grew substantially from 37% in grade school to 57% following high school, the percentage that identified primarily as Black grew modestly from 25% to 29%, and the percentage that identified primarily as White decreased substantially from 22% to 4%. This indicates the growth toward a more integrated identity and, according to the stage models, improved psychological health.

Brown also found a positive correlation between conflict and identifying as White and a negative relationship for those identifying as multiracial. Brown defined conflict as emotional turmoil contributed to by societal misidentification, being rendered invisible, and pressure to deny their White parent and their own whiteness. Thus, higher emotional turmoil is associated with identifying as White, and a higher percentage of multiracial participants identified as White when they were younger. This supports the hypothesis that, stress induced psychological adjustment, behavior and health problems will go down as multiracial people mature from adolescents into young adults and move from a monoracial identity to a multiracial identity. Brown also found in general that the majority of participants (74.8%) had experienced some degree of conflict about their racial identity while growing up, but a large percentage (83.2%) had to some extent reached resolution of this issue at the time of the study. This again suggests that the

multiracial developmental process of growing older leads to better adjustment.

Brown also, interestingly, found that a majority of her participants had compartmentalized their racial identity, by expressing a Black identity publicly (e.g., filling out forms; how they would describe themselves to another) but privately identifying themselves as multiracial. A majority, 64.7%, reported choosing the Black racial category publicly for example on forms requesting race information, while 66.4% would define themselves as multiracial in the absence of external pressure. Limitations of Brown's study include using the snowball method, and only including Black/White multiracial people living in the Northeast from a more highly educated segment. The retrospective design, while one of the few to collect developmental data, are based on recalled experiences only.

Other studies support the concept expressed by many of the stage models concerning the pressure multiracial adolescents feel to conform and adopt a monoracial identity. Winn and Priest (1993) interviewed 34 multiracial children, ages 8-20, and found that 82% felt compelled to choose a monocultural racial label and felt awkward about having to choose one parent's identification over that of the other.

When multiracial adolescents choose to identify multiracially, there is evidence that many face rejection. Rockquemore and Laszloffy (2003) reflect on a counseling client "Cory's psychological pain was rooted in the fact that she perceived herself to be a multiracial person. In other words she felt she was neither Black nor White and also was both Black and White. She understood herself as having a multiracial identity, yet her peers failed to accept or validate that self-perception. The messages she received from the world around her suggested that others would only accept her if she agreed to deny

some part of herself. She felt trapped in the borderlands of two worlds, unable to find a comfortable place within either" (Ibid, p124). As mentioned earlier, Brunnsma and Rockquemore (2002) found that the largest group of the 177 students in their study were in the unvalidated border (multiracial) identity, at 38.7%, i.e., they adopted a multiracial identity yet this identity was not validated by those around them. Jones (1997) found similar evidence in her qualitative study of 10 college women, of the perceived pressure to conform to externally defined expectations.

The pressure to conform combined perhaps with life experiences seems to lead many multiracial adolescents to affiliate predominantly with their minority heritage, and this is reflected in similar ethnic identity scores. Spencer, Icard, Harachi, Catalano, and Oxford (2000) examined the degree of developed sense of ethnic identity in a sample of 11-15 year olds that included 1,812 monoracial teenagers and 372 multiracial teenagers. They found no difference between monoracial minority groups and multiracial groups in terms of scores in their ethnic identity as measured by the Multigroup Ethnic Identity Measure (MEIM). Higher ethnic identity scores have been associated with better adjustment. The similarity of ethnic identity scores suggest that many of the multiracial teenagers identified monoracially, and achieved similar scores. Grove (1991) also found evidence of the close affiliation between multiracial and monoracial minority adolescents. He used Marcia's Identity Status Interview to evaluate overall ego identity development in multiracial White/Asian older adolescents. He found no significant identity status differences as defined by Marcia between monoracial and multiracial groups.

In summary, there is empirical evidence to generally support the stage models, from the pressures to conform monoracially (Winn & Priest, 1993) and movement toward

a multiracial identity (Brown, 1995). There are, however, substantive differences in the stages of the various models, and no studies have sought to empirically determine which are most valid, and whether the sequential developmental path applies to most multiracial people.

There is evidence supporting the concurrent models also. Harris and Sim (2002) found substantial variety among 11,531 adolescents participating in the Add Health project, in terms of multiracial identity. In many cases racial self reporting changed from the school questionnaire to the home questionnaire for the same student. They report that 7% of students changed their racial designation from monoracial to multiracial or the reverse. Their work provides clear evidence at the fluid, situational nature of the multiracial identity.

Stephan and Stephan (1989) report that multiracial students from Hawaii and the Southwest U.S. both express multiple identities that evidence the importance/influence of the situation on the choice. Anderson (as cited in Mukoyama, 1998) found among Asian/White multiracial adults that their self-identification regarding multiraciality would change situationally and reflect both heritages at different times. Renn (2000) using a qualitative grounded theory studied the experiences of 24 multiracial students, ages 19-23, at three different, small colleges. She found the students exhibited a pattern of identity that corresponded to Root's (1990) identity model which emphasizes situational, fluid definitions of identity.

In summary, the concurrent models are supported by the self-reporting characteristics of multiracial participants (Harris & Sim, 2002; Stephan & Stephan, 1989). They provide an explanation that many multiracial people shift their racial identity

as an intentional way to cope with their changing environments, rather than a reflection of underlying identity confusion as some researchers have conjectured (Udry et al., 2003). No empirical studies have sought to relate identity choices or patterns of changing identities to adjustment and well being outcomes.

The qualitative study by Jones (1997) of the multiple dimensions of identity development in women college students reflects the contextual characteristics later depicted in Root's (2003) ecological model. Jones used purposeful sampling to select 10 diverse (e.g., race, culture, religion) women from a large East Coast university. Participants were 20 to 24 years old, with three born outside the United States (e.g., Indian, Sri Lankan), two self identified as African American/Black, and five self identified as White. The grounded theory approach was used involving multiple interviews and resulted in the distillation of 10 key categories that reflected the participants understandings of their identities, experiences of difference, and contextual influences. These categories were: (a) relative salience of identity dimensions in relation to difference; (b) the multiple ways in which race matters; (c) multiple layers of identity; (d) the braiding of gender with other dimensions; (e) the importance of cultural identifications and cultural values; (f) the influence of family and background experiences; (g) current experiences and situational factors; (h) relational, inclusive values and guiding personal beliefs; (I) career decisions and future planning; and (j) the search for identity. Participants reflected the complex interaction of their sense of identity with contextual influences of race, culture, gender, sexual orientation, family, relationships, religion, experiences, and personal attributes. Their stories portray identity as continually being re-described and constructed within a varied and rich contextual

environment that is consistent with Root's ecological approach..

Root's (2003) ecological model draws from Gibbs (1987,1998) clinical work and intervention process related to helping resolve developmental tasks for multiracial young people. The intervention process focuses on assessing four sociocultural areas of importance: (a) age-appropriate developmental behaviors; (b) parental and family attitudes toward their multiracial identity; (c) school and community resources and social networks; and (d) peer relationships.

While not direct tests of Root's model the following empirical and clinical studies of multiracial people have focused on one or more environmental dimensions which are pulled together in Root's model. For example, parent/adolescent relationship quality (Radina & Cooney, 2000); family relationships and self esteem (Mass, 1992); social acceptance and peer group (Field, 1996); dating and anxiety (Lesure-Lester, 2001); peer social rejection (Gibbs & Moskowitz-Sweet, 1991, cited in Lee, 2004); school related stress (Collins, 2000); societal acceptance (Fears & Deane, July 5, 2001), phenotype and identity (Brunsma & Roquequomore, 2001) are all dimensions included in Root's model. One of the advantages of Root's model is its comprehensiveness.

The current study sought to examine the relationship between environmental protective and risk factors and psychological adjustment, behavior, and health outcomes among multiracial young adults. Root's ecological model seemed to provide the best theoretical framework to support this investigation. Empirical studies that have used the Add Health data have relied on similar ecological groundings. For example, Gerard and Buehler (2004) examined the relationship between cumulative exposures to environmental risks and youth problem behaviors using Wave I and II data from Add

Health. They organized risk factors into four social domains: family, school, peer/friends, and neighborhood. Other Add Health researchers have used similar schemas to organize environmental factors and adjustment outcomes for adolescents (Swahn & Donovan, 2004); Blum, Kelly, & Ireland, 2001).

In summary there are three themes evident within the domain of multiracial identity models. First, there are stage models which reflect an identity development path evolving from a monoracial perspective to a multiracial one (Jacobs, 1992; Kerwin & Ponterotto, 1995; Kich, 1992; Poston, 1990). Stage models, with empirical support, suggest that an identity that embraces one's full heritage will lead toward better well being. Second there are concurrent models which recognize the different, concurrent, possible identity options that multiracial people choose from and how these choices can change depending on the situation, or at least have dimensions become more salient depending upon the setting (Rockquemore & Brunsma, 2002; Root, 1990). Third, there is the environmental orientation reflected in Root's (1999; 2003) ecological model. Root's model recognizes the complex interactions between micro and macro environmental conditions and, at the same time, includes concurrent racial identity choices and reflects development over the life span. Thus Root's model encompasses the stage and concurrent racial identity approaches within an ecological framework that recognizes the importance of family, school, friends, and neighborhood. These micro environments are, in turn, embedded within macro dimensions such as class, gender, sexual orientation and the regional-specific and generational history of race relations. Root's model helps provide a helpful framework through which to review the major themes of the multiracial experience that are explored in the next section.

Factors Influencing Well Being and Identity Development

The current study used Root's ecological model as a framework through which to view the relevant environmental domains affecting the multiracial population, including family, school, friends, neighborhood, and generation. These are covered below.

Family Environments

Root's (2003) ecological model places great emphasis on family functioning, including parental availability, extended family acceptance, losses and disruptions, sense of belonging and acceptance, and the unfortunate potential presence of violence, abuse and neglect. Family socialization in Root's model includes the language spoken in the home, how the parents self identify, nativity (i.e., U.S. born, international), names, and home values and spirituality. This section will examine literature about the role of the family on multiracial adjustment and well being.

Many authors express their belief in the importance of the family system in terms of its influence on the healthy racial identity development (or lack) of the multiracial child (Bowles, 1993; Bruno, Bibb, & Mahboubi, 1996; Williams, 1994; Gibbs, 1998; Mukoyama, 1998; Rockquemore & Laszloffy, 2003; Root, 1998; Ross, 1995). There is a paucity of actual research, however, in this area. The few empirical studies, clinical examples and expositional works are reviewed below.

Root (1998) studied the experiences affecting racial identity among multiracial siblings in the family environment. She interviewed 20 pairs of siblings, ranging in age from 18 to 40. She found that family dysfunction was a significant factor, along with peer group rejection and generational cohort, contributing to derailing the identity development process, in that children who experienced psychological abuse, and

sometimes physical abuse, racialized the experience by generalizing to the race of the bad parent. This led for example to behaviors such as refusing to date persons who were of the same racial or ethnic make-up as the cruel parent (Rockquemore & Laszloffy, 2003) . Root's study indicates a clear relationship between an unhealthy family environment for the multiracial child and negative psychological and behavioral outcomes. Is there evidence that the environment in multiracial families is unhealthy?

Radina and Cooney (2000) compared the quality of the relationships between parents and their multiracial children with monoracial White and monoracial minority families. The authors used the Add Health database. Three relational dimensions were examined: association/interaction, communication, and emotional closeness. Comparable relationship quality was found between the parents and adolescents in all three groups, except that multiracial boys and their fathers were found to be less emotionally close and communicative. This study indicates that the multiracial family environments are in general as healthy as monoracial families. Milan and Keiley (2000) had similar findings. These studies suggest that family environments don't appear to explain the lower well-being in multiracial adolescents.

Other researchers have reported on the significance of both the immediate and extended family environment on self-esteem and a positive ethnic identity (Jones, 1997; Mass, 1992).

Several authors gained their perspective on the influence of family on multiracial people through their clinical work with clients. Based on her clinical treatment of multiracial young people, Gibbs (1998) observes that multiracial teens often receive conflicting messages from their parents about family attitudes regarding race (Bruno et

al., 1996). Bowles (1993) related clinical cases where White mothers created severe identity problems in trying to raise their multiracial daughters as White, and multiracial sons struggled silently with how they saw the world treat them differently than their White fathers. Bowles also reports on the case of a multiracial young client where parents emphasized her multiraciality and shared heritage. She seemed to have been the most comfortable with her identity and to have a more integrated, cohesive sense of self than other multiracial clients.

Several authors have written expositional pieces about the multiracial family. Pinderhughes (1995) noted the importance of the parent's influence and that not providing proper support can cause the multiracial child to hold in feelings and inhibit a healthy sense of curiosity and exploration about their heritage. Miller and Miller (1990) suggested that parents need to understand that their experiences will differ from their children's since they, the parents, are not mixed race, a theme echoed by others (Luke, 1994; Rosenblatt, 1999).

In summary, family systems literature reinforces the influence of the family as both a risk and protective factor and provides further evidence of the increased psychological adjustment and behavioral problems that might be caused by intra-family stress during the adolescent years. There are very few empirical studies in this area, however, those that exist suggest that multiracial families are no more at risk than monoracial families. Root's (2003) ecological model, however, places significant importance on the family environment and its influence on the multiracial child. The clinical studies are interesting vignettes but cannot be generalized to the non-clinical population. The positive value of having an intact family with biological parents for

multiracial children has been demonstrated (Cooney & Radina, 2000), as well as the value of family connectedness for all children (Blum et al., 2001).

School, Friends, and Neighborhood Environments

Root's (2003) ecological model considers the school, neighborhood and friends environments as important influences on the multiracial experience. These will be considered in turn.

School environment. In schools, Root (2003) theory suggests that problematic attitudes by teachers and students such as the "color blind approach" or, conversely, "race is everything" perspectives tend to suppress thoughtful dialogue and inhibit the multiracial student from learning a constructive vocabulary to discuss race. She also outlines the competitive and stratification process of formal schooling, which lends itself to in-group/out-group behavior and winning and losing that can place additional stress on the multiracial student's ability to be fully connected to other students in the school environment.

This desire to be connected can translate into pressure to conform. For example, Collins (2000) found in a qualitative study of 15 multiracial adults ages 20 to 40 (14 Japanese/White and 1 Japanese/Black), that all participants believed that their experience within the school context exerted a profound influence on their development. Most recalled being victims of discrimination and humiliation. As adolescents they felt the strong need to belong to peer groups, yet there were few other multiracial kids in their schools, this led many of the participants to feel rejected by members of both races. Collins asserts that their minority status was a source of stress.

Luke (1994) identifies the school as potentially the greatest source of stress for

multiracial children and their parents. She contends that schooling is their first and most enduring encounter with public life. Identities are shaped through schooling practices and peer relations, academic futures are legitimated and the public texts of school knowledge provide powerful lessons about which cultural groups count as socially relevant and powerful, about social attitudes, gender and race identities. While this is true for all kids, there are unique dimensions to this experience for multiracial children. Nishimura (1995) warns that multiracial children may mask their underlying identity struggles through exhibiting other risk behaviors and attitudes, such as poor school performance, poor social skills, social isolation, sadness and depression.

Friends. Root's (2003) theory suggests a unique relationship with peers related to the multiracial child in what she calls hazing or authenticity tests, in which multiracial adolescents are challenged by peer groups to determine if they belong. Because of ambiguous phenotype and known multiracial heritage, Root (1998) found evidence of this type of peer acceptance/rejection testing most prevalent among middle to late adolescents.

However, other researchers have not found similar evidence. Cauce, Hiraga, Mason, Aguilar, Ordonex, & Gonzales (1992) found no difference in peer relationships between multiracial adolescents and their monoracial minority counterparts. Gibbs and Hines (1992) found positive peer relationships among the 12 Black/White adolescents in their study.

Neighborhood environment. Root's (2003) theory sees the neighborhood in connection with the family and school environments. For example, a dysfunctional home life may drive the child to seek a home away from home, with positive or negative outcomes. If there are prevailing negative racial messages in one or more of these (home,

school, neighborhood) environments the child may seek refuge in places that further derail a positive construction of racial identity. Another challenge is entering a new community (e.g., family moving, changing schools, going to college) in which the multiracial adolescent has to renegotiate their racial status.

Mass (1992) found that the location of upbringing is a salient factor influencing one's self-concept and ethnic identification. Multiracial people raised in more integrated neighborhoods reported fewer problems regarding race than multiracial people raised in predominately White neighborhoods. Aikins (as cited in Mukoyama, 1998) found that multiracial participants who grew up in predominantly Black neighborhoods tended to more likely identify as Black. Conversely, Twine (1996) reported on 16 multiracial young women (with Black heritage) who were raised in predominantly White, middle-class, suburban neighborhoods in which they affiliated with the White culture around them. Mukoyama (1998) concluded that a significant amount of the variance in ethnic identity can be explained by whether or not the respondents grew up in diverse communities.

It is clear that the role of school, neighborhood and friend experiences can influence adjustment and well being outcomes; however, the research in this area is limited and doesn't provide sufficient evidence to predict what these effects might be. One might conjecture that supportive school, neighborhood and friend environments that were affirming of the child's racial self concept would lead to better adjustment and well being as an adult.

Generational/Societal Acceptance

It is generally observed that societal acceptance of multiracial people in the U.S. is

increasing over time (Collins, 2000). Since the current study used Add Health data from two points in time, 1994-1995 and 2001-2002, it was necessary to be very cautious in not making comparative statements that would suggest the change between the two times was only due to developmental progress, since there might also be changes in societal norms. The current study is not longitudinal, and there are no direct comparisons of constructs (e.g., depression, friends) between times 1 and 2. Still, the developmental aspects of interest in the current study warranted cautious interpretation in view of societal change. Unfortunately, there were no studies found that empirically examined the effect of time/generation on the adjustment of multiracial people. The following review reflects glimpses of this issue as portrayed in the literature.

Root (2004) provides the most direct, useful writing on the generational changes. Her focus is on multiracial women. She identifies three generational cohorts: the 'exotic' generation in their late thirties or older; the 'vanguard' generation in their twenties to late thirties; and 'multiracial baby boomers' in their mid twenties and earlier. On the one hand the multiracial baby boomers seem to have the most latitude in defining themselves in the world. They were the first multiracial generation that could define themselves uniquely multiracial (versus 'half Black and half White'). Root also contends this generation is the first that is not captured completely by the hypodescent 'one drop' rule, so that a White/Asian multiracial baby boomer for example could recognize Asian as a 'symbolic race' but live her life affiliating/identifying as White. Root conveys the image of a liberated multiracial young person that is at odds with some of the recent literature that suggests higher health and behavior risks among them. Perhaps, these adjustment difficulties would have been even higher in past generations, but are still elevated with

this more recent group. Her perspective supports the idea that the environment for multiracial people will improve over time not only, perhaps, because as they mature they are better adjusted in terms of racial identity, but because society is becoming more accepting.

Field (1996) noted that the multiracial adolescents in her study of Black/White young people predominantly identified as multiracial. She contrasts this with a study with a similar sample conducted 16 years earlier (Hall, in Mukoyama, 1998)) in which the majority of participants identified as Black. Field suggests this might be due to a generation/cohort effect in that the earlier generation may have experienced a less racially tolerant society, while today's youth are more likely to be encouraged to identify as multiracial. Root (1998) in her study of 40 multiracial siblings cited the legacy of the civil rights movement as having a noticeable affect on differentiating sibling's experience from each other. She cites the repeal of anti-miscegenation laws in 1967 as being followed by a multiracial baby boom.

This concept of increasing societal acceptance is born out in a study of interracial romantic relationships. Fears and Deane (July 5, 2001) surveyed a national sample on acceptance of interracial relationships which showed a significant increase in acceptance levels. Interracial couples report widespread tolerance and acceptance of their relationships, according this survey conducted by The Washington Post, the Henry J. Kaiser Family Foundation and Harvard University. This acceptance, however, varied by type of interracial couple. Nearly half of Black- White couples -- significantly more than Latino-White or Asian-White partners -- said they believe marrying someone of a different race makes marriage harder. Two-thirds of couples in Black-White partnerships

said at least one set of parents objected to their union at its start. A companion survey found that interracial dating is fairly widespread: About 4 in 10 Americans reported they had dated someone of another race, and nearly 3 in 10 reported “serious” relationships. These numbers are even higher for younger Americans.

On the other hand, the continuing societal challenges for multiracial adolescents remains, as reported by Harris (2002) who investigated the attitudes and perceptions of school counselors toward multiracial children in K-12 schools in nine states in the Southeast. His survey looked into several factors that might influence these attitudes and perceptions. With a response of 328 school counselors he found that they strongly supported the position that multiracial children were not genuinely accepted by society. Gordon (1995) echoes these same concerns from a sociological perspective.

The literature on generational/societal acceptance for multiracial people lacks any empirical investigation. The literature that does exist does little in the aggregate to clarify the question. The potential confounding effect of the generational/societal six year change from Wave I to Wave III in the Add Health data was a necessary qualification to the current study. If change was found in multiracial participants between Waves I and III was it due to generational/societal changes or individual maturation and development?

The next section will examine evidence in the literature related to individual development

Multiracial Change from Adolescence to Young Adulthood

Root's (2003) ecological model posits that different aspects of identity will change in salience over the life span. Thus, sorting out sexual identity, for example, may be most salient in relation to the family environment at one time in life, but have a different salience related to identity later in relation to society. Does being multiracial reflect a

changing identity experience from adolescence to young adulthood? Since the current study included experiences at both points in time, it is of interest to know if the literature reveals any themes of change during this developmental period.

There are three studies that reflect some comparison between multiracial adolescence and young adulthood (Brown, 1995; Phinney & Alipuria, 1996; Twine, 1996). None of these studies are longitudinal.

Brown (1995), cited earlier, studied 119 Black/White young adults 18-35 years old asking them to recall their childhood and adolescent experiences. In terms of racial identity she found a substantial portion came to adopt a multiracial identity over time (37% in grade school increasing to 57% following high school), and that while a majority recalled conflict over their racial identity while growing up (74.8%) most reported having resolved at least to some extent this issue by the time of the study (83.2%).

Phinney and Alipuria (1996) conducted a cross-sectional study that included two separate samples, one from high school and one from college that compared multiracial students with their monoracial peers. While not longitudinal the authors provided two point-in-time glimpses of self esteem in multiracial/multiethnic adolescents and young adults. The study compared measures of self-esteem and other measures of attitudes and identity between multiracial/ethnic and monoracial/ethnic participants. The college study consisted of 47 multiracial/ethnic and 345 monoracial/ethnic students selected from two large, public universities in southern California. The samples were not random, in that participants were selected based on their parentage, birthplace (U.S. born), and age (17-24 years). Monoracial/ethnic and multiracial/ethnic categorization was based on the students self-label which included Latino, Asian American, African American, American Indian,

non-Latino White, and Mixed. Results indicated no significant difference in self-esteem between the multiracial/ethnic and monoracial/ethnic students from either campus. The high school students were selected from predominantly minority (Hispanic and African American) schools in urban areas of Los Angeles and included 194 multiracial/ethnic students and 696 monoracial/ethnic students. A comparison of self esteem between the multiracial/ethnic and monoracial/ethnic students was not significant. The authors conclude that multiracial/ethnic young people were not at a psychological disadvantage based on the measure of self-esteem for either age group. Limitations include the lumping of White and monoracial minority into one group; no statistical data reported related to the self-esteem findings; and the use of different criteria for multiracial/ethnic categorization, i.e., using parents' races for the college students and self-labels for the high school students. The authors contend, however, that this latter difference intentionally showed that self esteem did not vary for multiracial/ethnic students based on their self-identification. Their findings would suggest that in terms of self esteem, both multiracial/ethnic adolescents and young adults compare favorably to their same-age counterparts, and there is no evidence of change in this comparative relationship between adolescence and young adulthood.

Twine's (1996) study of young adults included reflections on their adolescence. Twine conducted a qualitative study of 16 biologically multiracial women in college ages 18-25, but who had identified as White or race neutral as adolescents. They grew up in predominantly White, middle-class suburban communities, and recall central to their experience of being raised White, was their immersion in a family and social network which embraced a racially unmarked, middle-class identity. This began to change in

middle/high school marked by puberty and dating. These women found they were not included in the dating culture as White males did not choose them. In college most of these women adopted a Black or multiracial identity and they describe this shift during their first 2 years in college. They continue to show evidence of an identity struggle as they seek to both belong to a minority culture yet do not feel completely comfortable. Twine presents through the narratives of the young women the complex experiences they have had. It does not suggest an inherent lessening of the stress and potential effect on health and behavior risks between adolescence and young adulthood, but their increasing maturity and ability to reflect thoughtfully on their experiences does indicate that their coping skills are improving, which may in fact mitigate some of the adjustment difficulties. In summary, Brown (1995) reflects an improvement in adjustment from adolescence to young adulthood. Twine (1995) reflects adjustment difficulties at both adolescence and young adulthood. Phinney and Ailipuria (1996) reflect healthy adjustment at both adolescence and young adulthood. While no other articles were found that addressed the change from adolescence to young adulthood in multiracial people, several studies focused on adjustment during adolescence. These only provide part of the continuum but are reported below to at least aid in understanding the adolescence-only period of time.

Multiracial adolescents report feeling compelled to choose a monoracial label (Winn & Priest, 1993), experience social marginality and peer rejection (Gibbs and Moskowitz-Sweet, 1991, cited in Lee, 2004), and face tests of acceptance into monoracial communities during middle and high school (Root, 1998). In the clinical setting identity conflicts are reported including: conflicts about racial/ethnic identity; conflicts about

social marginality; conflicts about sexuality; conflicts over autonomy; conflicts over educational and occupational aspirations (Gibbs, 1995), isolation and anger (Benedetto and Olisky, 2001), and greater need for developing self worth among adolescent girls (Lee, 2004). Expository work expresses the adolescence dilemma of not wanting to choose one parent over the other, yet wanting to belong to a peer group (Benedetto and Olisky, 2001), leading to at-risk behaviors including (a) poor academic achievement, (b) off-task behavior, (c) poor social skills, (d) negative attitudes toward adults, (e) chip-on-the-shoulder personas, (f) social isolation, and (g) aggressive behaviors toward peers (Nishimura, 1995).

Contrary data has been found by others. In a study that did not find significant levels of conflict, Salgado de Snyder et al. (1982) studied 63 multiracial students, aged 12-18 with one Mexican parent and one non-Hispanic parent. There was no evidence of conflict regarding their multiracial heritage. They also exhibited pride in their Mexican background and expressed strong belief that intermarriages are just as successful as monoracial marriages. Ross (1995) conducted a qualitative study of 12 multiracial children (with mixes of White, Black, Jewish, Japanese, Somalian and Puerto Rican parents), ages 10-18 and found that all participants perceived their heritage in positive terms. They spoke about the many advantages including openness, their ability to relate to different types of people and create cultural bridges, and their ability to see things from different perspectives.

The preponderance of findings supports the idea that adolescence is a period of increased psychological adjustment and distress among multiracial adolescents. Unfortunately, there are few examples of studies of multiracial adult participants in

comparison. The current study examined the psychological adjustment, behavior and health outcomes of multiracial young adults. The literature establishes the difficulties experienced by adolescents, but does not provide a basis to expect (or not) that a change in these difficulties occurs by young adulthood. One significant experience that may lead to change for many young adults is going to college. Is there any evidence that this experience influences the adjustment and well being of multiracial young adults? This question will be examined next.

College Experience

There is evidence that the college experience is a significant environment of change affecting young adults. College experience is linked to greater exposure and openness to diversity (Pascarella, Edison, Nora, Hagedorn & Terenzini, 1996), more open attitudes about racial issues (Newswanger, 1996), increased critical thinking skills and satisfaction with college correlated to greater exposure to students of different ethnic and racial backgrounds (Astin, 1993).

Several articles suggest that the college experience represents a healthy period of adjustment among multiracial young adults. Two personal accounts provide glimpses into this experience. Fukuyama (1999) recalls in a personal narrative about having a Japanese and White heritage, how college was a 'liberating' experience' as she came to claim a positive ethnic identity. Especially in a study abroad program to Japan she developed a love of Japanese culture and the beginning of her path toward self appreciation. This speaks to the positive influence college can have on the well being and self worth of multiracial people. Williams (1999) in a personal account of her journey as a light skinned, multiracial woman, recounts her experience as an adolescent wanting

desperately to be White and convincing herself that she was ugly and worthless. Entering college she immersed herself in her Blackness and began to experience more wholeness. She later evolved her feeling of being multiracial.

Empirical studies also support the healthy multiracial adjustment of college students relative to their monoracial counterparts. Stephan and Stephan (1991) in studying two college samples in geographically different areas found that the multiracial students were more appreciative and accepting of monoracial groups than monoracial groups were of each other. They also found that multiracial students initiated greater voluntary contact with monoracial students than these students did across monoracial groups. Lesure-Lester (2001) studied the relationship between dating competence and social anxiety in a sample of 217 college students from two Los Angeles schools, comprised of 60 Caucasian, 91 African American, 28 Multiracial, 26 Mexican American, and 12 Asian American students, age 18 to 22. She found that multiracial college students did not differ in their level of dating competence from the monoracial/ethnic students. Mukoyama (1998) found no difference in self esteem or adjustment among 54 Japanese-White, and 32 Japanese -Black college students.

Other studies suggest that the multiracial identity challenges continue for college students. Renn (2000) studied the experience of multiracial college students using a qualitative grounded theory approach, by exploring their interactions with peers, involvement in activities, and academic work to see how they chose psychological and physical spaces to occupy in their predominantly monoracial environments. Participants included 24 students, ages 19-23, with 8 each from three private, residential New England universities. There were 15 women and 9 men. Her findings suggest that college

students still acutely feel their differentness on campuses. The multiracial students on all campuses spoke of the need to find space - both physical and psychological - to fit in. Nine of the twenty four students seriously considered transferring after their first year because of their sense of 'I never really feel like I completely belong' (p 409), evidencing the continuing struggle they encounter. Renn's findings along with other researchers (Brunsma and Rockquemore, 2001) suggest that higher health and behavior risks might continue into young adulthood and into the college environment.

Gillem, Cohn and Throne (2001) used grounded theory analysis to explore the history and current perspective of two multiracial college students using a case study approach. Their narrative assessment conveys the complexity of trying to determine whether college makes a difference in adjustment of multiracial young adults. The 19 year old male was marginally adjusted, didn't feel accepted by Blacks or Whites and hated being multiracial. The 17 year old female had evolved a Black/multiracial identity. She had a healthy sense of herself and was able to defend against the negative attitudes about multiracial people that she encountered. The experience prior to these two students arriving at college seemed to be a much greater determinant in their eventual adjustment status than the college environment. While it is difficult to generalize from the experience of two persons, these themes are repeated in other studies (Twine, 1996)

Taken together these studies of the experience of multiracial young adults enrolled in college do not suggest a significant change in the societal issues they must face. However, if one assumes that these young adults are increasing in their maturity and in their ability to think critically (Astin, 1993) about their experiences then perhaps their coping skills are improving, which may in fact mitigate problems of adjustment. These

studies consist of convenience samples and individual case studies. They suggest that individual experiences can be significantly affected by the specific college environment, so it is difficult to generalize conclusions from these studies to multiracial college students in general

Summary of factors influencing well being and identity development. This section reviewed the multiracial literature, using Root's (2003) ecological model as a framework, related to family, school and neighborhood environments, friends/peers, generational/society acceptance, evidence of change from adolescence to adulthood, and influence of college attendance. General conclusions are difficult to draw. The existing literature is very fragmented. There is little continuity of research that intentionally builds on previous knowledge in coherent ways. Thus, what exists is a large number of stand alone studies that use different segments of the multiracial population. Sample sizes tend to be very small, and most are convenience samples or are drawn from one or a few schools, so that there is limited ability to generalize. The environmental factors in this section have been reviewed to find out how they might influence adjustment and overall well being outcomes in multiracial young people. These outcomes, specifically psychological adjustment, behavior, and health outcomes, will be examined in the next section.

Adjustment Outcomes in Multiracial Young People

The previous section explored the environmental factors that might influence the overall well being in multiracial young people. The current section will look more closely at this well being, in terms of the psychological adjustment, behavior and health outcomes in this population. First, self esteem, as one aspect of psychological

adjustment, will be reviewed since this construct has received substantial attention in the literature. Next, the three studies by Udry et al. (2003), Milan and Keiley (2000) and Cooney and Radina (2000) will be reviewed in detail. These three studies used the Add Health database and found greater psychological adjustment, behavior and health problems in multiracial adolescents when compared with those who were monoracial. A primary question of the current study was whether these problems were also evident in the young adult multiracial population. Therefore, the findings of these three studies were central to the current study. The current study also used the Add Health database, so other studies that used the database were examined: (a) other studies of the multiracial population and (b) other studies that have examined similar environmental factors and psychological adjustment and behavior outcomes as the current study.

Self Esteem

An often examined question is whether multiracial people have problems with self-esteem. Consequently, this has been a measure of well being in a number of studies. Results are mixed, but in general self esteem does not seem to be lower among multiracial people. Studies with positive outcomes will be reviewed first, followed by those finding negative outcomes. Also, studies with adolescents versus young adults will be grouped separately.

Field (1996) investigated the relationship between multiracial identity, reference group orientation, and self esteem/self concept. Participants were identified through the snowball method in the Denver area, and included 31 Black/White multiracial adolescents, 31 Black adolescents and 31 White adolescents. Participants were closely matched on age, gender, demographic location (e.g., racial composition of neighborhood).

Ages ranged from 13 to 18 years, and each group consisted of 19 girls and 13 boys. A series of multiple analyses of variance (MANOVAs) were used to assess the relationship between race, self-esteem/self concept and reference group orientation. Field found that the multiracial adolescents had self-concepts as positive as both their monoracial peers, both in terms of global self worth and also in specific domains such as social acceptance, physical attractiveness and romantic appeal. Field also investigated the reference group orientation of the multiracial youths and found that those who adopted either a Black or multiracial reference group orientation had positive self concepts; however, the relatively small number who adopted a White reference group orientation were having significantly more difficulty in developing a positive self concept. This is a fairly strong study. It uses Black and White control groups and matches participants on demographic characteristics as closely as possible. It also uses multiple methods of measurement including participant's self report, observational data from parents, and a face-to-face interview. The main limitations relate to the small sample size and the snowball method of identifying participants.

Gibbs and Hines (1992) found similar results with 12 Black/White adolescents from the San Francisco Bay area including nine of their parents. They found moderately high self-esteem, with Achenbach scores all within the normal range. The adolescents all had positive peer relationships. Overall, the majority reported feeling positive about themselves and content with their multiracial identities. Cauce et al. (1992) studied 22 Black/White and Asian/White multiracial adolescents in comparison with similar sized groups of monoracial Asian and Black adolescents and found no difference in self-esteem levels, life stress, and adjustment between these groups. While an older study, Chang (as

cited in Mukoyama, 1998), in researching this topic actually found that multiracial 4th through 6th graders in two schools in Kansas had a higher mean measure of self concept than their monoracial counterparts. Chang conjectured that military environments tend to have higher levels of diversity and this may be providing a positive environment for the multiracial children to thrive.

Other researchers have used college age participants and found similar results. Mass (1992) compared 53 multiracial White/Japanese college students to a monoracial group of U.S. Japanese students and found no significant difference between the multiracial and monoracial minority groups regarding psychological adjustment and self-esteem. Stephan and Stephan (1991) compared two geographically and racially different samples of college students: one sample from Hawaii including 34 White, 100 Asian and 57 multiracial students, and one sample from New Mexico including 129 White, 54 Hispanic and 123 multiracial students. The multiracial students in both settings were not different from their peers regarding self-esteem, feelings of alienation, stress levels, or quality of interpersonal relations. Phinney and Alipuria (1996) found no difference in self esteem between 47 multiracial/ethnic college students and 345 monoracial/ethnic college students. In a study involving only multiracial college students, Mukoyama (1998) studied the relationship between ethnic identity and self-esteem and adjustment among 54 Japanese-White, and 32 Japanese-Black students. She found that the two multiracial groups did not differ in terms of self esteem or adjustment and that both groups had high levels of both.

In the previous studies of both multiracial adolescents and college students have found self esteem levels comparable to their monoracial counterparts. The following two

studies, however, found more mixed results.

Bracey et al. (2004) in a study that included 3,282 students ranging in age from 13 to 20 years from three high schools in a large southwestern city found that the self esteem of multiracial adolescents was lower than monoracial Blacks and higher than Asians with no other significant differences.

From the clinical perspective, Bowles (1993) used his own clinical case studies of ten multiracial clients he treated during thirty years in practice. One of his conclusions was that females with a Black/White heritage and who identified as White demonstrated significant maladjustment including high levels of anxiety. As they came through therapy to accept their multiracial selves, Bowles reported that their self-esteem "soared" and that anxiety decreased markedly.

Most of the findings across different age groups, different multiracial combinations and different monoracial comparison groups did not find significant differences between multiracial and monoracial participants. The overall impression is that multiracial young people are not suffering from lower self esteem. However, the samples vary widely in size and are convenience samples from specific locales. Instruments, participants, study designs differ in ways that would make it very difficult to draw general conclusions. This is a general weakness in much of the multiracial literature. Even though the previous research has focused on one construct, the literature remains fragmented. Milan and Keiley (2000) using the Add Health data concluded that a generalizable sample of multiracial adolescents had significantly lower self esteem than both their White and monoracial minority counterparts. Their results are contrary to much of the previous research but their conclusions are compelling because the same

instrument was used with a nationally generalizable sample. Next, we turn our attention to the studies that have used the Add Health database.

Psychological, Behavior and Health Outcomes Using Add Health Study Data

Given the limitations of the studies reviewed so far, the Add Health study data was particularly beneficial to the study of psychological adjustment, behavioral and health outcomes in multiracial people. It's extremely large sample size meant that sufficient numbers of multiracial people had been included to enable comparisons between White, monoracial minority and multiracial groups. Add Health is the largest, most comprehensive survey of adolescents ever undertaken. With the initial survey including 90,118 students from 132 schools across the U.S., data at the individual, family, school, and community levels were collected in three waves: Wave I (1994-1995), Wave II (1995-1995) and Wave III (2001-2002). All three Waves totaled 7,643 variables. It is important to note that intact measures were not incorporated into Add Health; rather, researchers can access the full variable set and put together the measures relevant to a specific research purpose. See Appendix A for a more detailed description of Add Health. First, three studies, Udry, et al. (2003), Milan and Keiley (2000), and Cooney and Radina (2000) which have used the Add Health data to investigate psychological adjustment, behavior and health outcomes in multiracial adolescents are reviewed below. These reviews will be followed by reviews of other Add Health based studies that have either investigated multiracial adolescents or investigated similar environmental factors and adjustment outcomes as those in the current study.

Udry et al. (2003)

Udry et al. (2003) conducted one of the most recent, and most extensive, studies

of multiracial adolescents using the Add Health data. Their purpose was to assess whether there was evidence of increased health and behavior risks among multiracial adolescents relative to their monoracial counterparts. The authors surmised that if there were no such evidence, then multiracial adolescents might be expected to have risk levels that would fall between their two monoracial groups but not outside these boundaries. Therefore, they compared each combination of multiracial adolescents to their two, constituent monoracial groups, e.g., White/Asian adolescents were compared to both White monoracial and Asian monoracial adolescents. As a control, the authors also compared these groups based on non-risk factors such as GPA, or family education, to see whether multiracial adolescents fell between their two constituent monoracial groups on these non-risk factors as expected.

The authors used the full Add Health database which included 83,135 in-school respondents and a follow-up at-home of a subset of 18,924 respondents (these amounts are less than the entire samples and the authors did not explain their process for eliminating respondents). Because their objective was to compare each multiracial group to its constituent race groups, they excluded any respondent whose race information could not enable them to be identified as either a single race or as two races. The in-school sample included White (46,364), Black (13,530), Asian (4,133), and American Indian (1,275). Multiple race categories included: White and Black (416), White and Asian (583), White and American Indian (1,573), Black and Asian (294), Black and American Indian (590), Asian and American Indian (83). There were 14,294 respondents excluded: Other (5,817), Missing Race (5,870), 3 or more races (1,045), Other + another race (1,562). These excluded respondents could not be compared at the race specific level.

The in-home subset of 18,924 was similar in composition to the in-school sample from which it was drawn.

Udry et al. used the self-identification of the respondents to determine monoracial and multiracial identity. They noted that more than 50 percent of respondents who identified multiracially in-school, identified a different racial identity at-home, while less than 10% of respondents who identified monoracially White, Black and Asian in-school, identified a different racial identity at-home. The authors conjecture that the high inconsistency among multiracial adolescents could be due to differences in test administration, ambiguity in the question, or a lack of a fully developed self-concept.

The authors used items from both the in-school and at-home questionnaires. They next identified variables from the questionnaires and divided them into risk variables (school and home surveys) and non risk attributes (school and home surveys) for control purposes. Risk variables included: general health, waking up tired, sleep problems, skin problems, headaches, aches/pains, depression/feeling blue, suicidal thoughts, smoking, drinking excessively, availability of guns in home, sexual behavior and school behaviors (e.g. skipping school). Controlling variables used were: academic performance, two-parent homes, parent education level.

Each multiracial group was compared to its monoracial constituent groups across the risk and non risk variables. Their analysis of risk variables consisted of odds ratios where the multiracial group having a ratio greater than 1.0 meant that it was at higher risk for the variable, and a ratio of less than 1.0 meant lower risk. For example, for the variable 'feeling depressed/blue', White/Black adolescents had an odds ratio of 1.53 compared to White adolescents and 1.76 compared to Black adolescents, both

significant at $p < .05$.

Every risk variable reported odds ratios exceeding 1.0, significant at the $p < .05$ level. Following are the risk variables where the odds ratio for the multiracial group was higher than both its constituent groups. Psychological adjustment including depressed/feeling blue; Behavior including smoking, and drunk regularly (excessive drinking was higher than at least one of each constituent group for all multiracial combinations); Health problems including general poor health, waking up tired and sleep problems, skin problems, and aches/pains. Headaches, suicidal thoughts, sexual behaviors and school behaviors were not found to be elevated. Every multiracial combination was found to have elevated risks for some or most of the risk variables reported.

The authors then statistically controlled for age, sex, vocabulary scores, GPA, family structure and family education. They report that while many of the risk variables were no longer statistically significant for multiracial adolescents, very few variables changed from above 1.0 (greater risk) to below 1.0 (less risk) in comparing multiracial adolescents to their monoracial constituent groups. The authors conclude that the control variables do not explain the elevated psychological adjustment, behavior and health risks.

Several limitations are important to note regarding this study. Udry et al. (2003) point out the limitations of categorizing racially according to the adolescents self-identification. It has been shown how this is not fixed for multiracial adolescents in that their reported race(s) varied significantly between the in-school questionnaire and in-home questionnaire (Harris & Sim, 2002). The authors did not report the odds ratios after controlling for a number of factors (e.g., age, sex, GPA, family education). Doing so

would have provided the reader a better understanding of the effect of these factors. Also some of the cell sizes are small, for example, the at-home survey only included 26 self-identified Black/Asian respondents; it is unclear how this affected their findings.

The value of this study is that it is the only research that has compared specific multiracial combinations with their constituent racial groups. Doing so provides valuable information about the specific psychological adjustment, behavioral and health problems faced by each multiracial group in comparison to its constituent groups.

Milan and Keiley (2000)

Milan and Keiley (2000) used the Add Health database to study the adjustment of multiracial adolescents relative to White and monoracial minority youth. They further explore why multiracial children may be particularly vulnerable from a social-constructionist perspective, and they offer guidelines for a narrative-based family therapy approach for this population. Milan and Keiley's approach differed from Udry et al. (2003) in that the sample was aggregated into three groups: multiracial, monoracial minority, and White. This allowed global comparisons between the three groups and general observations about multiracial adolescents, which were not possible using Udry et al.'s results.

Participants were drawn from the public-use data set from Add Health (a reduced data set from the full database). The public-use data set includes Wave I and II respondents and consists of one-half of the core sample, chosen at random, and one-half of the oversample of African-American adolescents with a parent who has a college degree. Milan and Keiley report the data set as including 6,504 respondents, which they subdivided into 3,521 White, non-Hispanic students, 1,941 minority monoracial, and 272

multiracial/biethnic students. Since the subsets total 5,734, it is unclear what students were eliminated from review, however, since they identify non-Hispanic Whites, it might be assumed that they excluded those who did not report any race and those who identified as both White and Hispanic.

For measures, Milan and Keiley (2000) aggregated items from the Add Health questionnaire into seven measures that they identified as: quality of mother-child relationship (5 items, e.g., "How close are you to your mother?"), quality of father-child relationship (5 items, e.g., "How much does your father care about you?"), depression (20 items, e.g., "In the past week, how often have you felt depressed?"), somatization (16 items, e.g., "In the past year, how often have you had skin problems/acne?"), conduct problems (19 items, e.g., "In the past year, how often have you damaged property?"), school-related behavioral problems (6 items, e.g., "How often do you have trouble getting along with teachers?"), self-worth (5 items, e.g., "I have a lot of good qualities"). Alpha reliabilities for all constructed measures exceeded .80, with annual stability correlations ranging from .50 to .65 with an average of .65. Confirmatory factor analysis loaded variables in a conceptually expected manner, with a three-factor model (i.e., behavioral-conduct and school problems; depression and somatization; and self-regard) providing the best fit.

Analysis primarily consisted of one-way analyses of variance, with HSD post hoc comparisons. No significant differences were found between multiracial, White and monoracial minority adolescents for the quality of the parent-child relationships. The multiracial students were, however, found to have greater risks ($p < .01$) for all other measures in comparison to their White/non-Hispanic, and monoracial minority

counterparts: depression, somatization, conduct problems, school behavior, and self-worth. The authors conclude that multiracial adolescents report more problems across multiple domains of functioning, and that self-identified multiracial adolescents are particularly vulnerable in comparison to their monoracial peers.

Limitations in this study include use of the smaller public-use Add Health data set, unclear accounting of how they categorize the sample, including how they treated the Hispanic classification.

The value of Milan and Keiley's (2000) work is its global approach to the question of whether multiracial adolescents have more psychological adjustment, behavioral and health problems compared to their peers. They reach similar conclusions as Udry et al. (2003) from the aggregate of multiracial adolescents while Udry et al. examined individual multiracial groups. Despite the fact that Milan and Keiley did not use the entire sample, they still had a large subsample and created measures with good internal consistency. Together, Milan and Keiley and Udry et al. present a compelling picture of greater adjustment problems for multiracial adolescents using the same nationally representative sample set, and taking different approaches to reach their conclusion.

Cooney and Radina (2000)

Cooney and Radina (2000) also studied adjustment outcomes for multiracial adolescents using the ADD Health data set. Citing the limitations in the existing literature including the prevalence of clinical samples, small sample sizes, and other methodological problems, Cooney and Radina sought to use a wide range of indicators of psychological adjustment and behavioral adjustment and the large, representative sample from Add Health to reduce these limitations.

Participants were drawn from the public-use data set of 6,504 respondents from Add Health as did the Milan and Keiley (2000) study. Cooney and Radina (2000) further limited their analysis to only the 2,901 adolescents whose biological parents were currently married and living together. They did this to eliminate any confounding effects of family structure, which has been linked to adjustment problems. They divided the sample into 1,870 single-race White, 534 single-race minority and 284 multiracial adolescents, with 213 cases removed because of missing race data. Multiracial adolescents were identified by using the self reported races of the biological parents.

Measures included: depression, e.g., people disliked me, hopeless about the future (19 items); delinquent behavior, e.g., painting graffiti, shoplifting (15 items); substance abuse, e.g., cigarettes, alcohol, illegal drugs (7 items); used psychological counseling; repeated a grade level in school; ever been suspended or expelled; GPA; problems encountered in school this past year, e.g., trouble getting along with other students (4 items); feelings about school, e.g., felt part of the school (6 items).

Additionally, five control variables were chosen that have been known to likely be associated with adolescent adjustment and behavior: adolescent's age and sex; parents age, education and marital quality.

Two types of analyses were used to compare adjustment between multiracial adolescents and monoracial minority and White peers. Ordinary least squares regression was used for continuous scale measures (depression, GPA, school problems, feelings about school, and substance abuse). For dichotomously scored variables, logistic regressions were used. Odds ratios to indicate the likelihood of occurrence of the adjustment variable were also provided.

The multivariate regression models controlled for adolescent age, parent age and education level, and parent marital quality. Partial (boys or girls) significance was found for the following items. Multiracial boys: were more likely to have seen a counselor in the past year than White or minority monoracial boys; had higher rates of grade retention (repeated) than White or minority monoracial boys; had higher rates of school suspension than White boys; and had higher substance abuse than monoracial minority boys.

Multiracial girls reported greater use of counseling services than White or monoracial minority girls; higher rates than White girls and lower rates than monoracial minority girls for both grade retention and school suspensions; higher rates of delinquency than White girls; and higher GPA than minority monoracial girls.

The authors conclude that even though some findings of significance were evident, a number of comparisons did not produce significant results. For boys, no significant differences were found for delinquent behavior, or for depression, and for girls no differences were found for substance abuse and feelings about school. While their study supports some concern for multiracial adolescents in a few areas they did not find widespread elevated risks and conclude that multiracial adolescents may not be struggling as badly as some research might suggest.

A limitation of Cooney and Radina's (2000) was their self-imposed decision to only include adolescents whose biological parents were currently married and living together (for all races). The authors did this to eliminate any confounding effects of family structure which they state has been linked to adjustment problems. There is confirming evidence of the dysfunctional effects of the added racial element on multiracial children from separated or divorced parents (e.g., Rockquemore & Laszloffy,

2003; Root,1998). Therefore, while Cooney and Radina's study finds less adjustment and behavioral problems in multiracial adolescents in comparison to their monoracial counterparts than Udry et al. (2003) and Milan and Keiley (2000), the authors most likely drew from the segment of the multiracial population with more protective factors.

The value of this study is that it provides some tempering evidence to the conclusion that multiracial adolescents have greater adjustment problems than their monoracial peers. It suggests the added importance of parental influence on the well being of multiracial adolescents and points out the value of Root's (2003) ecological model in interpreting study results. Root's model recognizes the powerful influence of the family environment and can offer an explanation for different findings between Cooney and Radina (2000) versus Udry et al. (2003) and Milan and Keiley (2000).

Table 1 provides a comparison of the significant findings between the three studies, Udry et al. (2003), Milan and Keiley (2000) and Cooney and Radina (2000).

Other Add Health Based Studies - Multiracial

The current study used the Add Health database to study multiracial young adults. Since one of the unique benefits of using the Add Health data was that results could be viewed in relation to other Add Health-based studies (e.g., Udry et al., 2003), it was important to examine any other studies of multiracial young people that used the Add Health data. Two other studies, in addition to those already described, used the Add Health database to investigate multiracial adolescents: Harris and Thomas (2001) and Radina and Cooney (2000). These studies did not focus on the same adjustment outcomes as the current study and were, therefore, less central to the literature review in comparison to Udry et al. (2003), Milan and Keiley (2000), and Cooney and Radina

Table 1. *Comparison Psychological Adjustment, Behaviors and Health/Somatization Significant Findings*

	Milan and Keiley	Cooney and Radina	Udry et al.
Self Worth	MR < W < MM	No items in this category	No items in this category
Depression	MR & MM < W	MR & MM < W (Girls only)	depressed/blue B/W<B, W ; W/I<W,I ; B/A<B,A; B/I < B consider suicide? Not significant
Substance Abuse	No items in this category	not significant	regular smoker: WI<W,I ; BA<B,A; WB<B ; I<BI regular drinker: WB<B ; WI<W ; WA<A; BA<B;AI<A drunk regularly: BA<B,A ; WB<B; WA<A
Delinquency	MR < MM < W	MR & MM < W (Girls only)	No items in this category.
School Problems	MR < MM & W	school problems: not signif. repeat grade: MR < W (boys only) suspension. MM < MR < W (girls only)	school problems, repeat grade, suspension: not significant
Health/Somatization	MR < W < MM	No items in this category	health fair/poor: B/A<B,A ; W/I<W ; WA<W headaches: W/A<A ; B/A<A; A/I<A wake up tired: W/A<W,A ; B/A<B,A W/I<I ; B/I<B skin problems: WI<WI; WB<B ; WA<W ; BA<B aches/pains: WI<WI ; AI<AI; WA<A ; BI<B ; BA<A sleep problems: W/A<W,A ; B/A<B,A; WI<W ; BI<B; AI<A

Note. MM=Monoracial Minority (includes Black, Asian, American Indian); W=White; MR=Multiracial
B=Black, W=White, A=Asian, I=American Indian, e.g., B/W=Black/White multiracial person. All < signs report significant differences with lower always meaning worse functioning. E.g., Udry et al, Depression, B/W < B,W means that the Black/White sample reported significantly worse (lower) scores on depression than the Black and White samples.

(2000). These studies none-the-less provided additional information about the multiracial experience as reflected in the Add Health data.

Harris and Thomas (2001) used the Add Health data set to assess whether educational outcomes suggested that multiracial adolescents were at greater risk. The outcomes they examined were grade repetition, verbal comprehension and vocabulary (AHPVT), and self-reported GPA. They ran a series of nested regression models. They concluded that once they controlled for sociodemographic and contextual differences between groups, many outcome differences disappeared. When differences persisted, there was not a consistent ordering of single-race and multiracial groups. There was also not a clear difference in patterns across multiracial groups. The authors concluded that, with respect to education, concerns about the hardships associated with being multiracial were largely unfounded. Radina and Cooney's (2000) study of the parent/child relationship was reported earlier. Comparable relationship quality was found between the parents and adolescents in all three groups - multiracial, monoracial minority and White, except that multiracial boys and their fathers were found to be less emotionally close and communicative.

In summary, when looking at researchers who have used the Add Health database to investigate psychological adjustment, behavioral and health outcomes in multiracial adolescents compared to their monoracial peers, three major studies exist - Milan and Keiley (2000), Cooney and Radina (2000), and Udry et al. (2003). These studies provide consistent findings that multiracial adolescents report greater problems related to

psychosocial and psychological adjustment than either their monoracial minority or White counterparts. While Harris and Thomas (2001) and Cooney and Radina provide some mitigating conclusions, there is overall evidence of elevated risks in this population. The studies by Milan and Keiley, Cooney and Radina, and Udry et al. do a competent job of identifying the problem outcome areas, but are less helpful at defining environmental factors that might contribute to these outcomes, either positively or negatively. Other Add Health studies have related environmental factors to adjustment outcomes. What might be learned from these other studies to guide the design of the proposed study will be examined in the next section.

Other Add Health Based Studies - General

Root's (2003) ecological model provides a useful framework for identifying and organizing both independent and dependent factors for the current study. Environmental factors of interest in the current study included the family, school, friends and neighborhood environments as depicted in Root's model. Overall well being outcomes included psychological adjustment, behavior and health factors and were these were reflected well in the studies by Milan and Keiley (2000), Cooney and Radina (2000), and Udry et al. (2003). A primary goal of the current study was to examine the relationship between the environmental predictors and adjustment outcomes of multiracial young adults. Several Add Health-based studies combined these factors and they will be reviewed next.

Gerard and Buehler (2004) examined the relationship between cumulative

exposures to environmental risks and youth problem behaviors using Wave I and II data from Add Health. They used Bronfenbrenner's ecological theory as a framework to organize environmental risk factors into four social domains: family, school, peer/friends, and neighborhood. Their literature review reported on the connections that have been found between these environmental factors and mental health, problem behaviors and general well being. Within the family domain factors such as low parental warmth, low parental involvement and spousal or partner relationship difficulty were associated with youth adjustment problems including internalizing and externalizing behaviors. Within the school domain low school connectedness was associated with substance abuse, emotional distress, and deviant behavior. Within the peer/friends domain, perceived low peer support and peer rejection was associated with behavior problems at home and school. Within the neighborhood environment, feeling unsafe, being dissatisfied and perceptions of poor neighborhood quality were associated with externalizing and internalizing problem behaviors. Gerard and Buehler used the Wave I (1994-1995) and Wave II (1995-1996) in-home public-use data sets selecting 5,070 7th through 11th graders who had data from both Waves. Outcome measures included 14 items for externalizing behaviors (aggressive or delinquent behavior, e.g., fighting, shoplifting and selling drugs) and 19 items measuring internalizing behaviors (depressive symptoms including somatic disturbances, interpersonal problems and negative affect). The authors used the mean scores to create two outcome measures, externalizing behaviors and internalizing behaviors. Environmental risk factors included familial risk (e.g., parents relationship

quality, parental warmth and involvement), peer context (e.g, feeling socially accepted/rejected, cared for by friends), school context (e.g, feeling happy and safe in school, feel part of the school), and neighborhood context (e.g., happy with neighborhood, would like to move). They found that cumulative exposure to environmental risk factors was associated with linear increases in both externalizing and internalizing problem outcomes. In particular they found the environmental factors of low parental warmth, problematic peer relations and low school connectedness to be common factors influencing both internalizing and externalizing behavioral outcomes. Further the researchers concluded that exposure to multiple domains of risk (i.e., domains of family, school, peer, neighborhood) increased the severity of problem outcomes, suggesting that these domains are not isolated from each other and they have an additive effect on problem behaviors. This study is informative in that it examines the relationship between environmental factors and problematic outcomes. Their environmental factors are consistent with the factors assessed in the current study regarding multiracial adolescents (e.g., family, school, peers/friends, neighborhood). Their problem outcomes include many of the negative outcomes found by Udry et al. (2003) and Milan and Keiley (2000) among multiracial adolescents (e.g depression, delinquency). Therefore, Gerard and Buehler provided a useful approach toward accomplishing the objective of the current study to examine environmental predictors and problem outcomes for multiracial young people.

Swahn and Donovan (2004) used the Add Health Wave I and II in-home data to

study the environmental correlates and predictors of violent behavior among adolescent drinkers. Their analysis was restricted to adolescent drinkers, representing a sample of 8,885 at Wave I. They wanted to examine environmental correlates of violent behavior at Wave I, and to look at these same Wave I factors as predictors of violent behavior at Wave II (represented by new violent behavior between Wave I and Wave II). The environmental correlates/predictors at Wave I included family structure (e.g., biological parents), closeness to parents (e.g., parents are warm and loving), school connectedness (e.g., felt part of the school), as well as drug use, delinquency, school functioning and level of alcohol consumption. The outcome measure was an aggregate of 6 items related to violent behavior (e.g., serious physical fighting, pulling a knife or gun on someone) measured at both Wave I and Wave II. They found 14 correlates of violence at Wave I, including level of alcohol use, drug use, delinquency and poor school functioning, and four predictors of violence at Wave II, including high drinking and drug use, low grade point average and being suspended/expelled from school. While some of these factors overlap, the authors also concluded that many of the correlates (14) were not also predictive of violence. Of interest to the current study was the use of environmental factors such as closeness to parents and school connectedness as predictors of future outcomes. Even though the authors did not find these environmental factors to be significant correlates or predictors the study provides a useful model of their use. A primary question of the current study was to examine environmental experiences at Wave I including family, school, friends and neighborhood factors, as predictors of better psychological adjustment, behavioral and health outcomes at Wave III. Swahn and

Donovan's study provided a useful guide toward addressing this question using the Add Health data.

Blum et al. (2001) used the Add Health Wave I data to explore the experience of adolescents with mobility, learning and emotional disabilities. They wanted to compare this population to their adolescent counterparts without disabilities in terms of problem outcomes including suicide attempts, cigarette smoking, alcohol use, marijuana use and sex before 12 years old. They also wanted to examine environmental factors associated with these problem outcomes among the adolescents with disabilities. The environmental factors included family connectedness (e.g., parents care/feel close to them, family activities together), school connectedness (feel close to people at school, feel part of the school, feel safe), health/somatic complaints, self worth, depression, religiosity, and victim of violence. They found that the adolescents with disabilities had elevated problem outcomes in comparison to their non-disabled counterparts. The researchers found that environmental protective factors associated with lower problem outcomes included family connectedness and school connectedness, and risk factors associated with elevated problems included health complaints, violence victimization, and belief in an early death. Of interest to the current study was Blum et al.'s focus on a particular subpopulation within the Add Health data, and comparing this group to their counterparts in terms of elevated problem outcomes, and also examining environmental factors and their influence on these outcomes. The proposed study is attempting to do the same thing in focusing on the multiracial population as young adults (Wave III) and comparing their psychological adjustment, behavioral and health/somatization problems with their

monoracial counterparts, and in examining environmental factors similar to Blum et al. (e.g., family, school connectedness) and their influence on these problems.

The three studies by Blum, et al. (2001), Gerard and Buehler (2004), and Swahn and Donovan (2004) using Add Health data provided useful background in the use of the Add Health data to study environmental factors, problem outcomes and subpopulation comparisons. Gerard and Buehler explicitly used an ecological framework to lay out environmental factors and problem outcomes that were very consistent with the proposed study. Swahn and Donovan analyzed the environmental factors at Wave I as predictors of future behavior at Wave II, which mirrored the current study's goal to assess environmental factors at Wave I as predictors of future outcomes at Wave III. Blum et al. provided helpful insights for the design of the current study. Blum et al. selected a subsample and compared it to the whole sample in terms of problem outcomes, and also examined environmental factors that correlated to these problem outcomes. These were the same primary goals of the current study, using a different subsample (multiracial adolescents).

Chapter 3 - Statement of Problem

Over the past 15 years there has been a growing amount of research literature about multiracial people. Most of the empirical work has focused on multiracial identity development. There has been far less attention paid to overall well-being, including psychological, behavioral and health outcomes. The multiracial literature in general has suffered from several flaws. Studies are unconnected with each other and there is little evidence of coherent lines of knowledge building. This is driven in large part by the difficulty in accessing multiracial samples. Almost all studies are convenience samples, relying on word of mouth to gain participants. As a result participants are usually from a limited geographical area and the studies suffer from response bias issues and results that cannot be generalized to the multiracial population.

Several recent studies (Cooney & Radina, 2000; Milan & Kieley, 2000; Udry et al., 2003) have indicated that there was evidence of lower psychological, behavioral and health well-being among multiracial adolescents when compared to their monoracial counterparts. These studies used data from the National Longitudinal Study of Adolescent Health (Add Health) which collected data on adolescents nationwide in 1994 and 1995, and again from these same respondents as young adults in 2001 and 2002. What was not known from these studies was whether the problems were temporary and associated with the adolescence stage of development and diminished with age, or were they chronic and continued into young adulthood? Knowing the answer to this question would enable a better understanding of the developmental experience of multiracial adolescents and young adults. There was also evidence in several studies that the college

experience provided all students unique opportunities to grow, mature, form important relationships and develop one's identity. Does attending college have a significant effect on the psychological adjustment, behavior and health outcomes in multiracial young adults?

Stage and concurrent models of multiracial identity provide only a limited ability to understand the complex development of healthy adjustment and well being in multiracial young adults. For example, the stage models suggest that a multiracial identity is healthiest yet large numbers of multiracial people identify monoracially. These models are restricted in their capacity to explain the variety of personal and environmental factors that shape healthy adjustment in the multiracial young adult.

Root's (2003) ecological theory extends the framework of multiracial identity development, encompassing concurrent and stage concepts, within a broad context that includes micro and macro environmental factors, in relation to healthy outcomes of adjustment and well being. Environmental contexts include the family in which the young person is growing up; the school environment; friends; and the the local neighborhood as well as individual aspects of psycho-social wellness.

The Add Health database represented a unique opportunity to study multiracial adolescents and young adults. It provided a large, nationally representative sample, included all racial groups, and provided extensive data at two points in time (1994-1995 and 2001-2002) on the same sample of people. This archival database was made available to researchers. Using this database to study the multiracial experience provided a rare ability to compare a representative sample of multiracial young people to their

monoracial peers across a number of environmental predictors, and psychological, behavior and health outcomes.

The current study sought to understand:

- Do multiracial young adults report lower levels of psychological adjustment, behavioral, and health well-being relative to their White and monoracial minority counterparts?
- What is the effect of the college experience? Do college attending multiracial young adults experience equal levels of psychological adjustment, behavioral, and health well-being relative to their college attending White and monoracial minority counterparts?
- Can the environmental factors of family, school, friends, and neighborhood as well as psychological adjustment during adolescence predict improved psychological adjustment, behavior and health outcomes during young adulthood?
- Do multiracial young adults who self identity as multiracial, versus monoracial, report better levels of psychological adjustment, behavior and health outcomes?

Hypotheses

Hypothesis 1.a: Multiracial young adults report lower (worse) levels of psychological adjustment, behavioral and health well-being relative to their monoracial minority and White counterparts.

Even though there is evidence that adolescents move toward a more self-accepting multiracial identity as they mature into young adulthood (Erikson, 1968; Jacob, 1992; Kerwin & Ponterotto, 1995; Kich, 1992; Phinney, 1990; Poston, 1990), the age of young

adulthood seems to still be within the life span period of struggle as they move toward more independence and stability. There are several studies of multiracial young adults which still show clear evidence of struggle (Gillem et al., 2001; Twine, 1996). While there are some studies that are contrary, most suggest that higher psychological adjustment and behavioral problems are still evident.

Hypothesis 1.b: College attending multiracial young adults do not report lower levels of psychological, behavioral and health well-being relative to their college attending monoracial minority and White counterparts.

The studies that use college attending multiracial young adults as participants don't collectively reflect concrete evidence of reduced psychological adjustment, behavior and health problems between adolescence and young adulthood. However, the increasing maturity and ability to reflect thoughtfully on experiences does indicate that the coping skills of these young people are improving. Further, the college environment provides ample opportunities for, and in many ways encourages, the exploration of self identity, self in relationship to others and being introduced to people who are different than oneself. Colleges tend to be relatively diverse environments with significant avenues for participating in ethnic and community based student groups.

Hypothesis 2: The environmental factors during adolescence predict higher levels of psychological adjustment, behavior and health well-being outcomes during young adulthood.

Root's (1999; 2003) ecological model provides a useful framework to examine how environmental factors can influence measurable outcomes in multiracial young

adults. Root's model identifies the family as a major source of influence on multiracial identity development and well-being. The school environment and closely associated experiences with friends are significant factors in Root's model. The neighborhood and interactions within it are also important to these outcomes. There are no known and available empirical studies of Root's model as a whole; however, there is ample evidence of the significance of these factors on the life experiences of a multiracial young person, including the family (Bowles, 1993; Bruno et al., 1996; J. Luke, 1994; Cauce, et al., 1992; Gibbs, 1995; Mass, 1992; Mukoyama, 1998; Pinderhughes, 1995; Rockquemore & Laszloffy, 2003; Root, 1998; Ross, 1995), school (Luke, 1994; Collins, 2000), friends (Renn, 2000; Rockquemore & Laszloffy, 2003) and neighborhood (Mass, 1992; Mukoyama, 1998; Pinderhughes, 1995).

Hypothesis 3: Multiracial young adults who self identify as multiracial will report higher levels of psychological adjustment, behavior and health well-being outcomes than those who self identify as monoracial.

There is both a theoretical basis and empirical evidence to support this outcome. All of the stage models of multiracial identity development suggest that the evolution of a multiracial identity eventually results in the integration and acknowledgment of the full mix of one's heritage (Jacob, 1992; Kerwin & Ponterotto, 1995; Kich, 1992; Phinney, 1990; Poston, 1990). This would suggest that those who have evolved into the latter stages are the most psychologically healthy and well-adjusted (Phinney, 1990). In terms of adolescents they will develop greater identity clarity as they mature. These multiracial models describe the specific experience of multiracial adolescents and young adults

within the larger, more general context of Erikson's (1968) identity developmental model for all individuals. Erikson's identity development theory would suggest that adolescents in general go through a particularly difficult time of identity turmoil, and that they grow through this period toward more stable identity clarity as young adults. For multiracial young people this growth would include developing an integrated racial acceptance of self that should be reflected in improved well being.

Chapter 4 - Method

This study used archival data from The National Longitudinal Study of Adolescent Health (Add Health; Bearman, Jones, & Udry, 1997), the largest, most comprehensive survey of adolescents ever undertaken. The original Add Health items were drawn from a many sources intending to measure the broadest possible array of health arenas (e.g., mental, physical, emotional health statuses; health affecting behaviors, drug, tobacco and alcohol use; family patterns of illness or disease; family interactions, peer influence). These data were collected by the Carolina Population Center at the University of North Carolina, Chapel Hill, and made available for purchase by outside researchers for \$750.

Data were collected at three points in time from the same participants: Wave I (1994-1995), Wave II (1995-1996) and Wave III (2001-2002). Data at the individual, family, school, and community levels were collected in Waves I when the students included in the study were 12 to 18 years old. Wave II was a one year follow-up. At Wave III, six years after Wave I, the original respondents now 18-26 years old were re-interviewed to investigate the changing nature of their development and better understand the influence that adolescence has on young adulthood. The Add Health methodology is described below, including participant selection, and more fully in Appendix A.

Design Statement

This is a descriptive, correlational study that examined the psychological adjustment, behavioral and health problems of multiracial young adults in relation to their monoracial peers. It also examined the factors during adolescence that might predict

improved outcomes as multiracial young adults.

Participants

Since there was attrition between Waves I and III, the current study used participants from the 15,197 respondents who completed Wave III of the Add Health project in 2001-2002. The current study defined two subsets of the Wave III participants, one nested within the other. Data about these participants were pulled from both their Wave I and III responses in order to examine outcomes at Wave III as well as relationships between their Wave I and III responses (Wave II data was not used in the current study). First, how the Add Health researchers selected participants for their study beginning with Wave I and going through Wave III will be described. After that, how the two subsets were selected for the current study will be described.

Add Health Project Participant Selection

The Wave I participants surveyed by the Add Health project represented a generalizable sample of all young adults in the U.S. who attended school, grades 7 to 12, in the U.S. in 1994-1995 when the initial sample was drawn. A brief description of how these participants were originally selected will be described here. A more detailed description of the full Add Health project is included in Appendix A (Add Health Project Description).

Wave I was conducted in 1994-1995 and included 90,118 students from 80 high schools, and 52 feeder schools. The high schools were randomly selected from all high schools in the country after clustering schools according to: region (e.g., Northeast), urbanicity (urban, suburban, rural), school size (e.g., 125 or fewer, 126-350, etc...), school

type (public, private, parochial), percent White/Black, grade span (e.g., 7-12, 9-12, etc.), and curriculum (vocational, alternative, special education). These students were 12 to 18 years old and in grades 7th-12th at the time. A stratified random subset (with selective oversampling) of 20,745 students were selected for follow-up in-home interviews as part of Wave I. Wave II was conducted in 1996 as a one-year follow-up survey of the in-home students from Wave I. Wave II data was not used in the current study. Wave III was conducted in 2001-2002 and included all of the original 20,745 in-home students from Wave I, less 783 classified as ineligible because they were not part of the original core probability sample at Wave I, or were deceased by the time of Wave III. Of the 19,962 eligible participants, 15,197 completed the Wave III questionnaire.

Two Subsets for Current Study

Two subsets of participants were defined for the current study. The reason that two subsets were produced is that the current study had two primary areas of focus and the subsets addressed these two areas: (a) The first subset focused on well-being outcomes of multiracial young adults in comparison to their monoracial counterparts at Wave III. The primary concern in participant selection was to ensure sufficient responses (i.e., key demographic data, total quantity of responses and selective essential responses) to the Wave III items used in the current study and only examined responses at Wave III. This first subset was labeled *Wave III subset*, as the subset that focused on Wave III responses only. (b) The second subset was nested within the first and focused on the relationship between predictor factors during adolescence at Wave I and well-being outcome factors at Wave III, thus it was important that respondents provided sufficient

responses (i.e., key demographic data, total quantity of responses and selective essential responses) to both Waves I and III surveys. This subset was labeled *Wave I-III subset*, as the subset that focused on both Wave I and Wave III responses. The missing item analysis used to define the Wave III subset and Wave I-III subset is described below.

(Note: Whenever the word “subset” is used in the current study it refers to one of the two subsets above and not to the whole Wave I or III samples.)

Missing Item Analysis

Only missing responses among the items selected for the current study were analyzed. The items that were examined for missing item analysis are described in the Measures section later. Also, these items are listed in Appendix B - left hand column ‘Initial Items’. The missing item analysis and removal of participants proceeded in three steps. First, key demographic data were examined (e.g., race) and if missing the participant was removed from both subsets. Second, the quantity of missing item responses (for Waves I and III separately, and the total for both) was examined and participants with the largest number of missing responses were removed from inclusion in both subsets. Third, participants missing essential responses (i.e., responses to items that were fundamental to the purpose of the current study) were removed. This third step was conducted separately for the Wave III subset and Wave I-III subset since they required different sets of essential responses. These three steps are described more fully next.

Key demographic data. Before identifying the two participant subsets, a missing item analysis was performed to identify and remove participants missing key demographic data. First, 223 participants were removed that were missing Wave III

racial identity data since this information was essential for all analyses in the current study (note: The Wave III racial identity was used as the baseline racial identity for all participants.) Second, 13 participants were removed that were missing information on whether they attended college or not, which was necessary to determining the impact of college on well-being outcomes. These steps resulted in the removal of 236 participants from both subsets.

Quantity of missing responses. Next, a series of missing item analyses were conducted to identify participants missing a large proportion of responses in either Wave III, Wave I, or in total (Waves I and III). Three analyses were run since a participant might have enough answered items to pass the threshold for Waves I and III separately, but their combined missing count might be unacceptably high.

For Wave III items, missing responses ranged from 0 to 44 out of a total of 55 items. The frequency table of the number of participants for each level of missing response (0-44) was visually inspected to see if there was a natural break or cut-off. It showed that out of 15,197 participants, 15,010, or 98.8%, were missing 0 to 7 responses while 187, or 1.2% accounted for missing responses from 8 to 44. Therefore, only a relatively small number of participants accounted for the higher range of missing responses. To establish a more stringent cut-off, e.g., 7 missing responses or lower would lead to increasingly larger numbers of participants that would have to be removed, while relaxing the number of allowable missing responses, e.g., 8 and up would only add small increments of participants, so 8 was selected as the cut off to balance the smallest number of missing responses with the greatest number of retained participants. The 187

participants with 8 or more missing Wave III responses were marked for removal.

Next, for Wave I, missing responses ranged from 0 to 81 out of a total of 81 items (27 participants did not answer any Wave I items). The frequency table of the number of participants for each level of missing response (0-81) was visually inspected for a natural cut-off point. It showed out of 15,197 participants, 15,058, or 99.1% were missing 0 to 36 responses while 139, or .9% were missing 37 to 81 responses. A cut-off level of 36 for Wave I was much greater than the cut-off of 8 used for Wave III; however it was a logical cut-off that balanced the smallest number of missing responses with the greatest number of retained participants (for example, to use a cut-off of 8 missing responses for Wave I would have removed 6,463 participants with missing responses between 8 and 35). The 139 participants with 36 or more missing Wave I responses were marked for removal. (Note: a number of these participants were also marked for removal because of missing Wave III responses.)

Finally, for combined items Waves I and III, missing responses ranged from 0 to 88 items out of a total of 146 items (55 Wave III items plus 81 Wave I items plus 9 general items). The frequency table of participants for each level of missing response was visually inspected for a natural cut-off point. Out of 15,197 participants, 15,033, or 98.9%, were missing 0 to 36 responses while 164, or 1.2%, were missing 37 to 88 responses. Therefore, the 164 participants were marked for removal.

Many of the same participants marked for removal overlapped in the Wave III, I and total missing item analyses above, so that the total net number of participants removed because of the quantity of missing responses was 317.

Essential responses. The previous two steps removed a total of 553 participants; 236 because of missing key demographic data and 317 because of the quantity of missing items. These steps reduced the initial Wave III sample of 15,197 participants to 14,644 (a 3.6% drop). The next step looked at missing responses to items that were essential to the current study's objectives. Since the Wave III subset and the Wave I-III subset focused on different objectives these were evaluated separately.

Essential responses in Wave III subset. It was essential that the Wave III subset of participants responded to items being used to measure outcomes such as depression, self worth, delinquency, drinking, drug use and general health (see the Measures section for a full explanation of these items), and that any missing items were not concentrated in one section (e.g., depression consisted of 12 items). The average across 55 essential items was 0.4% missing responses, with a range from 0-2.5%. This was considered an acceptable missing item range for the current study and thus no further participants were removed. The Wave III subset consisted of 14,644 participants.

The retained Wave III subset (14,644) was compared to the removed subset (553) for characteristics of gender, age, college attendance, and race (Table 2 - Wave III Subset). Age was tested with an independent sample T-test, while the categorical variables gender, college attendance and race were tested with Pearson Chi-square (X^2). There were no differences in gender, $X^2(1, N = 15,197) = 3.54, p = .06$. There were significant differences in college attendance, $X^2(1, N = 15,184) = 55.41, p < .01$; race, $X^2(1, N = 14,974) = 14.59, p < .01$; and age, $t = -7.12 (df = 15195, N = 15,197, p < .01)$. The retained subset comprised more participants who attended college, who were White and

were younger.

Essential responses in Wave I-III Subset. It was essential that the Wave I-III subset of participants that were selected for the current study responded to both items measuring outcomes at Wave III as well as predictors at Wave I such as experiences at home and school, and self worth (see the Measures section for a full explanation of these items), and that missing items were not concentrated in individual factors. Beginning with the subset of 14,644, further analysis of missing items revealed that a substantial number of these respondents did not answer sections of Wave I items (e.g., experience in school, self worth). These missing sections were essential to analyzing the relationships between Wave I and Wave III data. These participants had met the threshold in terms of the quantity of missing Wave I items evaluated earlier; however, they had not answered whole blocks of items related to single essential topics.

Initial missing item analysis by sections of items (e.g., self worth, school experience) revealed significant clusters of missing responses concentrated in certain sections in Wave I. These are described next. Self Worth consisted of five items with the average number of participants missing responses to these items equaling 32.28%. School Experience consisted of ten items, nine of which had an average number of participants missing responses equaling 31.17%. Friends consisted of three derived items with an average number of missing responses equaling 27.93%. There was significant overlap among participants in that participants missing one section were likely to be missing the other two sections as well. A total of 3,622 participants were missing all three sections (Self Worth, School Experience, Friends). An additional 842 participants

were missing the Self Worth section only. Together this totaled 4,464 participants. Because of the large number of participants involved, it was important to assess whether the participants should be removed or whether the sections of items should be deleted. All three sections were considered essential in examining the relationship between adolescence and young adulthood (i.e., how do self worth, school experience and measures of friendship during adolescence influence well-being outcomes at young adulthood). Therefore, the decision was made to delete the participants. Wave I parent sections (parents were also interviewed during Wave I) were analyzed next revealing significant clusters of missing items concentrated in two sections. Parents' Family Experience consisted of five items with the number of parent respondents who were missing all five items equaling 12.86%. Parents' Neighborhood Experience consisted of three items with the number of parent respondents who were missing all three items equaling 13.53%. There was significant overlap in parent respondents who were missing both sections, with 1,192 parent respondents missing responses to both. These item sections were considered essential in understanding how parents' experiences might influence well-being outcomes for the child. Therefore, the participants (whose parents did not answer these sections) were removed. In total the missing item analysis resulted in the removal of 5,666 participants from the 14,644, resulting in 8,978 participants being retained for the Wave I-III subset.

The retained Wave I-III subset of 8,978 participants was compared to the total removed participants of 6,219 (553 removed earlier plus 5,666 participants removed as described above) starting from the original Wave III sample of 15,197. The

characteristics of gender, age, college attendance, and race were compared for the two subsets (Table 2, Wave I-III subset). Similar to the Wave III comparison, age was tested with an independent sample T-test and gender, college attendance and race were tested with Pearson Chi-square. Differences were found among all variables: gender $X^2(1, N = 15,197) = 25.60, p < .01$; college attendance, $X^2(1, N = 15,184) = 238.22, p < .01$; race, $X^2(1, N = 14,974) = 94.45, p < .01$; and age, $t = 6.98 (df = 15,195, N = 15,197, p < .01)$. The participants retained for the Wave I-III subset of 8,978 were more likely to be younger, White, college attending and female than the participants removed.

For both subsets, the retained items had missing responses of 2.5% or less. These missing responses were imputed in SPSS using the average of the other responses.

In summary, the two retained subsets differed from the removed subsets along the lines of age, race, gender and college attendance. While the retained subsets were still very similar to the total Wave III sample (See Table 2 - Total Sample), the different characteristics of the removed subsets are important in understanding the limitations of being able to generalize findings from the data sets used in the current study. These limitations in the participant sample will be discussed further under Limitations in the Discussion chapter.

Measures

This section describes the initial items selected for the current study. The Results section describes the final items selected after preliminary analysis. Appendix B displays all of the initial items selected in the left hand column (the right hand column shows the final items after preliminary analysis and will be described under the Results section).

Initial items were selected for the current study from the Add Health surveys conducted at Wave I and Wave III. Since code books were available on-line at the Add Health web site, items were initially identified and grouped for the current study prior to receiving the actual data. The items initially chosen were grouped into factors for use in both evaluating well-being outcomes of participants at Wave III as well as examining predictive influences of these outcomes at Wave I. Outcome items were grouped into tentative factors similar to those used by Milan and Keiley (2000), Cooney and Radina (2000) and Udry et al. (2003). These factors included self worth, depression, problem drinking, drug use, delinquency, and health (see Appendix C for a complete listing of these items). Predictor items were grouped into factors guided by the ecological framework defined by Root (2003) which defined domains of the child's environment such as family, peers, school and neighborhood. Before describing these items, a brief overview is provided of the Add Health survey.

The original Add Health items were drawn from a many sources. There are no intact scales from the literature in the questionnaires; however, the survey instruments were extensively pilot tested (see Add Health web site <http://www.cpc.unc.edu/projects/addhealth/>). Questions were revised as necessary in response to pilot test results. The Add Health web site encourages researchers who develop scales using the database to employ a variety of methods to validate their scales when designing their analyses, including: determining the alpha reliability of summed scales; using confirmatory or exploratory factor analysis; testing different measurement

Table 2.
Demographic comparisons of retained and removed participants

	Total Sample	Wave III Subset		Wave I-III Subset	
		Retained	Remove	Retained	Removed
	N=15,197	n=14,644	n=553	n=8,978	n=6,219
Gender					
Female	52.8%	53.0%	48.9%	54.5%	50.4%
Male	47.2%	47.0%	51.1%	45.5%	49.6%
College Attend.					
No	41.1%	40.5%	56.6%	36.0%	48.5%
Yes	58.9%	59.5%	43.4%	64.0%	51.5%
Missing	.1%	-	-	-	-
Race*					
White	62.7%	63.8%	54.1%	66.4%	59.5%
Multiracial	4.2%	4.2%	4.0%	4.5%	3.8%
Monoracial Min.	31.7%	32.0%	41.9%	29.1%	36.7%
Missing	1.5%	-	-	-	-
Age					
18	1.0%	1.0%	1.3%	.6%	1.6%
19	9.5%	9.5%	8.9%	9.7%	9.2%
20	13.2%	13.4%	8.2%	13.3%	13.1%
21	16.1%	16.2%	12.4%	17.5%	14.1%
22	19.0%	19.2%	14.7%	20.1%	17.4%
23	19.1%	19.1%	20.2%	19.8%	18.0%
24	16.1%	16.0%	19.1%	15.0%	17.7%
25	5.1%	4.9%	11.3%	3.7%	7.3%
26	.7%	.6%	3.3%	0.4%	1.2%
27	.1%	.1%	.7%	0%	.3%
28**	0%	0%	-	-	0%

* Self reported race at Wave III

** 1 participant was 28 yrs old.

assumptions using structural equation models; or using a split-sample design technique. Most of these methods were used in the current study.

All 2,820 items in Waves I and 2,283 items in Wave III were reviewed for their possible usefulness in addressing the hypotheses in the current study. Root's (2003) ecological model was used as an initial frame for defining outcome (Wave III) and environmental predictor (Wave I) items. Wave III was examined for outcome items that could be used to compare the well-being of multiracial young adults against their monoracial counterparts. Items or measures used in previous Add Health based research on multiracial people (Cooney & Radina, 2000; Milan & Keiley, 2000; Udry et al., 2003) were used to guide this selection.

Wave I was examined for predictor variables that could be used to relate environmental and adjustment factors during adolescence to the outcome variables (Wave III) during young adulthood. Variables used in previous Add Health based research, both on multiracial people specifically (Cooney & Radina, 2000; Milan & Keiley, 2000; Udry et al., 2003) and adolescents generally (Blum et al., 2001; Gerard & Buehler, 2004; Swahn and Donovan, 2004) were used to guide this selection as well as Root's (2003) multiracial identity model.

Definitions. The following definitions were used in the current study. Individual items were grouped into factors (e.g., self worth). Factors were used to provide observable measures of latent constructs (e.g., psychological adjustment). Latent constructs cannot be directly observed but can be indirectly measured through observable variables like factors. Latent constructs are used in the structural equation modeling

(SEM) analysis. Items, factors, and latent constructs are grouped into three categories of variables: (a) Predictor variables, which refer to data from Wave I, (b) Outcome variables, which refer to data from Wave III and (c) Status variables, which refer to demographic data about the individual participants (e.g., race, age, college attending). The three classes of variables are described below (note: because depression and self worth are identified as factors for both Waves I and III these factors are distinguished with a 1 or 3 suffix, e.g., self worth1 for Wave I, self worth3 for Wave III).

Predictor Variables

One key research question (hypothesis 2) examined whether there were factors during adolescence that predicted better psychological adjustment, behavior and health outcomes for young adults. Therefore, Wave I, when the participants were ages 12-18, was used for identifying the predictor items. Root's (2003) ecological model has been a useful framework to select domains of the self and environment that are predicted to influence identity development and psychological well being in multiracial people. Items were selected from across the three surveys that comprised Wave I - student in-school, student in-home, and parents in-home. (Note: While the word predictor is being used to reflect that these items were assessed during adolescence and will be correlated with responses six years later during young adulthood, these are none-the-less correlations, since there is no experimental manipulation in the current study.)

The latent constructs and the factors that comprised them include: Psychological adjustment construct measured by depression1 and self worth1 factors; School environment construct measured by the child's experiences and friendship activity factors;

Family with biological parents categorical (yes/no) individual item; Family environment construct measured by both the child's and parents' experience factors; and Neighborhood environment construct measured by the child's and parents' experience factors. The initial item set is further described below.

Psychological Adjustment

'Depression1' consisted of 19 items, including questions like "[In the last seven days?], You felt depressed", and "You felt lonely", measured on a five point scale from *never or rarely* to *most of the time or all of the time*.

'Self worth1' consisted of five items, including questions like "I like myself just the way I am", measured on a five point scale from *strongly agree* to *strongly disagree*.

School Environment

'Child's school experience' consisted of 10 items. A set of six items included statements like "I feel close to people at this school", "I am happy to be at this school", and "I feel like I am part of this school", scored on a five point scale from *strongly agree* to *strongly disagree*. Also included were two questions about not getting along, e.g., "How often have you had trouble getting along with other students?", scored on a five point scale from *never* to *everyday*.

'Friends' was measured by five items. One item, "How much do you feel that your friends care about you?" scored on a five point scale from *not at all* to *very much* assessed the respondent's perception. Friendship activity level was derived by summing the number of reported activities engaged in (up to five, e.g., went to his/her house; spoke on the phone) within the last week with up to five male and five female friends, resulting in

an interval variable from 0-50. Friendship reciprocity was measured by identifying how many friends identified by the respondent, identified the respondent in return as their friend, with a scale of 0-10 (five male plus five female friends). Friendship network size was measured by totaling the number of friends identified by the respondent and the number of other students that identified the respondent as a friend (these could be students different from those under friendship reciprocity). School-wide cross-race friendships was a single continuous index variable, called a segregation index computed and reported in the Add Health data, that measured the degree to which reported friendships were across races or were within races for an entire school. The segregation index had a theoretical minimum of -1 (pure out-group preference) and a theoretical maximum of +1 (pure in-group preference, or total segregation). While this last item was not a measure of the individual respondent, it provided a measure of a favorable (less segregated) climate in school for a multiracial adolescent.

Biological Parents

Whether the respondent was living with his/her biological parents (yes/no) was derived from three items asked of the adult completing the parent questionnaire: were they the biological mother or father, and if not, was the biological mother or father living in the same household?

Family Environment

Child's family experience was measured by 12 items. Seven were individual items such as "Your mother encourages you to be independent" measured on a five point scale from *strongly agree* to *strongly disagree*. The other five were scores in which, for

the current study, the separate responses about the mother and father were combined and averaged, with the new derived items, for example, “How close do you feel to your mother and father” measured on a five point scale from *not at all* to *very much*. The participants’ responses about their parents were averaged together because 28.5% of all participants were missing responses about the father. Averaging the two responses about the parents together had been an approach followed by previous researchers using the Add Health data. Gerard and Buehler (2004) and Zweig, Phillips, and Duberstein (2002) both averaged parent responses together in their research with Add Health data.

‘Parents family experience’ consisted of five items asked of the parent with questions such as “You get along well with [your child]” and “You feel you can really trust [your child]”, scored on a five point scale from *always* to *never*.

Neighborhood Environment

‘Child’s neighborhood experience’ consisted of three direct items and a summed item (derived from four items). Examples of the direct items included “I feel safe in my neighborhood” scored on a five point scale from *strongly agree* to *strongly disagree* and “On the whole, how happy are you with living in your neighborhood?” scored on a five point scale *not at all* to *very much*. The summed item was labeled neighborhood connectedness and consisted of four questions answered “yes or no” to statements such as, “You know most of the people in your neighborhood”, and “People in this neighborhood look out for each other.” Yes responses were summed to a composite score 0-4, with 0 being low neighborhood connectedness and 4 being high connectedness.

‘Parent’s neighborhood experience’ consisted of three items asked of the parent,

for example, “If you saw a neighbor’s child getting into trouble, would you tell your neighbor about it?”, scored on a five point scale from *definitely would* to *definitely would not*, and “How much would you like to move away from this neighborhood?” scored on a three point scale from *not at all* to *very much*.

Outcome Variables

Following are more detailed descriptions of the initial outcome items selected from Wave III for the current study.

A primary goal of the current study was to determine if multiracial young adults continued to experience lower levels of well being in terms of psychological adjustment, behavioral and health outcomes relative to their White and monoracial minority counterparts. Therefore, Wave III data, when participants were between 18 and 24 years old (predominantly), was used to answer this question. The selected outcome variables were drawn from variables used by Udry et al. (2003), Milan and Keiley (2000), and Cooney and Radina (2000), who found similar problems in psychological adjustment, behavioral and health outcomes when these same participants were adolescents. In some cases the exact same item was used (e.g., “In general how is your health?”), in other situations the same psychological, behavioral or health factor or construct was addressed (e.g., Substance abuse) but through questions at Wave III that were different than questions at Wave I. Appendix C compares the items used from these three studies and the initial items selected for the current study.

The latent constructs and factors that comprised them include: Psychological adjustment construct measured by depression₃, self worth₃, and maturity factors, and

general life satisfaction (single item); Maladaptive behavior construct measured by delinquency, problem drinking, and drug abuse factors; and Health construct measured by general health and physical limitation factors. These are described below in turn.

Psychological Adjustment

'Depression3' consisted of 11 items. A sequence of nine items started with "How often was each of the following things true during the past seven days?", with items such as "You could not shake off the blues..." and "You were depressed", scored on a four point scale from *never or rarely* to *most of the time or all of the time*. Two items ask about the last 12 months "How often have you cried a lot?" and "How often have you laughed a lot?" scored on a five point scale from *never* to *every day*.

'Self worth3' was measured by 11 items. It included items such as "...you have many good qualities?" and "...you like yourself just the way you are?" scored on a five point interval scale from *strongly agree* to *strongly disagree*. The selfworth3 factor included a sequence of six items such as "How intelligent are you?" scored on a four point interval scale from *very intelligent* to *not at all intelligent*, with other characteristics (replacing intelligent) such as popular/confident/independent/attractive scored similarly.

'General life satisfaction' was a single item "How satisfied are you with your life as a whole?" scored on a five point scale from *never* to *every day*. While comprised of only one item because no others could be found that fit, it was utilized because it assessed an important global attitude.

'Maturity' measured by five items, included items such as "How immature are you?" scored on a four point scale from *very immature* to *not at all immature*, and "How

often do you think of yourself as an adult?” scored on a five point scale *never to all of the time*. Two items were scored on a three point scale, “In terms of taking on adult responsibilities, would you say you grew up faster, slower, or about the same rate?” with a scale of *faster to slower*.

Maladaptive Behaviors

‘Delinquency’ consisted of nine items, with a similar stem “In the past 12 months how often did you...”, and included items such as “steal something worth more than \$50?” and “deliberately write a bad check?”, scored on a four point scale from *never to five or more times*.

‘Problem drinking’ consisted of six items asking about the last 12 months. Three items asked if the respondent had problems 1) with school/work, 2) with friends, or 3) with someone they were dating, because they had been drinking, scored on a five point scale from *never to five or more times*. Using the same scale, three other items asked about being hung over, being sick to the stomach, or getting into a sexual situation later regretted, due to drinking.

‘Drug abuse’ consisted of five items. Three were similar to drinking in asking if the respondent had problems 1) with school/work, 2) with friends, or 3) with someone they were dating, because they had been using drugs, scored on a five point scale from *never to five or more times*.

Health

‘General health’ consisted of three items “In general, how is your health?” scored on a five point scale from *excellent to poor*, “In the past month how often did a health

problem cause you to miss a day of school or work?” scored on a five point scale from *never* to *every day*, and “In the past seven days, how often did you fall asleep when you should have been awake (for example during class or work)?” scored on a four point scale from *never* to *every day*.

‘Physical limitations’ consisted of five items concerning physical limitations such as “Does your health limit you in any of these activities? vigorous activities.. walking more than a mile... and bending, kneeling, or stooping”, all scored on a three point scale of *not limited at all* to *limited a lot*.

Overall Well-being

Overall Well-being was a second order latent construct that was used in the SEM. Overall well-being was conceptualized as underlying the first order latent constructs of psychological adjustment, maladaptive behaviors and health in Wave III. This construct was meant to reflect the overall well being and adjustment of the multiracial young adults, influenced by their adolescent experiences in the family, school, and neighborhood environments. It was considered a second order latent construct since it was measured by first order latent constructs which were, in turn, measured by observable factors.

Figure 1 is the full SEM diagram showing the relationships between observable factors and latent constructs. The SEM was used in analyzing Hypothesis 2. Hypotheses 1.a, 1.b., and 3 used the observable factors at Wave III only.

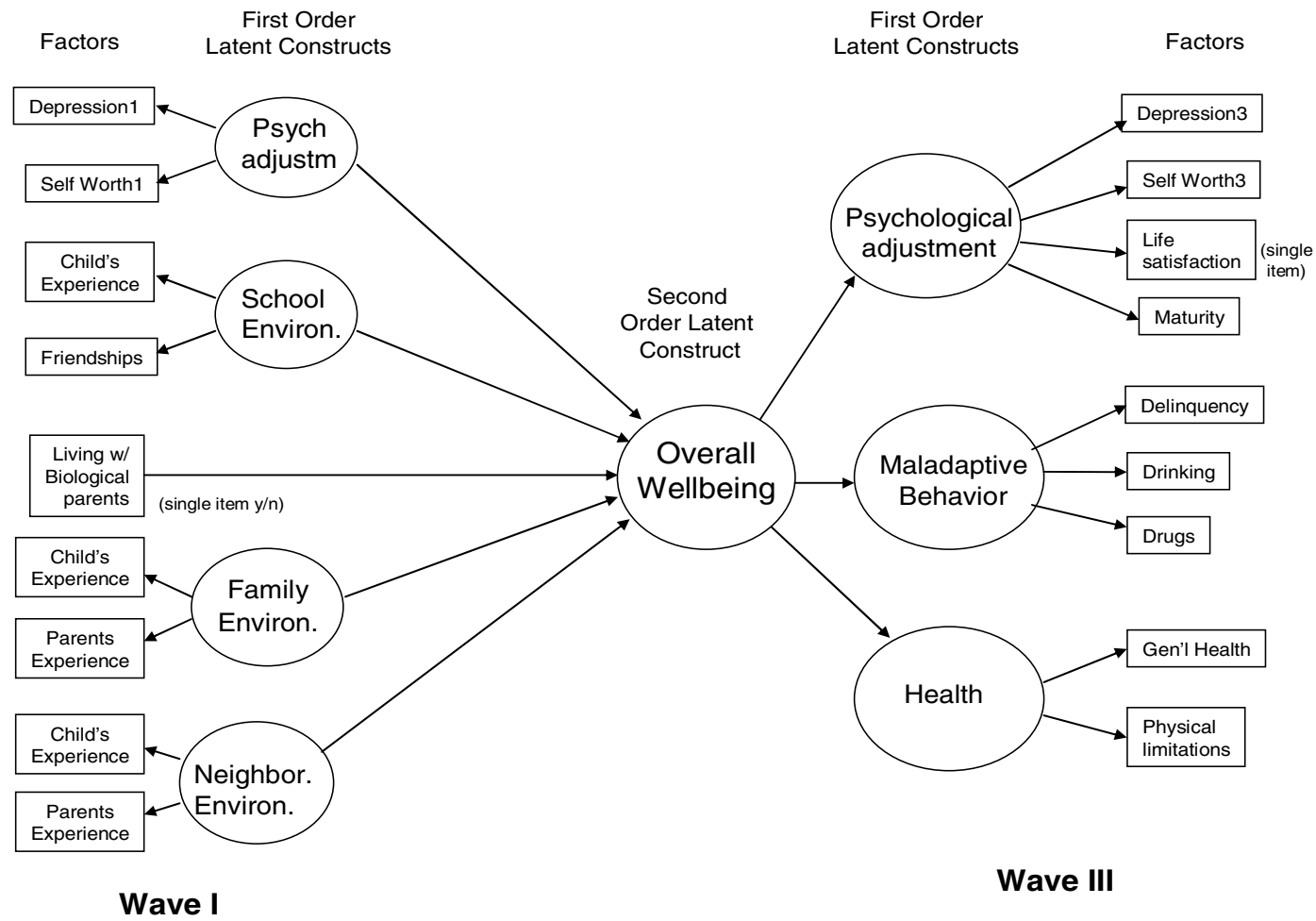
Status Variables

Racial identification

Race categories were defined as Multiracial, White, and Monoracial Minority.

The method of deriving the reported race was slightly different between Waves I and III. In Wave III participants had the option of selecting one or more of the following race categories: White, Black, Asian, and American Indian. White respondents were identified by selecting only the White race category. Monoracial Minority respondents were identified if they selected only one of the following race categories: Asian, Black, or Indian American. Multiracial respondents were identified if they selected more than one race category. Classifying the race of participants in Wave I was a little more involved. Participants answered questions about their race both during the school survey and again during the home survey. They were classified in the following way. If the reported single race at school and home was the same (55.1%) this race was used. If multiracial was reported at both school and home, the respondent was identified as multiracial (1.4%). If race (single or multiracial) was only reported on one of the surveys (30.6%) this reporting (single or multiracial) was used, i.e., they did not answer the race question on one of the surveys. If the race reported was different between school and home and at least one of these locations was multiracial, then the respondent was included as multiracial (4.5%). If different single races were reported at the two locations then the respondent was classified as having unclear race (1.3%). Finally, if no race was reported at either school or home then race was recorded as missing (7%).

Figure 1. SEM Initial Measurement and Structural Model



The Add Health researchers treated the category Hispanic consistent with the 2000 U.S. Census as an ethnicity separate from the race category. This means, for example, if a respondent to Add Health reported Hispanic as their ethnicity and White as their race, then for race purposes they would be categorized as monoracial White as opposed to being considered multiracial Hispanic/White. There was initial concern for the purpose of the current study that a majority of people who reported being Hispanic would not additionally check a race category, since much of the literature and popular press treats Hispanic as a category equivalent to and mutually exclusive with race. However, in analyzing the Add Health data for the current study, it turned out that the vast majority (91.6%) of Wave III participants who identified as Hispanic also identified one or more race categories: White (66.0%), Multiracial (3.5%), Black (4.8%), Indian American (13.0%), and Asian Pacific Islander (4.3%), while a portion did not mark any race (8.4%). This means that while there is still the concern that the current study is not capturing the multiethnic experience of Hispanic/Latino participants, the vast majority of these participants were included through their selection of one or more race categories.

Mutiracial Identification from Wave I-III

Substantial literature has focused on the issue of identity and identity development, with the majority of work suggesting that the evolution of a multiracial identity, one that recognizes the full heritage of the person leads to better well-being outcomes than an identity that denies one of the parent's, i.e., a monoracial identity. The literature also suggests the developmental stages correlate somewhat to chronological age and that a person would move toward a multiracial identity as she/he grew older.

Multiracial identity development is a complex construct and beyond the current study's scope. However, as a proxy multiracial identification, i.e., the race categories participants select was computed for the current study by examining how participants self reported their race in both Waves I and III. All participants were placed into one of three categories. (a) Monoracial to multiracial - participants who identified as monoracial at Wave I and multiracial at Wave III. The literature would suggest improved well-being outcomes for this group. (b) Multiracial to monoracial - participants who identified as multiracial at Wave I but switched to monoracial by Wave III. The literature suggests lower well-being outcomes for this group relative to their multiracially identifying peers at Wave III. (c) Multiracial to multiracial - participants who identified as multiracial at both Waves I and III.

College Attendance

There is evidence that the college experience provides better avenues for students to explore their identity and be exposed to others in ways that might enhance their individual development and maturation. Therefore, college attendance was used as a categorical factor to compare multiracial young adults to their peers.

College attendance was defined as any evidence that the respondent attended college. Two items were examined to determine this, "What is the highest grade or year of regular school you have completed?" and "What year of college or graduate school are you currently in?" Anyone who completed at least one year of college in response to the first question was included, as well as respondents who had completed 11th and 12th grade (1st question) and also reported being currently enrolled in college (2nd question). This

accounted for freshman who had not yet completed one year in college.

Summary of Variables

In summary, the items comprising the predictor, outcome and status variables identified in this section were selected originally before receipt of the archival data and therefore required testing of assumptions (e.g., factor analysis, SEM testing) in order to be finalized. This preliminary data analysis is reviewed under the Results chapter. The initial and final item sets are both shown in Appendix B.

Procedures

Since this study used archival data, the following section describes the procedures and participant safeguards used in the collection of the data. This information was obtained from the Add Health web site at <http://www.cpc.unc.edu/projects/addhealth/>.

The Wave I in-school questionnaire was completed 1994-1995. It consisted of a self-report instrument comprised of 68 questions administered to students in grades 7 through 12 during school time in a 45 to 60-minute class period. Parents were informed in advance of the date of the questionnaire and could request that their children not participate. Unless otherwise directed by the school, passive consent forms were used (it was assumed that a parent granted permission unless the form was returned with a signature that indicated otherwise). Some schools required active consent forms (the form had to be returned with a signature indicating that permission was granted). To protect the identities of participants, a rigorous security system prevented anyone from being able to link a respondent's answers to a name or other identity. Identification numbers used to collect data were never used for data distribution.

The Wave I at-home interview was completed in 1995. It consisted of a one to two hour interview, comprised of about 700 questions. The majority of the interviews were conducted in the respondents' homes. Written informed consent was obtained from both the parent or legal guardian and the adolescent. To protect confidentiality, no paper questionnaires were used. Instead, all data were recorded on laptop computers. For less sensitive topics, the interviewer read the questions aloud and entered the respondent's answers. For more sensitive topics, the respondent listened through earphones to pre-recorded questions and entered the answers directly.

The Wave III at-home interview was completed in 2001-2002. It consisted of a 134 minute (average) interview, comprised of 1,310 questions. Most of the interviews were conducted in respondents' homes. Respondents were asked to read and sign an informed consent form. Parental consent was not needed as respondents were 18 to 26 years old. All respondents who agreed to participate in the interview received an incentive payment. To maintain confidentiality, no paper questionnaires were used. As in earlier waves, data were recorded on laptop computers. For less sensitive material, the interviewer read the questions and entered the respondent's answers. For more sensitive material, the respondent entered his or her own answers in privacy. For respondents that agreed to provide a urine and/or saliva sample (used for STD testing), an additional consent form was used.

The Add Health Database was purchased by the author of the current study for \$750 from the Carolina Population Center at the University of North Carolina Chapel Hill. The Center has established rigorous requirements surrounding the disposition of,

and access to, the participant data. The UNC researchers allow access to their data only after compliance with extensive security requirements. These included:

1. Completion of an Application for Obtaining Sensitive Data. Information about the recipient of the data was required.
2. Agreement for the Use of Sensitive Data. This agreement stipulates the requirements of the requesting researcher (e.g., must hold a faculty or research position); obligations of the principle investigator, research staff and recipient institution; certificate of confidentiality that protects the Add Health participants; and the requirement for institutional signatures.
3. Sensitive Data Security Plan. Identifies the physical security of the computer and data as well as the data access protection required.
4. Data File Order for the use of Sensitive Data. Includes the requirement for explaining the necessity and relevance of any specially constructed data sets.
5. Supplemental Agreement with Research Staff. Requires anyone who has access to the Add Health data to comply fully with the terms of the agreement.
6. Security Pledge (pledge of confidentiality). Required to be signed by both the investigator and all research staff.

Since the author of the current study did not hold a faculty or research position, his advisor Dr. Mary Ann Hoffman signed the agreement as the recipient of the data, and served as the designated principle investigator for the project. The author of the current study was considered a research staff member and signed all appropriate pledge agreements.

Chapter 5 - Results

This section covers preliminary analysis, hypothesis testing, and additional analyses. After receiving the data the following steps were taken. All items were coded so that higher scores indicated better outcomes. This was done in all cases, for every item. So, for example, factors like depression or problem drinking, a higher score means less evidence of the problem and a lower score means more evidence of the problem. Approximately 30 percent of items were recoded in order to achieve this consistency. All items were converted to standardized z-scores. This was done so that merging individual items into composite factors would not inadvertently weight the composite factors.

Preliminary Analyses

This section describes the measurement phase of the two-stage structural equation model (SEM). The initial items described under the Measurements Section previously were selected prior to testing for acceptable fit in the SEM. The SEM testing could lead to removal of items or changes in the groupings of items into factors (this is explained in more detail later). Since it would be desirable to maintain consistency in the use of items and factors across the hypotheses in the current study, the first stage of the SEM, the measurement phase, was conducted before hypothesis testing. The second stage of the SEM, assessing the structural paths, is reported under hypothesis 2.

EQS 6.1 was used in the current study to conduct the SEM analysis. Three primary fit indices were used to evaluate model validity as recommended in Martens (2005), the comparative fit index (CFI; Bentler, 1990), the standardized root-mean-square residual (SRMR; Hu & Bentler, 1999), and the root-mean-square error of approximation

(RMSEA). CFI varies from 0 to 1 in which a higher number indicates a better fitting model. Hu and Bentler recommend .95 as an approximate cut-off. SRMR is recommended by Hu and Bentler to have a value .08 or lower for acceptable data model fit. Finally, RMSEA with a 90% confidence interval is recommended by Hu and Bentler to have values .06 or lower. Chi-square was reported but given its sensitivity to sample size, it was not considered as a determining index for overall fit. A significant X^2 statistic indicates a bad fit between the observed covariance matrix and the covariance matrix predicted by the model; however, the larger the sample size the more likely X^2 will be significant (Martens, 2005). The CFI, SRMR and RMSEA are less sensitive to sample size and were used instead. Fit indices were rounded according to accepted practice in research reporting SEM statistics, with CFI rounded to two decimal places and RMSEA, SRMR as well as model path coefficients and measurement model loadings rounded to three decimal places (Gelso, Kelley, Fuertes, Marmarosh, Holmes, Costa & Hancock, 2005; Lent, Tracey, Brown, Soresi, & Nota, 2006; Mattanah, Hancock & Brand, 2004).

Data were assessed for multivariate normality. Preliminary review indicated that the distribution of the majority of the individual items was skewed (e.g., positive reporting of drug use; delinquent conduct; problem drinking). A number of the items selected for the current study had low incidences of positive responses. This was particularly true under the Maladaptive behaviors construct in Wave III, which consisted of the delinquency, drinking and drug abuse factors. A quick examination of the items shown in Appendix B can illustrate why the responses were skewed, for example, under delinquency an item is "In the past 12 months, how often did you use or threaten to use a

weapon to get something from someone?" It would not be unusual to have skewed results for items like these since only a minority of the general sample reported this behavior. The most widely used estimation method, maximum likelihood, requires an assumption of multivariate normality (Martens, 2005). When this assumption is violated, maximum likelihood estimation is likely to underestimate standards of error moderately to severely (Garson, n.d.). The robust maximum likelihood estimation method corrects the deflation in the standard of error and was used in the current study.

Initial Measurement Model

The initial measurement model, as part of the SEM, allowed all latent constructs to covary (no constraints). This was done to allow the measurement model to be examined separate from potentially inadequate fit of the structural model. Because the observable factors and latent constructs were tentatively defined prior to receipt of the archival data, a preliminary, confirmatory factor analysis was conducted once the data were received, to confirm the initial groupings of individual items. Principal components analysis (PCA) was used, rather than common factor analysis, because of its data reduction value and theoretical fit, in that the variables initially grouped into observable factors were believed to represent aggregate domains as opposed to underlying causes or explanation of the item variability. The words factor and component are used interchangeably in the current study. There was a sufficient participants-to-variables ratio in the current study according to common practice use of ratios in the 4:1 to 5:1 range. PCA was applied to the items within each of the 16 factors (e.g. depression1, child's school experience) and any item with a loading of less than .4 was removed from that

factor. This resulted in the removal of 17 items. A total of 67 items were retained with Cronbach alphas for the 16 factors ranging from .72 to .93. This preliminary analysis confirmed the items grouped within the initial factors, so they were used in the next step, testing whether these factors in turn, loaded acceptably on the latent constructs of the SEM measurement model. Composite items were created for each factor by averaging the individual items together. All individual items had been standardized to z-scores previously to allow for creating composite items.

The measurement model included all 16 factors (e.g., depression) and one individual item 'life satisfaction' loading on 7 first order latent constructs (e.g., psychological adjustment) as shown previously in Figure 1 (note: the factor 'living with biological parents' does not load on a first order latent construct and so is not evaluated in the measurement model phase). The fit of the initial measurement model is shown in Table 3. The SRMR = .040, RMSEA = .057, 90% confidence interval for RMSEA = (.056, .059) all met acceptable criteria. The CFI, however, at .86 did not meet the acceptable threshold of .95.

Table 3

SEM measurement model fit indices (whole sample Wave I-III subset 8,978)

Model	χ^2	<i>df</i>	CFI	SRMR	RMSEA	90% CI for RMSEA
Initial measurement model	3,287.98	108	.86	.040	.057	(.056, .059)
Revised measurement model	487.10	57	.99	.017	.029	(.027, .031)

Note. CFI = comparative fit index; SRMR = standardized root-mean-square residual; RMSEA = root-mean-square error of approximation; CI = confidence interval.

Revised Measurement Model

Since the initial measurement model did not meet all fit indices requirements, revisions were made in order to improve the fit. Modifications must be performed cautiously and with theoretical justification. Post hoc model modification is generally discouraged (Martens, 2005) because of the potential for modifications to fit the sample data being used only, with no ability to determine if the model would generalize beyond the current data. While Martens found the practice of post hoc modification to be fairly widespread, 40% of 105 SEM or path analysis studies he examined in the *Journal of Counseling Psychology* between 1987 and 2003 used such modifications, he observes that, when used, post hoc modifications should be documented and explained fully. This section describes the measurement model modifications made to the initial model in the current study. A two-step process was followed.

First, parameter data were examined from the initial measurement model to identify low loadings of factors on latent constructs. Note that similar to factor analysis, SEM uses loadings to assess how well the observable factors fit with their respective latent constructs, with .4 being an accepted cut-off. Five factor loadings were lower than .4: (a) parents neighborhood experience .099, (b) parents family experience .37, (c) friendships .25, (d) maturity .01, and (e) physical limitations .38. Review of the basis for these items further supported the removal of the first four. These are discussed in turn.

Parents neighborhood experience and parents family experience were originally included on the assumption that the child's experience in the family or in the neighborhood (latent constructs) could be observed through both self reports by the child

as well as the parents. However, the low loading factors for the parent reports suggest these factors are not reflecting the same construct as the child's experiences. Friendships was originally included as an observable measure of the underlying construct of the child's experience in the school environment. It consisted of items measuring behavior (e.g., number of activities with friends in the last week) and I conceptualized this behavioral measure as another reflection of the child's experience of the school environment (Add Health reported that the vast majority of reported friend relationships were within the same school). However, the low loading of friendships on the latent construct school environment suggests that it is not an observable measure of the child's perception of their school experience. Maturity was among the Wave III factors when the participants were 18 to 26 years old and was originally selected for the current study as an observable factor for the latent construct of psychological adjustment. I included it to see if it enhanced the explanatory value of the SEM model; however, I did this tentatively since there was no similar factor used in other previous studies from Wave I (Cooney & Radina 2000, Milan & Keiley, 2000; Udry et al., 2003). There was also some conceptual question whether maturity items (eg., 'How often do you think of yourself as an adult?') reflected the same psychological adjustment construct as depression and self worth, with which they were grouped. The very low loading of maturity on psychological adjustment confirmed that it was not an observable measure of the same underlying construct as the other factors. Physical limitations seemed theoretically valid as a measure, along with general health, of the underlying latent construct of health; however, because it loaded slightly below the .4 cut-off it was included as a factor for potential elimination. These

five factors above were identified for possible removal, pending the next step.

The second step was to re-visit the original groupings of items into factors. The low CFI fit index of the initial measurement model could have been a result of how these items were grouped into factors and how these factors were interpreted to represent underlying constructs. In this step all items were allowed to freely load on any factor within the Wave I or Wave III item sets respectively. An exploratory factor analysis using principal component analysis with Oblimin rotation was performed. Retaining factors was determined using eigenvalues > 1.0 . Because eigenvalues can over- and under-estimate the best number of factors to be retained, the scree plot was also used to examine the slope of eigenvalues and use the cut-off when the slope approaches zero.

For Wave I items, both eigenvalues greater than 1 and inspection of the scree plot suggested a cut-off between seven and eight factors. Out of the first eight factors, four were retained for the SEM analysis and four were deleted. The factors that were retained included: (a) depression1, consisting of eight items ($\alpha = .85$); (b) self worth1, consisting of six items ($\alpha = .86$); (c) child's school experience consisting of four items ($\alpha = .76$), and (d) child's family experience consisting of six items ($\alpha = .86$). The factors not retained for Wave I included three identified earlier as having low factor loadings: parents neighborhood experience, parents family experience, and friendships. A fourth factor, child's neighborhood experience, consisting of three items, was also removed. It was originally included as an observable measure, along with parents neighborhood experience, reflecting the underlying construct of the neighborhood environment. However, once parents neighborhood experience was deleted, it could not

stand alone to reflect the neighborhood environment and it did not associate sufficiently with other factors to be combined with another latent construct.

The component correlation matrix was examined to see if any changes should be considered between factors and latent constructs. In SEM, factors are intended to be observable measures of underlying constructs, so the correlation matrix in and of itself should not be sufficient to group factors, but it can provide useful guidance about the relationship of factors. In the initial model, self worth1 was associated with depression1 in representing the underlying construct psychological adjustment. However, self worth1 correlated most highly with child's school experience (.36) and less with depression1 (.19). Depression1 and child's school environment did not correlate as high (.11). This warranted considering whether self worth1 and child's school environment might reflect the same underlying construct. Upon reviewing the items in each factor, they did seem to reflect the same construct, e.g., self worth1 items included "I like myself just the way I am" and "I feel loved and wanted", and child's school experience items included "I feel socially accepted" and "I feel close to people at this school". I labeled the underlying construct Acceptance (by self and others).

Depression1 and child's family experience were retained as stand alone factors in Wave I. In order to create at least two factors per latent construct as required in the SEM analysis, each of these factors was divided into two parcels each with a random subset of the individual items. As a result the depression1 was divided into depression1 A (alpha = .74) and depression1 B (alpha = .70). Child's family experience was divided into child's family experience A (alpha = .82) and child's family experience B (alpha = .68). See the

Wave I portion of Figure 2 SEM.

For Wave III items, the scree plot flattened after factor 8, however, the first 12 factors had eigenvalues > 1 . The first five factors were retained: depression3 (alpha = .81), self worth3 (alpha = .79), delinquency (alpha = .70), drinking (alpha = .71), and physical limitations (alpha = .77). The sixth factor, maturity was not retained because of its very low factor loading in the initial measurement model (alpha = .01). The seventh factor, drug abuse (alpha = .77), was retained because of its high correlation with the drinking and delinquency factors and theoretical fit with the latent construct, maladaptive behavior. The eighth factor, social comparisons was new and represented a subset of items originally included with self worth3. This new subset consisted of five items such as “How intelligent are you?” and “How popular are you?” I did not retain it because it did not seem to theoretically fit with the underlying construct psychological adjustment. The ninth factor binge drinking was not retained because it duplicated drinking. The tenth factor, general health (alpha = .24), was retained, as an additional observable factor along with physical limitations, of the latent construct health. Even with the low alpha coefficient in the factor analysis, retaining general health in the SEM was important since lower levels of health were found in Wave I among multiracial adolescents by other Add Health researchers and seeing whether this still existed among multiracial young adults during Wave III was an important goal of the current study. Also, the initial SEM measurement model testing indicated that the general health factor loaded satisfactorily (.71) on the underlying latent construct health so, combined with the other observable factor physical limitations, the latent construct health could be retained in the SEM.

The two steps described above led to a revised SEM measurement model. The final set of constructs, factors and individual items of the initial and final measurement models are shown in Appendix B - right hand column. A summary of the initial and final constructs and factors (not including individual items) is shown in Table 4. The revised SEM model diagram is shown in Figure 2. Fit indices for the revised measurement model are shown in Table 3. All fit indices were excellent with CFI = .99, so the revised measurement model was accepted.

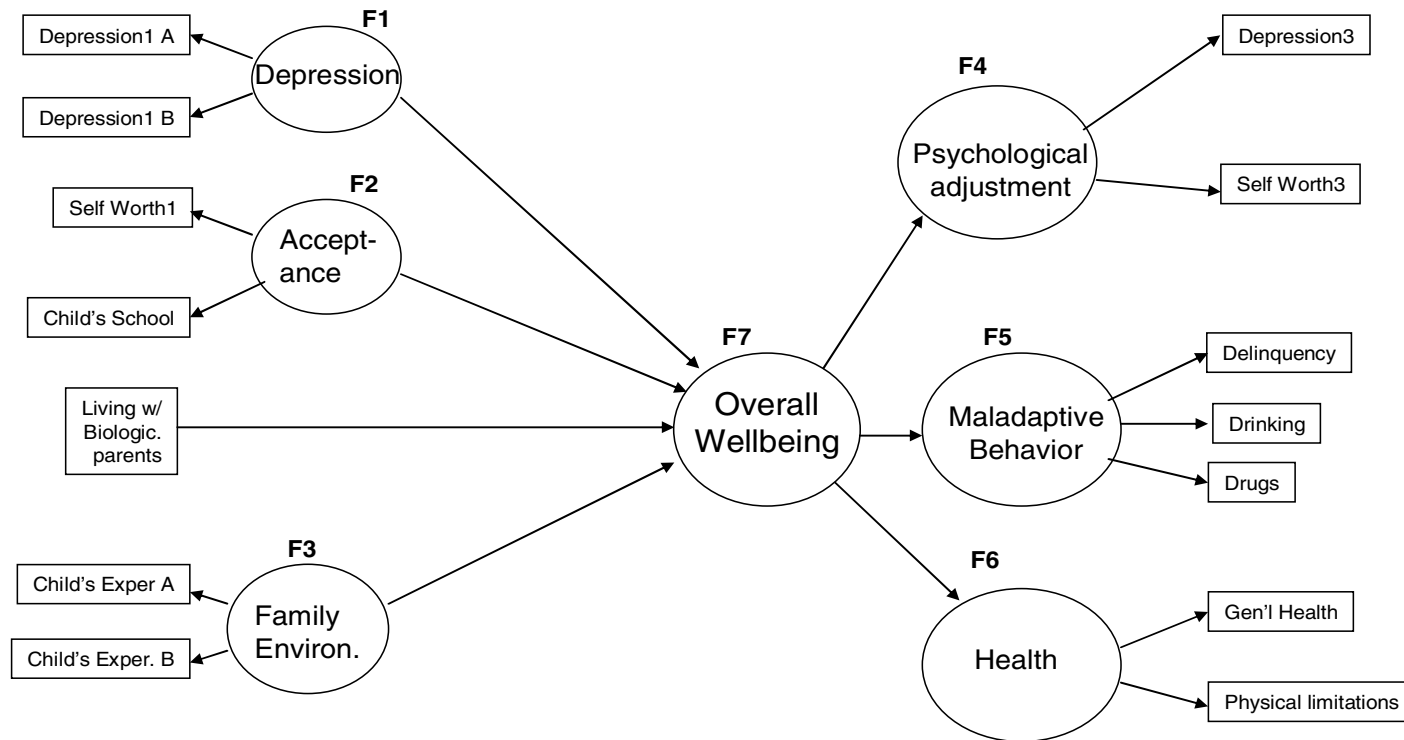
The SEM measurement model successfully defined the set of factors that could be used across the hypotheses in the current study. Two exceptions to uniform use were made. First, even though maturity was deleted as a factor in the SEM because of its low loading on the latent construct psychological adjustment at Wave III maturity had a reasonable alpha = .63 and seemed a relevant factor when comparing multiracial young adults to their monoracial counterparts. Using this factor in the non-SEM hypotheses, 1.a, 1.b., and 3 would have no effect on the SEM analysis, so it was evaluated in these hypotheses. Conversely, the general health factor was included in the SEM in spite of its low alpha because it had good factor loadings with the latent construct Health and also provided a second factor for this construct (along with physical limitations). However, as a stand alone factor, with only three items and a weak internal consistency, general health was not included in the analyses of the non-SEM hypotheses 1.a, 1.b., and 3. The matrix in Table 5 displays Means, Standard Deviations and Intercorrelations among the final predictor and outcome variables using Wave I-III entire subset of 8,978 participants. Table 6 is the same as table 5 for the multiracial subsample only of 402 participants.

Table 4. *Summary of Initial and Final Latent Constructs and Factors*

Initial	Final
Predictors (Wave I)	
Psychological Adjustment <u>depression1</u>	Depression1 <u>depression1 A</u> <u>depression1 B</u>
self worth1	Acceptance self worth1
School Environment child's school experience friends	child's school experience
Biological Parents Family Environment child's family experience	Biological Parents Family Environment child's family experience A child's family experience B
parent's family experience	
Neighborhood Environment child's neighborhood experience parent's neighborhood experience	
Outcomes (Wave III)	
Psychological Adjustment <u>depression3</u> <u>self worth3</u> gen'l life satisfaction maturity	Psychological Adjustment <u>depression3</u> <u>self worth3</u> maturity [incl. in non-SEM only]
Maladaptive Behaviors delinquency problem drinking drug abuse	Maladaptive Behaviors delinquency problem drinking drug abuse
Health general health physical limitation	Health general health [inc. in SEM only] physical limitation

Note. Latent constructs are underlined. Observable factors are all lowercase.

Figure 2. SEM Final Measurement and Structural Model



Note: latent constructs F1-F3 and Biologic. Parents are correlated freely.

Wave I

Wave III

Table 5. *M, SD and Intercorrelations among predictor and outcome variables using Wave I-III subset of 8,978 participants.*

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Depress1 A	-												
2. Depress1 B	.78**	-											
3. Self Worth1	.30**	.30**	-										
4. School Exp.	.24**	.23**	.56**	-									
5. Family Exp. A	.33**	.34**	.31**	.24**	-								
6. Family Exp. B	.27**	.27**	.29**	.20**	.74**	-							
7. Depress3	.27**	.27**	.16**	.12**	.17**	.12**	-						
8. Self Worth3	.18**	.18**	.26**	.14**	.18**	.18**	.42**	-					
9. Delinquency	.00	-.00	.02	.03*	.02*	.03*	.09**	.10**	-				
10. Drinking	.00	.01	.04**	.03*	.02	.03**	.11**	.11**	.22**	-			
11. Drug Abuse	.03**	.03**	.03**	.03**	.04**	.04**	.11**	.10**	.28**	.32**	-		
12. Health	.14**	.15**	.11**	.10**	.09**	.07**	.28**	.22**	.07**	.09**	.10**	-	
13. Phys Limits	.10**	.10**	.06**	.04**	.05**	.04**	.17**	.10**	.03**	.01	.02*	.27**	-
<i>M</i>	.04	.03	.01	.01	.03	.03	.02	.02	.00	-.01	.00	.01	.01
<i>SD</i>	.73	.71	.75	.76	.84	.75	.64	.73	.62	.81	.72	.62	.70
alpha	.74	.70	.86	.76	.82	.68	.81	.79	.70	.71	.77	.24	.77

Note. All *M*'s and *SD*'s are calculated from standardized z-scores.

* $p < .05$ (two-tailed) ** $p < .01$ (two-tailed)

Table 6

M, SD and Intercorrelations among predictor and outcome variables using Wave I-III subset of 402 multiracial participants.

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Depress1 A	-												
2. Depress1 B	.74**	-											
3. Self Worth1	.25**	.26**	-										
4. School Exp.	.24**	.20**	.55**	-									
5. Family Exp. A	.34**	.29**	.19**	.19**	-								
6. Family Exp. B	.30**	.22**	.23**	.16**	.78**	-							
7. Depress3	.28**	.28**	.15**	.07	.10*	.08	-						
8. Self Worth3	.14**	.13*	.24**	.05	.13*	.16**	.42**	-					
9. Delinquency	.01	-.03	.09	.04	-.03	.01	.11*	.10*	-				
10. Drinking	-.01	.02	.07	.02	.05	.05	.10*	.14**	.20**	-			
11. Drug Abuse	-.05	-.02	.00	.01	-.05	-.05	.16**	.07	.21**	.54**	-		
12. Health	.18**	.17**	.15**	.02	.11*	.09	.28**	.32**	.12*	.11*	.08	-	
13. Phys Limits	.09	.07	.08	.01	.05	.03	.18**	.15**	.09	-.05	.04	.25**	-
<i>M</i>	-.01	-.04	-.03	-.05	-.07	-.08	-.07	-.07	-.03	-.07	-.18	-.05	-.03
<i>SD</i>	.74	.72	.76	.73	.86	.78	.66	.73	.62	.93	1.04	.63	.66

Note. All *M*'s and *SD*'s are calculated from standardized z-scores.

* $p < .05$ (two-tailed) ** $p < .01$ (two-tailed)

Hypothesis 1a: Multiracial young adults report lower (worse) levels of psychological adjustment, behavioral and health well-being relative to their monoracial minority and White counterparts.

Hypothesis 1b: College attending multiracial young adults do not report lower levels of psychological, behavioral and health well-being relative to their college attending monoracial minority and White counterparts.

A series of fixed effects 2 x3 (college x race group) between subjects univariate ANOVAs were run in order to examine both main effects and interaction terms. The Wave III subset of 14,644 participants was used. The independent factors were college (attended, $n = 8,715$; not attended, $n = 5,929$) and race (Multiracial, $n = 616$; Monoracial Minority, $n = 4,683$; White, $n = 9,345$). The results are reported below by each dependent (Wave III) factor. Note that all means and standard deviations were calculated from standardized z-scores. Eta squared, η_p^2 , was used to report effect sizes. Effect sizes are not affected by the use of standardized z-scores.

Depression3. There were significant main effects for race, $F(2,14642) = 36.77, p < .01$; college, $F(1,14643) = 75.05, p < .01, \eta_p^2 = .005$, and between race and college, $F(2,1642) = 4.56, p < .05, \eta_p^2 = .01$ in terms of reported depression at Wave III. Further univariate ANOVAs examined the interaction effect using Tukey HSD post hoc analysis for pairwise comparisons. For college attending participants race was significant, $F(2,8713) = 11.73, p < .01, \eta_p^2 = .003$, with multiracial ($M = -.011, SD = .67$) and monoracial minority young adults ($M = .026, SD = .62$) scoring significantly lower (worse) than White ($M = .09, SD = .58$) participants. For non-college attending

participants race was also significant, $F(2,5927) = 22.66, p < .01, \eta_p^2 = .008$, with multiracial ($M = -.18, SD = .70$) and monoracial minority participants ($M = -.17, SD = .77$) scoring significantly lower than White ($M = -.04, SD = .70$) participants.

Further examination within each race group revealed non-college attending participants scoring significantly lower (worse) on depression than college attending participants for all three groups: multiracial, $F(1,615) = 9.81, p < .01, \eta_p^2 = .016$; monoracial minority, $F(1,4682) = 95.01, p < .01, \eta_p^2 = .020$; and White, $F(1,9344) = 93.32, p < .01, \eta_p^2 = .010$.

In summary for Depression3 at Wave III, while multiracial young adults exhibited lower (worse) depression3 scores than their monoracial minority and White counterparts, the effect sizes were so small that these statistical findings did not represent meaningful differences. Therefore, hypothesis 1.a was not supported and hypothesis 1.b was supported. College attendance does make a difference within each race group in that depression3 scores are higher (better) for college attending participants within all three groups

Self worth3. There were significant main effects for race, $F(2,14642) = 11.92, p < .01, \eta_p^2 = .002$ and college, $F(1,14643) = 53.51, p < .01, \eta_p^2 = .004$ in terms of reported self worth at Wave III. The interaction between race and college was not significant, $F(2,1642) = .15, p > .05$. Tukey HSD post hoc analysis revealed significant difference for all pairwise comparisons with multiracial participants scoring lowest (worst) ($M = -.10, SD = .73$), White next ($M = -.01, SD = .73$) and monoracial minority participants scoring highest ($M = .04, SD = .76$).

Further examination within each race group revealed non-college attending participants reporting significantly lower self worth3 than college attending participants for all three groups: multiracial, $F(1,615) = 8.82, p < .01, \eta_p^2 = .014$; monoracial minority, $F(1,4682) = 41.53, p < .01, \eta_p^2 = .009$; and White, $F(1,9344) = 105.65, p < .01, \eta_p^2 = .011$.

In summary for Self Worth3 at Wave III, while multiracial young adults exhibited lower (worse) self worth3 scores than their monoracial minority and White counterparts, the effect sizes were so small that these statistical findings did not represent meaningful differences. Therefore, hypothesis 1.a was not supported and hypothesis 1.b was supported. College attendance does make a difference within each race group in that self worth3 scores were higher (better) for college attending participants within all three groups.

Maturity. There were significant main effects for race, $F(2,14642) = 4.43, p < .05, \eta_p^2 = .001$; college, $F(1,14643) = 29.28, p < .01, \eta_p^2 = .002$, and between race and college, $F(2,1642) = 4.50, p < .05, \eta_p^2 = .001$ in terms of reported maturity at Wave III. Further univariate ANOVAs examined the interaction effect using Tukey HSD post hoc analysis for pairwise comparisons. For college attending participants race was not significant, $F(2,8713) = .73, p > .05$. For non-college attending participants, however, race was significant, $F(2,5927) = 7.05, p < .01, \eta_p^2 = .002$, with monoracial minority participants ($M = .03, SD = .71$) scoring significantly lower than White ($M = .10, SD = .67$) participants. Multiracial participants ($M = .09, SD = .68$) scored in between the other groups and not significantly different than either.

Further examination within each race group revealed that those not attending college reported significantly higher maturity scores than those attending college. This was true for monoracial minority, $F(1,4682) = 14.73$, $p < .01$, $\eta_p^2 = .003$; and White, $F(1,9344) = 114.24$, $p < .01$, $\eta_p^2 = .012$ participants, while multiracial participants, $F(1,615) = 3.03$, $p > .05$, did not differ within their group. It is interesting to note that maturity differed from most other dependent factors in that non-college attending participants had higher mean maturity scores than college attending participants.

In summary for Maturity at Wave III, hypothesis 1.a was not supported and hypothesis 1.b was supported. Differences among race groups was not significant for college attending young adults, and for non-college attending young adults, the multiracial group did not report lower maturity scores than their White and monoracial minority counterparts. Further, the effect sizes for both college attending and non-college attending were so small that these statistical findings did not represent meaningful differences.

Delinquency. There were significant main effects for race, $F(2,14642) = 6.84$, $p < .01$, $\eta_p^2 = .001$, and between race and college, $F(2,1642) = 6.13$, $p < .05$, $\eta_p^2 = .001$ in terms of reported delinquency at Wave III. College attendance was not significant, $F(1,14643) = 1.73$, $p > .05$. Further univariate ANOVAs examined the interaction effect using Tukey HSD post hoc analysis for pairwise comparisons.

For college attending participants race was not significant, $F(2,8713) = .07$, $p > .05$. For non-college participants race was significant, $F(2,5927) = 9.30$, $p < .01$, $\eta_p^2 = .003$, with monoracial minority participants ($M = -.07$, $SD = .84$) reporting significantly

lower scores (worse, or more delinquent behaviors) than White ($M = .02$, $SD = .62$) participants. Multiracial participants ($M = -.01$, $SD = .60$) reported scores in between the other groups and not significantly different than either. Further examination within each race group revealed no difference between college attending and non-college attending participants for the multiracial, $F(1,615) = .04$, $p > .05$, and White, $F(1,9344) = .15$, $p > .05$ groups. There was a significant difference for monoracial minority participants, $F(1,4682) = 11.86$, $p < .01$, $\eta_p^2 = .003$ with college attending participants reporting higher scores (better, or less delinquent behaviors) than their non-college attending counterparts.

In summary for Delinquency at Wave III, hypothesis 1.a was not supported, and hypothesis 1.b was supported. Neither college attending nor non-college attending multiracial participants differed significantly from their White and monoracial minority counterparts.

Drinking. There were significant main effects for race, $F(2,14642) = 40.51$, $p < .01$, $\eta_p^2 = .006$, and between race and college, $F(2,1642) = 13.52$, $p < .01$, $\eta_p^2 = .002$ in terms of reported problem drinking at Wave III. College was not significant, $F(1,14643) = .10$, $p > .05$. Further univariate ANOVAs examined the interaction effect using Tukey HSD post hoc analysis for pairwise comparisons.

For college attending participants race was significant, $F(2,8713) = 59.15$, $p < .01$, $\eta_p^2 = .013$, with White ($M = -.08$, $SD = .90$) and multiracial participants ($M = -.04$, $SD = .82$) reporting significantly lower (worse) scores than monoracial minority ($M = .07$, $SD = .54$) participants. For non-college participants race was significant, $F(2, 5927) = 3.74$, $p < .05$, $\eta_p^2 = .001$, with White participants ($M = .00$, $SD = .80$) scoring significantly

lower (worse) than monoracial minority ($M = .06$, $SD = .72$) participants. Multiracial participants' scores ($M = -.03$, $SD = .88$) were not significantly different than either of the other groups. This finding is puzzling, since the multiracial mean score was lower than the White mean score.

Further examination within each race group revealed no difference in reported scores between non-college attending and college attending multiracial participants, $F(1,615) = .01$, $p > .05$. Non-college attending monoracial minority participants reported significantly lower (worse drinking) scores than their college attending counterparts, $F(1,4682) = 13.17$, $p < .01$, $\eta_p^2 = .003$. The opposite result was found among White participants with non-college participants reporting significantly higher (better) scores than their college attending counterparts, $F(1,9344) = 15.28$, $p < .01$, $\eta_p^2 = .002$.

In summary for Drinking at Wave III hypothesis 1.a was partially supported and 1.b was not. College attending White and multiracial students had significantly lower (worse) scores than monoracial minority participants, while non-college attending multiracial respondents did not have lower scores. It is interesting within groups, college attending monoracial minority students reported higher scores than their non-college attending counterparts, while the opposite was true for college attending White students.

Drugs. There were significant main effects for race, $F(2,14642) = 16.70$, $p < .01$, $\eta_p^2 = .002$ in terms of reported drug use at Wave III. College was not significant, $F(1,14643) = .67$, $p > .05$, and the interaction between race and college was not significant, $F(2,1642) = 2.11$, $p > .05$. Tukey HSD post hoc analysis revealed significant difference for all pairwise comparisons with multiracial participants reporting the lowest

(worse) scores ($M = -.11$, $SD = .93$), White participants next ($M = -.02$, $SD = .76$) and monoracial minority participants reporting the highest (best) scores ($M = .05$, $SD = .61$). In summary for Drugs at Wave III, hypothesis 1.a was not supported and hypothesis 1.b was supported. While multiracial young adults exhibited lower (worse) drug scores than their monoracial minority and White counterparts, the effect sizes were so small that these statistical findings did not represent meaningful differences.

Physical Limitations. There were significant main effects for race, $F(2,14642) = 4.07$, $p < .05$, $\eta_p^2 = .001$ and college, $F(1,14643) = 69.48$, $p < .01$, $\eta_p^2 = .005$ in terms of physical limitations at Wave III. The interaction between race and college was not significant, $F(2,1642) = 1.24$, $p > .05$. Tukey HSD post hoc analysis revealed multiracial participants reporting scores ($M = -.06$, $SD = .70$) significantly lower (more severe physical limitations) than White ($M = .01$, $SD = .69$) participants. Monoracial minority participants ($M = -.02$, $SD = .80$) were in between the other groups and not significantly different than either.

Further examination within each race group revealed non-college attending participants reporting significantly lower scores (worse) than college attending participants for all three groups: multiracial, $F(1,615) = 8.39$, $p < .01$, $\eta_p^2 = .013$; monoracial minority, $F(1,4682) = 76.55$, $p < .01$, $\eta_p^2 = .016$; and White, $F(1,9344) = 129.11$, $p < .01$, $\eta_p^2 = .014$.

In summary for Physical Limitations at Wave III, hypothesis 1.a was not supported and hypothesis 1.b was supported. While multiracial young adults exhibited lower (worse) physical limitation scores than their monoracial minority and White

counterparts, the effect sizes were so small that these statistical findings did not represent meaningful differences. College attendance does make a difference within each race group in that scores are higher (better) for college attending participants within all three groups.

In summary for Hypotheses 1.a multiracial young adults reported statistically lower (worse) scores for depression, self worth, drug abuse and physical limitations than their monoracial minority and White counterparts. Effect sizes (partial eta squared), however, were so small, varying between .001 and .003, that these statistical findings did not represent meaningful differences. For Hypothesis 1.b college attendance did not significantly influence the outcomes for multiracial young adults in relation to their monoracial counterparts. However, across all racial groups the college attending participants generally reported better well-being outcomes than their within-racial group, non-college attending counterparts. The current study found evidence of fewer difficulties of multiracial young adults relative to their monoracial peers, when compared to previous Add Health researchers who studied the same sample as adolescents and found consistent patterns of negative well-being (Milan & Keiley, 2000; Udry et al., 2003). In part this may be because previous researchers did not present effect sizes. The implications of these findings will be discussed more fully in the Discussion section.

Hypothesis 2: Environmental factors during adolescence predict higher levels of psychological adjustment, behavior and health well-being outcomes during young adulthood.

This hypothesis was tested using the SEM analysis. Under the Results section

(preliminary analysis) earlier, the results of the measurement phase of the SEM were reported. This was done in order to refine the final list of variables for use in all the hypotheses. The initial SEM measurement phase was conducted with the whole Wave I-III subset (8,978). Under Hypothesis 2, multigroup testing of the SEM proceeded in order to assess the specific invariance (equality) of the factor loadings and structural paths across the three groups (Multiracial, Monoracial Minority, and White). This was necessary to interpret the final model as it applied to multiracial participants relative to their monoracial counterparts. Multigroup testing proceeded with three phases: preliminary testing, a measurement phase and a structural phase. The following summary is provided.

The multigroup preliminary phase first tested to see if the measurement model previously developed (see Results, preliminary section) was tenable, i.e., adequate fit indices, for each group separately. The multigroup measurement phase then tested the three groups simultaneously using multigroup testing. Factor loadings that were not invariant, i.e., not equal, across groups were released one at a time until there were no longer any factor loadings that differed significantly between the groups. The multigroup structural phase tested for structural path invariance, with the paths showing significant difference between the groups released until no further significant differences remained. The resulting final multigroup, structural model identified the invariant structural paths and those that were not equal across the groups. This process is described in more detail below.

Preliminary. The first step was to see if the final measurement model previously

described using the whole sample (see Table 3) would be adequate if run separately for each sub population, Multirace, Monoracial Minority, and White. The model was tested to see it was tenable for each group separately. The data measurement model fit indices for each group are shown in Table 7 (rows A, B, and C). All fit indices met adequate thresholds for the three groups separately. Thus, multigroup measurement model testing could proceed.

Measurement model. The multigroup measurement model was first run with no constraints on factor loadings, i.e., all of the loadings for each group could vary separately. The overall fit indices are shown in Table 7 (row D). As expected the sum of the X^2 and df 's for separate groups (A, B, and C) equaled the X^2 and df for the multigroup model (row D). The unstandardized factor loadings and associated S.E., along with standardized factor loadings for all three groups are shown in Table 8. The measurement phase determined if these factor loadings were invariant or differed across groups.

First, the multigroup measurement model was run with all factor loadings fully constrained to be equal across groups (the structural portion of the model was included in this phase of testing without constraint across the three groups). Fit indices were adequate and are shown in Table 7 (row E). Lagrange Multiplier (LM) parameter testing was used to estimate the benefit of releasing each individual equality constraint. Constraints were released sequentially in order of the statistical significance (p value) using a $p=.05$ cut-off. These released factor loadings and univariate test statistics are shown in Table 9. Three factor loadings were released. For example, the first constraint

released was for the factor depression³ loading on latent construct psychological adjustment, for the multiracial (MR) and monoracial minority (MM) groups. The final measurement model results with three released factors are shown in Table 7 (row F). All fit indices were adequate.

Structural model. Testing of the structural model proceeded in much the same way as testing the measurement model. Beginning with the final measurement model, all structural paths were fully constrained to be equal across groups. LM parameter testing was used to estimate the benefit of releasing each individual equality constraint. Constraints were released sequentially in order of the statistical significance (p value) using a $p=.05$ cut-off. These released structural paths and univariate test statistics are shown in Table 9. Two structural paths were released. For example, the first constraint released was for the structural path between the latent construct depression and latent construct overall well-being, for multiracial (MR) and monoracial minority (MM) groups. The final structural model fit indices are shown in Table 7 (row G). All fit indices were adequate.

The final multigroup structural model is shown in Figure 3, with path coefficients for the three racial groups. Invariant path coefficients are shown as well as paths released because of significant coefficient differences between groups. R^2 values are also shown for all endogenous (i.e., dependent) constructs.

Table 7

SEM Single and Multigroup Model Fit Indices

Structural Model	χ^2	<i>df</i>	CFI	SRMR	RMSEA	90% CI for RMSEA
<u>Single groups:</u>						
A. Multirace sample	95.94	65	.98	.038	.034	(.018, .048)
B. Minority sample	198.48	65	.98	.023	.028	(.024, .032)
C. White sample	331.02	65	.99	.021	.026	(.023, .029)
<u>Multigroup:</u>						
D. Initial measurement model (No constraints)	625.43	195	.99	.028	.027	(.025, .030)
E. Initial measurement model (Full constraints)	710.29	213	.98	.036	.028	(.026, .030)
F. Final measurement Model (3 released factors)	695.83	210	.98	.035	.028	(.026, .030)
G. Final structural model (2 released paths)	701.40	216	.98	.035	.027	(.025, .030)

Note. CFI = comparative fit index; SRMR = standardized root-mean-square residual; RMSEA = root-mean-square error of approximation; CI = confidence interval

Table 8
Multi-group Comparisons on Factor Loadings for the Measurement Model

Factors (indented under each latent construct)	Unstandardized factor loading	SE	Standardized factor loading
<u>Wave I</u>			
Depression			
Depression1 A	1.105/1.036/1.036	.11/.04/.02	.896/.875/.886
Depression1 B	.905/.965/.965	.09/.04/.02	.831/.856/.891
Acceptance			
Self worth1	1.377/1.442/1.345	.25/.11/.05	.850/.853/.898
Child's school experience	.724/.694/.744	.13/.05/.03	.642/.563/.669
Family Environment			
Child's experience A	1.226/1.364/1.269	.13/.06/.03	.933/.959/.921
Child's experience B	.816/.733/.788	.08/.03/.02	.839/.784/.800
<u>Wave III</u>			
Psychological Adjustment			
Depression3 ^a	1.023/1.184/.913	.14/.08/.04	.686/.731/.681
Self worth3 ^b	.976/.843/1.095	.13/.06/.05	.608/.558/.640
Maladaptive Behavior			
Delinquency	.264/.915/.654	.13/.23/.09	.287/.438/.483
Drinking	3.795/1.093/1.528	1.85/.28/.21	.722/.555/.490
Drugs	1.159/ 1.059/1.082	.28/.24/.12	.743/.570/.625
Health			
General health ^c	1.766/1.808/1.526	.47/.26/.13	.684/.701/.690
Physical limitations	.565/.553/.656	.15/.08/.06	.356/.336/.409

Note. Data were presented in the sequence of Multirace/Monoracial Minority/White participants. Standardized factor loadings were all significant at the .05 level. Used robust statistics.

^a Significant group differences on unstandardized factor loadings: Monoracial Minority > Multiracial.

^b Significant group differences on unstandardized factor loadings: White > Multiracial.

^c Significant group differences on unstandardized factor loadings: Multiracial > White.

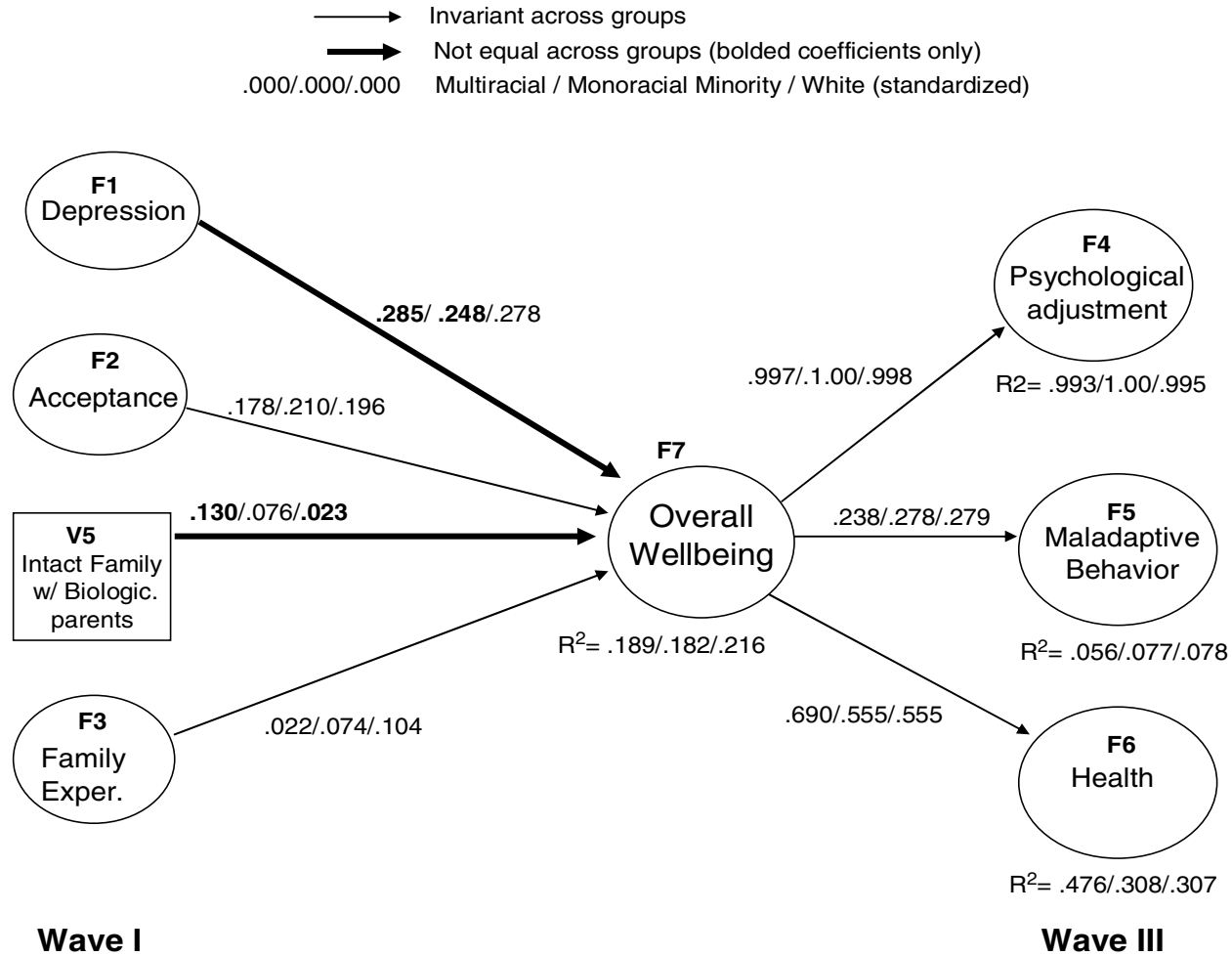
Table 9

Factor loadings and structural paths released.

	LM univariate test statistics	
	Chi-square	probability
Factor loadings:		
depression3 loading on psych. adjustment, for groups MR,MM	10.53	.00
gen'l health loading on health, for groups MR,Wh	4.91	.03
self worth3 loading on psych. adjustment, for groups MR,Wh	8.32	.00
Structural paths:		
path between depression and overall well-being for MR,MM	5.70	.02
path between biological parents and overall well-being for MR,Wh	4.02	.05

Note. Racial groups - MR = multiracial; MM = monoracial minority; Wh = White.

Figure 3. SEM Final Multigroup Structural Model with Path Coefficients



The multigroup testing of the SEM provides partial support for Hypothesis 2. The constructs of depression¹, acceptance (by self and others), families with biological parents, and child's experience of the family environment all were found to be significant predictors of overall well-being as a young adult. Overall well-being was in turn found to be significantly related to psychological adjustment, maladaptive behavior and health outcomes. Only partial support of hypothesis 2 is concluded because a number of factors/constructs were deleted from the original model proposed to support hypothesis 2. Therefore, these deleted factors and constructs could not be tested using the SEM. The easiest way to see the difference is to compare Figure 1, the initial SEM, with Figure 2 the final SEM. Factors that were deleted included friendships, parents family experience, and child's and parent's neighborhood experience from Wave I, and maturity from Wave III (note: the only other factor not shown in comparing Figures 1 and 2, life satisfaction, was retained but merged into self worth). All remaining factors, latent constructs and structural paths were significant at the $p=.05$ level.

Even though the model had adequate fit indices across Multiracial, Monoracial Minority and White groups, several factor loadings and several structural paths (see Table 9 and Figure 3) differed among the groups. This means that individual (group) factor loadings and path coefficients should be used for each group. Factor loadings and structural paths for the whole sample could be used in all other cases (note: I chose not to report these whole sample numbers in favor of providing individual group numbers which provide more detail).

Specifically for multiracial participants the SEM shown in Figure 3 reports that

the constructs of depression (coefficient = .285), acceptance (.178), and family experience (.022), and factor of living with biological parents (.130) during adolescence contribute significantly to overall well-being explaining 18.9% of its variance. In turn, overall well-being explained 99.3% of the variance for psychological adjustment, 5.6% for maladaptive behaviors and 47.6 % for health. It should be noted that the extremely high R^2 value for psychological adjustment is puzzling and cause for caution in interpreting this parameter. The EQS program was reviewed and the raw data visually inspected and no errors were found. The structural path between biological parents and overall well-being is worth noting because of the large difference between the path coefficients across groups. The coefficient for the multiracial group at .130 was larger than the monoracial minority group at .076 and significantly larger than the White group at .023.

Hypothesis 3: Multiracial young adults who self identify as multiracial will report higher (better) levels of psychological adjustment, behavior and health well-being outcomes than those who self identify as monoracial.

The Wave III subset was used to analyze this hypothesis. Of the 14,644 participants in the Wave III subset, 868 (5.9%) did not report a Wave I race and were removed from this analysis, leaving 13,776 participants. Recall that literature generally suggests the concept of identity development for multiracial people as evolving through stages from a monoracial identity to eventually embracing a multiracial identity, with some evidence of better psycho-social outcomes as a result. To test this concept the self reported racial identification of multiracial participants was examined at two points in time, Wave I (adolescence) and Wave III (young adulthood). It is important to note that

self reported racial identification (selecting one or more racial categories) is not the same as racial identity, a very complex construct (Jones, 1997). The current analysis used reported racial identification as a proxy for racial identity. Participants could select one or more race categories of White, Black, Asian, and American Indian at both Waves I and III, and they were then categorized in the following way. (a) Monoracial to multiracial - participants who selected a monoracial category at Wave I and multiple racial categories at Wave III. The literature would suggest improved well-being outcomes for this group. (b) Multiracial to monoracial - participants who selected multiple racial categories at Wave I but switched to a monoracial category by Wave III. The literature would suggest decreased well-being outcomes for this group. (c) Multiracial to multiracial - participants who selected multiple racial categories at both Waves I and III. The literature would suggest higher well-being outcomes for this group.

The actual change in well-being outcomes for each of the three subsets of multiracial participants from Wave I to Wave III could not be examined since the same exact measures of well-being weren't available at both points in time. These three groups could, however, be compared at Wave III using the well-being outcomes used previously in this study - depression³, self worth³, maturity, delinquency, problem drinking, drug abuse, and physical limitations.

A crosstabs of racial identity from Wave III and Wave I revealed that 308 participants selected a monoracial identification at Wave I and a multiracial identification at Wave III; 766 participants reported the reverse, i.e., they selected a multiracial identification at Wave I and a monoracial identification at Wave III, and 282 participants

selected a multiracial identification at both Waves I and III. See Table 10.

A series of univariate analyses of variance were run comparing the three subgroups of multiracial participants across the Wave III dependent factors. The results are shown in Table 11. The only significant difference found among the groups was for drug abuse; Tukey HSD post hoc analysis revealed that the scores for drug use reported by multirace-to-monorace participants ($M = .00$) was significantly higher (better) than the multirace-to-multirace participants ($M = -.15$, $\eta_p^2 = .006$), with monorace-to-multirace participants ($M = -.10$) not differing significantly from the other groups. This finding is contrary to the prediction of hypothesis 3. Therefore, with the single finding of a difference in the opposite than predicted direction, and all other factors not significant, hypothesis 3 was not supported.

Additional Analyses

College vs. Non-College

Even though college attendance did not change the relationship of multiracial young adults to their White and monoracial minority counterparts across most outcomes, the current study found significant improvement in well-being outcomes between college attending and non college attending participants within all racial groups. An additional analysis was conducted to examine the difference between the college attending and non-college attending participants back when they were adolescents to see if the difference existed before college.

Table 10

Racial Identification Change from Wave I to Wave III

		Wave I Racial Identification			
		White	Multi-racial	Monoracial Minority	Total
Wave III Racial Identification	White	8,147	392 ^b	194	8,733
	Multiracial	180 ^a	282 ^c	128 ^a	590
	Monoracial Minority	127	374 ^b	3,952	4,453
	Totals	8,454	1,048	4,131	13,776

Note. Wave I participants who identified different monoracial categories at Wave I (unclear race) were identified as monoracial at Wave I.

^a monoracial to multiracial

^b multiracial to monoracial

^c multiracial to multiracial

Table 11

Multiracial identification and Wave III dependent factors

Wave III Factor	<i>F</i>	<i>p value</i>
Depression	.57	.57
Self Worth	.82	.44
Maturity	1.96	.14
Delinquency	2.47	.09
Drinking	2.28	.10
Drugs	3.98	.02*
Physical Limitations	.78	.46

Note. all *F* tests with 2 *dfs*.

* significant at $p < .05$

A series of fixed effect, between group univariate analyses of variance were run comparing college and non-college attending participants using the factors identified from Wave I when they were adolescents: Depression (randomly parceled into the factors depression1 A and depression1 B); Self worth1; Child's school environment; and Child's family environment (randomly parceled into child's family experience A and child's family experience B). The whole Wave I-III subset of 8,978 participants was compared and the Wave I-III subset within this of 402 multiracial participants was compared. Means and Standard Deviations and the results of the ANOVAs are shown in Table 12.

For the whole Wave I-III subset the college attending participants reported higher scores than their non-college counterparts across all Wave I factors. For the Multiracial subset the college attending participants also reported higher scores than their non-college attending counterparts, however, only the psychological adjustment factors (depression1 A, and B; self worth) were significantly higher.

Parental income

The previous section found that in general college attending participants were doing better than their non-college attending counterparts back during adolescence, suggesting that college attendance doesn't explain the difference in well-being outcomes as young adults. Is there another moderating variable that might explain the difference in well-being outcomes? A factor that might covary with college attendance is parental income. Data on self reported parental income was gathered during the Wave I parent questionnaire with the following item - "About how much total income, before taxes did your family receive in 1994? Include your own income, the income of everyone else in

Table 12

College vs. non-college participants compared at Wave I factors

Wave I factors	Wave I-III Subset N = 8,978 ^a						Multiracial Subset n = 402 ^a					
	non-college n = 3,229		college n = 5,749		F	η_p^2	non-college n = 173		college n = 229		F	η_p^2
M	SD	M	SD	M			SD	M	SD			
Depression1 A	-.11	.79	.12	.68	198.18**	.022	-.11	.81	.07	.67	5.53*	.014
Depression1 B	-.08	.77	.10	.66	132.06**	.014	-.14	.82	.05	.63	7.00**	.017
Self worth	-.08	.79	.06	.72	67.00**	.007	-.16	.78	.07	.72	9.25**	.023
School Experience	-.12	.80	.08	.72	139.34**	.015	-.13	.76	.01	.69	3.57	-
Family Exper. A	-.02	.86	.06	.82	18.63**	.002	-.15	.96	.00	.78	3.08	-
Family Exper. B	-.01	.76	.05	.75	12.86**	.001	-.14	.83	-.03	.73	1.97	-

Note. Multiracial subset is contained within the Wave I-III subset. All *M*'s and *SD*'s are calculated from standardized z-scores.

^a Wave I-III subset *df* = 8,977; Multiracial subset *df* = 401.

* *p* < .05 (two-tailed) ** *p* < .01 (two-tailed)

your household, and income from welfare benefits, dividends, and all other sources.”
(Recall that Wave I was conducted in 1994-1995).

The Wave III subset of 14,644 participants was used to analyze the relationship between parental income and other factors. A limitation in this data set, however, related to 3,433 respondents whose parents (or other adult care givers) did not answer the income item. The 11,211 participants for whom parental income data was available was compared to the 3,433 participants who did not have this information. The characteristics of gender, age, college attendance, and race were compared for the two subsets. Age was tested with an independent sample T-test and gender, college attendance and race were tested with Pearson Chi-square. Differences were found among all variables: age, $t = 13.04$ ($df = 14,642$, $N = 14,644$, $p < .01$); gender $X^2(1, N = 14,644) = 5.11$, $p < .05$; college attendance, $X^2(1, N = 14,644) = 4.45$, $p < .05$; and race, $X^2(1, N = 14,644) = 213.39$, $p < .01$. The participants who provided parental income data were more likely to be younger, college attending, male and White or multiracial versus the participants who did not. Only the participants who provided parental data were included in the following analysis.

A between subjects univariate analysis of variance was run comparing the variable parental income at Wave I with whether the participant attended college or did not attend college by Wave III. A significant difference was found $F(1,11210) = 500.06$, $p < .01$, $\eta_p^2 = .043$, with parental income for college attending participants higher ($N = 6,725$, $M = 55.30$, $SD = 58.19$; note M is in thousands) than non college attending participants ($N = 4,486$, $M = 33.98$, $SD = 32.26$). This confirmed that college attendance and parental income co-varied.

Could parental income be a better determinant (than college attendance) of well-being outcomes as a young adult? The Pearson coefficients between parental income and Wave III well-being outcomes are shown in Table 13. Even though four coefficients are statistically significant, in general the correlations shown are small. It is interesting to note that four coefficients reflected a negative relationship, i.e., as parental income went up, the well-being outcome worsened; the two outcomes that were significant at the $p < .01$ level, maturity and drinking were generally consistent with the univariate analyses findings of hypotheses 1.a and 1.b. which found similar negative relationships between maturity and drinking with college attendance.

Since parental income and the Wave III outcome factors are both continuous variables, a series of simple linear regressions were also run and the R^2 values are also shown in Table 13. The amounts of variance explained by parental income were very small.

So parental income did covary with college attendance significantly; however, parental income did not account for the well-being outcomes of young adults. These results were run on the whole Wave III subset so it reflects all racial groups combined.

Table 13

Wave I parental income and Wave III outcome factors - Pearson correlation and simple regression

Wave III outcomes	Parental income	
	pearson coeff.	R ²
Depression3	.04**	.00
Self worth3	.01	.00
Maturity	-.09**	.01
Delinquency	-.01	.00
Drinking	-.06**	.00
Drugs	-.01	.00
Physical Limitations	.05**	.00

** $p < .01$ (two-tailed)

Race Specific Analysis

The current study aggregated race categories into three groups. In doing so monoracial minority groups of Black, Asian, and American Indian were grouped together, and all multiracial categories were grouped. This was consistent with two of the referent studies used by the current study. Cooney and Radina (2000) and Milan and Keiley (2000) aggregated monoracial minority and multiracial groups together which enabled an assessment of global relationships between multiracial people and their White and monoracial minority counterparts. This method, however, limited the ability to understand more precisely how individual monoracial and specific multiracial mixes related on outcomes. Previous quantitative research is scattered in approaches toward this issue. Many studies were limited to Black/White participants (Brown, 1995; Brunsma & Rockquemore, 2001; Field, 1996) while others focused on selective mixes (Harris & Sim, 2002; Mukoyama, 1998). Several specified all individual monoracial categories and aggregated multiracial mixes (Lesure-Lester, 2001; Martinez & Dukes, 1997) and others aggregated monoracial, including White and minority, and aggregated multiracial mixes (Phinney & Alipuria, 1996). The current study sought primarily to examine global relationships between multiracial young people and their White and monoracial counterparts. The Add Health sample size used by the current study, however, was so large that it was possible to examine the specific mixes of multiracial categories, e.g., White/American Indian, in comparison to their two constituent groups White and American Indian to a certain level. Doing so might have provided further insight into the comparative well-being between monoracial and multiracial groups. The

Wave III subset of 14,644 participants was categorized by the specific race responses of the participants and the results are shown in Table 14, in descending order of magnitude. It was evident that the cell sizes grew too small to allow a full analysis of all specific multiracial groups.

An analysis was conducted using only the larger cell multiracial groups. It was recognized that this could not be conclusive in evaluating specific multiracial mixes; however, it might provide an informative glimpse into specific multiracial mixes to the extent that data allowed. The analysis was limited to only specific multiracial groups with two races (since three would be more difficult to compare) and only those with at least 20 participants, compared to their constituent monoracial groups. Means and standard deviations are shown for these groups in Table 15.

A series of univariate analyses were run, with Tukey's post hoc analysis, comparing each specific multiracial group to its two constituent monoracial groups, e.g., Black/White participants were compared to the Black group and the White group across the dependent factors used in the current study from Wave III. The results are shown in Table 16.

In Table 16, the dependent factors are shown on the left hand side, and the specific multiracial groups are shown across the top. The first column, for example, represents the comparison of the multiracial Black/White (BW) participants with their two constituent monoracial groups White (W) and Black (B). The less-than < sign is used to indicate if there is a significant difference between the mean scores, where all item responses have been coded so that higher is better. Therefore, for depression³ for the

Table 14

Race specific categories using Wave III subset of 14,644

Race categories	<i>n</i>	percent
White	9,345	63.8
Black	3,173	21.7
Asian	1,088	7.4
American Indian	422	2.9
White/American Indian	282	1.9
White/Asian	117	0.8
Black/White	94	0.6
Black/American Indian	56	0.4
White/Black/American Indian	27	0.2
Black/Asian	20	0.1
White/American Indian/Asian	6	.0
American Indian/Asian	4	.0
White/Black/Asian/American Indian	4	.0
White/Black/Asian	3	.0
Black/American Indian/Asian	3	.0
Total	14,644	100.0

BW group, Black participants responded significantly lower (worse depression) than White participants, and Black/White participants did not differ significantly from either group. As can be seen the BW group did not differ from the other groups for any of the dependent factors used. The results are puzzling since the BW group, in comparison to the monoracial groups, had the highest mean score for self worth, delinquency, and physical limitations (recall that higher scores represent better well-being), and the BW group had the lowest mean score for depression and drugs (recall that lower scores represent lower well-being), yet in all of these cases the BW group was not found to differ significantly from the other two groups, even though the other two groups were found to differ significantly. The answer seems to be due to the standard error. In all cases the standard of error for the BW group post hoc pairwise comparisons was much larger than the standard error for the other pairwise comparisons. (Note: Because of the unequal n sizes of these groups, SPSS used the harmonic means provided by the Tukey Kramer post hoc analysis.)

For the White/American Indian group (WI), out of four factors where there were significant differences, the WI group was on the left hand side of the < sign indicating lower (worse) scores in three of these. In the case of the Asian/White group (AW) out of six factors where there were significant differences the AW group was on the left hand side of the < sign for three, and was not significantly different in the other three. The next two groups were minority/minority mixes. For the Black/American Indian (BI) group out of the two factors with significant difference, the BI group is on the right hand

side (better) for one and not significant in the other. For the last group, Black/Asian (BA), out of four factors with significant difference, BA group is not significant in all four cases. These results appear to support the findings reported in hypotheses 1.a and 1.b, that multiracial young adults do not differ meaningfully in well-being outcomes in comparison to their monoracial counterparts. There does not appear to be an overall pattern of lower well-being scores reported by specific multiracial mixes in comparison to their constituent monoracial groups. Race specific comparisons are useful for looking at those specific race combinations but less useful in drawing general conclusions about multiracial young people. In the current study, there were not sufficient numbers in all of the multiracial specific categories so that a complete analysis was not possible.

Table 15.

Means, Standard Deviations for Wave III outcomes for monoracial groups and selective multiracial groups

	White		Black		Asian		Am. Ind.		BW		WI		AW		BI		BA	
	<i>n</i> = 9,345		<i>n</i> = 3,173		<i>n</i> = 1,088		<i>n</i> = 422		<i>n</i> = 94		<i>n</i> = 282		<i>n</i> = 117		<i>n</i> = 56		<i>n</i> = 20	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Depression	.03	.63	-.06	.70	-.03	.67	-.11	.71	-.12	.72	-.10	.68	-.06	.66	-.03	.55	-.40	.98
Self worth	-.01	.72	.10	.75	-.10	.77	-.07	.78	.13	.65	-.22	.75	-.14	.73	.21	.61	-.25	.83
Maturity	.01	.68	.04	.70	-.19	.69	-.01	.70	.11	.67	.12	.67	-.26	.66	.15	.68	.08	.61
Delinquency	.01	.61	-.03	.75	-.00	.60	-.04	.80	.10	.27	.01	.53	-.06	.65	.01	.45	-.23	.65
Drinking	-.05	.86	.12	.54	.05	.78	.03	.73	-.01	.65	-.02	.82	-.16	1.10	.01	.61	.10	.40
Drugs	-.02	.76	.05	.58	.05	.65	-.00	.74	-.12	.82	-.09	.92	-.28	1.27	.02	.44	-.08	.64
Phys Limits	.01	.69	-.03	.83	.07	.65	-.10	.92	.04	.65	-.15	.75	-.07	.76	.09	.51	.01	.37

Note. All *M*'s and *SD*'s are calculated from standardized z-scores. BW = Black/White; WI = White/American Indian; AW = Asian/White; BI = Black/American Indian; BA = Black/Asian

Table 16.

Significant ANOVA results shown across Wave III dependent factors for specific multiracial groups

	BW (n=94)	WI (n=282)	AW (n=117)	BI (n=56)	BA (n=20)
Depression3	B < W (BW n/s)	I, WI < W	A < W (AW n/s)	n/s	n/s
Self worth3	W < B (BW n/s)	WI < I, W	A < W (AW n/s)	I < B, BI	A < B (BA n/s)
Maturity	n/s	I, W < WI	AW, A < W	n/s	A < B (BA n/s)
Delinquency	B < W (BW n/s)	n/s	n/s	n/s	n/s
Drinking	W < B (BW n/s)	n/s	W, AW < A	I < B (BI n/s)	A < B (BA n/s)
Drugs	W < B (BW n/s)	n/s	AW < W < A	n/s	n/s
Physical Limits	B < W (BW n/s)	WI, I < W	W < A (AW n/s)	n/s	B < A (BA n/s)

Note. BW = Black/White; WI = White/American Indian; AW = Asian/White; BI = Black/American Indian; BA = Black/Asian

n/s = not significant at $p=.05$ level.

Item responses were all coded so that higher was better, therefore, the < sign indicates the relationship between the means (standardized z-scores) of the various groups.

Chapter 6 - Discussion

The current study sought to answer two primary questions. First, do multiracial young adults continue to report lower levels of well-being relative to their monoracial peers? If true, this finding would be consistent with previous studies about the multiracial experience during adolescence and would suggest that these problems are chronic. If not true, then perhaps the difficulties experienced by multiracial adolescents are a passing phase of development during the teenage years but do not persist into adulthood. Second, are there factors during adolescence that can predict better well-being outcomes for multiracial young adults? Finding such factors could be a key step in defining intervention strategies in working with multiracial young people. This study also examined the role of attending college and the relationship between racial identification and well-being outcomes of multiracial young adults.

The Add Health database along with previous research provided a unique opportunity to study a large, national sample of young people at two points in time, once during adolescence and again as young adults. The discussion section will focus on findings related to: multiracial young adults and well-being; adolescent predictors of well-being in multiracial young adults; multiracial identity development and well-being, implications for the field, limitations and areas of future study. These topics are covered in turn below. First, however, a brief summary of the key findings is provided next.

Summary

Multiracial young adults, 18 to 26 years old, reported statistically higher levels of depression, drug abuse and physical limitations, and lower levels of self worth than their

monoracial minority and White counterparts. Effect sizes (partial eta squared), however, were so small, varying between .001 and .003, that these statistical findings did not represent meaningful differences. Therefore, the current study did not find clear evidence of continuing difficulties of multiracial young adults relative to their monoracial peers. These findings in which scores for multiracial young adults did not differ in a meaningful way from the scores of their monoracial minority and White counterparts is somewhat tempered by the overall negative pattern evident across the well-being outcomes of the current results at Wave III, i.e., multiracial young adults either scored lower (worse) or not significantly different than their monoracial minority and White peers, while in no cases did multiracial young adults report higher scores than their counterparts. Also, when viewed within the context of previous Add Health researchers who studied the same sample as adolescents and found consistent patterns of negative well-being (Milan & Keiley, 2000; Udry et al., 2003), the current outcomes should be interpreted cautiously. However, it is important to note that previous Add Health researchers did not present effect sizes which may have tempered their findings of negative well-being in multiracial adolescents.

To the extent that problems might continue from adolescence the current study found some intriguing clues toward improved well-being of multiracial young adults by examining the relationship between factors at adolescence and outcomes at young adulthood. An important finding suggests that psychologically well adjusted multiracial adolescents, measured by the presence of positive self worth and the absence of depressive symptoms, seems to be an important predictor of better well-being outcomes

as young adults. While this is true for adolescents of all races it appears to be a particularly important aspect for multiracial young people. Better psychological adjustment distinguishes multiracial adolescents who go on to college from their multiracial counterparts who do not, even if other environmental factors related to family and school are not significantly different. This is not true for the general population where better adjustment and better environmental experiences (family and school) differentiate college attending from non-college attending adolescents. College attendance is important since almost across the board for all race groups, college attending young adults report better well-being outcomes than non-college attending young adults.

An environmental factor, living with both biological parents during adolescence, was found to be significant. This item accounted for greater variance in the well-being of multiracial young adults than it did for monoracial young adults. More will be said about this later in the chapter, but it might be conjectured that both parents transmitting their diverse heritages to the multiracial child as well as modeling an interracial relationship would provide a healthier environment for developing a positive sense of self.

Racial identity development has been perhaps the most studied topic in the multiracial literature (Jacobs, 1992; Kerwin & Ponterotto, 1995; Kich, 1992; Poston, 1990; Rockquemore & Brunsma, 2002). The underlying assumption of stage theories of multiracial identity development has been that how a multiracial person identifies racially is strongly linked to their well-being and adjustment (Brown, 1995; Aikins, as cited in Mukoyama, 1998). The current study did not investigate racial identity directly, but by

examining the relationship between the self-selection of racial categories during Waves I and III and well-being outcomes, did not find evidence to support this underlying assumption. There was no correlation found between racial identification selected by multiracial young adults (monoracially or multiracially) and well-being outcomes. Since the current study did not directly investigate multiracial identity the current findings only suggest that further exploration of stage and other theories of multiracial identity is warranted to aid in understanding the relationship of multiracial identity, identity development and well-being outcomes.

The topics above are covered in more detail below. The current findings based on the hypotheses will now be discussed within the context of the existing literature.

Multiracial Young Adults and Well-being

The well-being outcomes reported by multiracial young adults were principally measured by the analyses for hypotheses 1.a and 1.b. The two hypotheses were predicated on the assumption that the multiracial population of young adults as a whole (hypothesis 1.a) continues to experience lower levels of well-being relative to their monoracial minority and White counterparts similar to results found when they were adolescents; however, the college attending subset of multiracial young adults (hypothesis 1.b) do not experience such differences, i.e., the college experience in providing greater opportunities for exploration of self identity and avenues for social contact with others who may share similar (and different) backgrounds, enables multiracial young adults to experience well-being at levels comparable to their monoracial counterparts. The findings of the current study suggest that the multiracial population of young adults as a

whole as well as the college attending subset do not differ meaningfully from their monoracial minority and White peers on well-being outcomes. Udry et al. (2003) and Milan and Keiley (2000), and to a lesser extent Cooney and Radina (2000) reported lower well-being outcomes using the same Add Health sample that was used in the current study when the participants were adolescents (Wave I). The current study results suggest that in the time between Wave I and Wave III well-being outcomes had improved for multiracial young people relative to their monoracial minority and White peers. This may indicate that the multiracial adolescent difficulties are more developmental than chronic.

In general the literature seems very mixed in studies of multiracial young people and well-being. Udry et al. (2003), Milan and Keiley (2000), and Cooney and Radina (2000) did not report lower well-being for multiracial adolescents across all factors. Udry et al, who examined specific multiracial mixes (e.g., Black/White) found an overall pattern of lower well-being measures but not in all cases or for all multiracial mixes, and while they didn't report effect sizes it was clear that a number of results were weak or modest. For example, when they controlled for age, sex, GPA and several family variables, they reported that a number of their findings of lower well-being for multiracial adolescents were no longer significant at the $p = .05$ level. Cooney and Radina concluded that their results were mixed regarding lower well-being for multiracial adolescents.

Other studies using data sets other than Add Health that have focused on the self esteem of multiracial young people have varied in their conclusion from finding no problems (Gibbs & Hines, 1992; Field, 1996; Mass, 1992) to finding lower self esteem (Bracey et al., 2004). Shih and Sanchez (2005) reviewed 28 qualitative studies and 16

quantitative studies that included multiracial participants in order to investigate the pattern of findings across the issues of identity development, depression, problem behaviors, peer relationships, school performance, and self esteem. The results they found were mixed. Among the quantitative studies they found no clear and strong patterns. Among the qualitative studies they found greater negative patterns for multiracial participants reported in those studies involving clinical samples and no evidence of negative patterns in the studies involving non-clinical samples. Their overall conclusion is that when excluding clinical samples, multiracial individuals appeared to be just as well-adjusted as their monoracial peers on most outcomes. The authors suggest cautious interpretation of their findings in that they did not conduct a meta-analysis as originally planned because of the wide heterogeneity in the quantitative studies.

In general it appears that multiracial young adults seem to be functioning as well as, or very close to, their monoracial minority and White counterparts. The current study's findings suggest that the lower well-being reported by multiracial adolescents may have been largely resolved by young adulthood. Even though during Wave III multiracial young adults reported scores across most outcomes lower than their monoracial minority and White counterparts, these differences were not meaningful. How might the relationship of multiracial young adults to their monoracial and White counterparts change over time? The Add Health website mentions the possibility a future survey of the Wave III participants. An interesting future research project would be to again examine well-being outcomes similar to the current study in the next Wave or to examine well-being in different ways.

In general, college attendance did not change the relationship of reported well-being between multiracial young adults and their monoracial peers as hypothesized. While college attending multiracial young adults reported higher well-being than their non-college counterparts this was true of the other racial groups as well. Is the college experience uniquely helpful to well-being outcomes for multiracial young adults? The literature has been mixed on this, to some extent supporting the college experience as an opportunity for greater self exploration of one's multiracial heritage (Fukuyama, 1999; Williams, 1999) while also reporting on the difficulties of college life similar to earlier adolescence (Gillem et al., 2001; Renn, 2000; Twine, 1996). As multiracial student organizations continue to be established on college campuses, one can imagine greater numbers of multiracial college students taking advantage of such venues to assert their identity and interact with others who share their experience (Renn, 2000). The author of the current study is the advisor for a college multiracial student group that was established four years ago and has been contacted by students at several other nearby institutions seeking to establish similar organizations. This trend is likely to continue as multiracial students find themselves increasingly comfortable in affirming their unique racial identity. The current study was limited in that the available data could only identify attendance at college, but not provide much information about the actual experience of college. This is discussed further under limitations.

Adolescent Predictors of Well-being in Multiracial Young Adults

SEM analysis. The SEM analysis in hypothesis 2 confirmed that there are factors during adolescence for participants across all racial groups that positively correlate to

well-being outcomes as young adults. While the number of factors during adolescence that were investigated had to be reduced, the factors that remained provided an informative model of the influence of these factors on well-being outcomes of multiracial young adults as well as their White and monoracial counterparts. Even though these findings were significant across all race categories, they none-the-less support the concepts found in Root's (2003) ecological model concerning identity development and adjustment for multiracial young people. Root conceptualized multiracial identity development to be influenced by a broad range of factors including traits (e.g., temperament), family functioning and influences (e.g., sense of belonging and acceptance), and community attitudes and racial socialization (e.g., school, friends, neighborhood). Root's model emphasizes the environmental influences on both the micro and macro levels. Several aspects of the SEM structural model findings stand out.

Psychological adjustment. First, the psychological adjustment constructs at adolescence (depression, acceptance) and as young adults (depression, self worth) have the highest structural path values in the SEM, suggesting the power of this perhaps obvious relationship, i.e., psychological adjustment as a young adult is significantly predicted by psychological adjustment as an adolescent. The strength of this connection was evident for all racial groups, with the path coefficient highest for multiracial adolescents. This strong relationship between adolescent and young adulthood psychological adjustment is important since lower psychological adjustment relative to peers for multiracial adolescents was perhaps the clearest, most consistent finding among the Add Health researchers of the adolescent sample (Cooney & Radina, 2000; Milan &

Keiley, 2000; Udry et al., 2003). While the current study did not find meaningful differences in psychological adjustment in multiracial young adults relative to their peers, the SEM findings point toward the need to focus on intervention strategies to improve psychological well-being during adolescence or even earlier to try and prevent negative patterns from either continuing or evolving.

Biological parents. Another informative aspect of the SEM relates to the findings concerning the Wave I item - intact families with both biological parents. The structural path coefficient between this item and Wave III overall well-being was highest for multiracial participants (.13), with monoracial minority next (.08) and White participants the lowest (.02). This suggests that whether a multiracial adolescent lives with both biological parents is a more important predictor of well-being outcomes as a young adult than it is for her/his monoracial minority and White counterparts. This finding is supported by the Cooney and Radina (2000) findings in their study of the Wave I participants. They limited their study to only adolescents living with both biological parents and found that multiracial participants did not differ from their monoracial counterparts on many adjustment factors. Conversely the negative affect on the multiracial child of living with only one biological parent, particularly if the break-up was adversarial, has been pointed out by other researchers (Root, 1998). Neither of these studies, however, examined the actual benefit on well-being outcomes of a multiracial adolescent living with both biological parents, nor examined whether there were significant differences between multiracial and monoracial youth on this factor. The SEM analysis in the current study examined both the explicit benefit of biological parents

to the multiracial adolescent as well as the quantitative difference of this factor in relation to monoracial youth. The current study doesn't, however, provide insight into why this factor is so important to multiracial children. Perhaps it stems in part from the positive benefit of having both biological parents present in which each can transmit their cultural heritage to the multiracial child. This may lead to greater self esteem and a sense of identity with both parents and eventually a stronger integration of both parents' heritages into the child's sense of self. There may be alternative explanations. For example, do interracial couples separate more readily than monoracial couples, leaving only the most healthy family environments with intact interracial couples? It must be kept in mind that many children are raised in very healthy environments by adults other than the biological parents. Whatever the reasons underlying the benefit of living with both biological parents, probing the parental environment of a multiracial client may provide important clues to the help provider about the influence of parents. Future research might examine the specific characteristics of how an intact interracial family creates a healthy environment.

College versus non-college. As mentioned previously college attending young adults of all races, in general, reported better well-being outcomes than their non-college attending counterparts. Under the additional analyses section these two groups were compared as adolescents to see if the difference in well-being existed before college. In general these results indicated that college attending participants were faring better than their non-college attending participants when both groups were adolescents. This diminishes the likelihood that the higher well-being outcomes of college attending

participants is due to the college experience, rather, higher well-being as adolescents seemed to predict a greater probability of attending college.

The multiracial subgroup differed from the whole sample in this analysis in an intriguing way. During adolescence the multiracial group that would go on to attend college reported higher levels of psychological adjustment (as measured by depression, self worth), but no difference in environmental factors (e.g., school, family) in comparison to multiracial adolescents who did not go on to attend college. This is puzzling in the context of a preponderance of literature which points out the importance of environmental factors in the life of a multiracial child, including: family (Bruno et al., 1996; Radina & Cooney, 2000), schools (Collins, 2000; Luke, 1994), friends (Cauce et al., 1992; Gibbs & Hines, 1992), and neighborhood (Mass, 1992; Twine, 1996). Root (2003) cites all of these influences as important in her ecological model. It must be noted that the current study limited the environmental factors during adolescence to school and family (friends and neighborhood factors did not survive the SEM measurement model testing). Since there were a limited number of environmental factors considered in the current study the differences identified between college attending multiracial youth and their non-college attending multiracial counterparts should be viewed cautiously. The factors available were constrained to the items available in the archival, Add Health data. Items directly related to the multiracial experience of the environment by multiracial youth may have better explained the difference between college attending and non-college attending multiracial youth. Given these caveats, this analysis may be providing a glimpse into the significance of temperament or personality factors as enduring

characteristics in spite of more temporal environment factors. The field of psychology has long been aware of the durable facets of the person and the notion of baseline or set points in the personality (Robbins & Kliever, 2000). Perhaps the multiracial adolescents who exhibited better adjustment had attributes of their personality in place prior to adolescence that enabled them to thrive in spite of environmental challenges.

Correlation matrix. The correlation matrix of predictor factors during Wave I and outcome factors during Wave III (Table 6) for multiracial young people also reflects the strength of the relationship between adjustment as an adolescent and adjustment as a young adult. The highest (over .20) correlations between Wave I and Wave III were between depression at I (factors A and B) and III (.28, .28 respectively) and self worth at I and III (.24). This supports the findings of the SEM analysis in identifying the significant connection between psychological adjustment during adolescence and psychological adjustment during young adulthood. The correlation matrix also provides some additional support for the SEM constructs at Wave III. As young adults (Wave III) depression and self worth were highly correlated (.42), and health was correlated to depression (.28) and self worth (.32). This latter relationship makes sense as there are many physical and somatic manifestations of depression.

At Wave III drinking and drug abuse are correlated (.54) and both are correlated to delinquency (drinking .20; drugs .21). This group of delinquency, drinking and drugs, however, is not strongly associated with the other Wave III factors of depression, self worth, health and physical limitations. The current study did not find meaningful differences between multiracial young adults and their peers related to maladaptive

behaviors (delinquency, drinking and drug abuse). How do these findings compare to previous findings from Milan and Keiley (2000), Cooney and Radina (2000) and Udry et al. (2003) when the participants were adolescents?

For delinquency, Milan and Keiley (2000) found more conduct problems among multiracial youth as well as school problems (e.g., trouble getting along with teachers) and Cooney and Radina (2000) found more delinquency among girls and more evidence of school suspensions among both boys and girls. For drinking, Udry et al. found evidence of problem drinking among multiracial adolescents. For drug abuse, Cooney and Radina aggregated cigarettes, alcohol, marijuana, and other illegal drugs into a factor called substance abuse, and found no differences between multiracial adolescents and their monoracial peers. Udry et al. (2003) found evidence of greater smoking problems among multiracial adolescents. Taken together the previous and current findings suggest that multiracial young adults may have improved their functioning generally in terms of delinquency, drinking and drug use. What might be behind such an improvement? The delinquency change is perhaps the clearest comparison since many of the items between Waves I and III were the same (see Appendix C for a comparison of these items). What might lead to improved functioning in terms of delinquency? It is possible that the increased stress to belong and fit in during the teen years can lead to more delinquency. Nishimura (1995) observed that multiracial youth may exhibit this stress through poor school performance, off-task behavior, and poor social skills. Root (1998) describes what she calls the hazing challenges that multiracial adolescents might experience as a way to test if they belong to a peer group. In order to conform and belong, adolescents may feel

the pressure to act out in ways that earn them approval (Gibbs, 1987). The Add Health web site points out (http://www.cpc.unc.edu/projects/addhealth/design_focus/wave3) that there are dense peer groups associated with school based networks during adolescence. By young adulthood, however, these networks are likely to have given way to smaller networks of friends, with college and work contexts becoming more important. These changes might explain the improvement in delinquency.

Parental income. It was earlier suggested that, for all race groups, higher well-being as a young adult was not due to college attendance since the adolescent participants who went on to attend college had higher well-being as adolescents. Therefore, parental income at Wave I was examined as a possible, alternative explanation of higher well-being. While parental income at Wave I was found, perhaps as expected, to significantly predict college attendance at Wave III, parental income did not predict higher well-being at Wave III. It is interesting to note that the scores for four well-being outcomes of young adults went down (got worse) as parental income went up - maturity, delinquency, drinking, and drug abuse. Therefore, parental income did not aid in explaining better well-being outcomes as young adults.

Factors affecting adolescent well-being. The current study suggests that multiracial adolescents who are psychologically well adjusted are more likely to be better adjusted as young adults and to go to college. An unanswered question is what factors might be leading to these healthier multiracial adolescents? As mentioned earlier, it might be due to temperament, i.e., inherent and enduring aspects of the individual that bear out as they grow. Another speculation is that environmental conditions during the

childhood years that precede adolescence are major shapers of the child's sense of self and these conditions set up self-perpetuating, recurring patterns. The notion of recurring patterns seems to be widely recognized throughout counseling psychology. Many psychodynamic and psychoanalytic theories posit this as a primary aspect of their theory (Wachtel, 1997). The patterns, often set up early in life, persist because a person's pattern of experiencing and interacting with others tends to continually recreate the old conditions again and again. Teyber (1997) states that the 'bedrock of all interpersonal dynamic treatment approaches is identifying the repetitive relational patterns that are central to the client's problems and distress' (p 50). Therefore what we see in the adjustment patterns of adolescents might be mostly a reflection of patterns established much earlier in life. An important area of future research would be to examine the early childhood experiences of multiracial children in more depth.

Race specific analysis. The race specific analysis was helpful in providing a glimpse into the relationship between individual multiracial mixes and their constituent racial groups in terms of well-being outcomes as young adults. The differences are slight and are mixed, i.e., there is some evidence of lower well-being but an even greater preponderance of no differences. This supports the findings in the current study of no meaningful (measured by effect sizes) differences in well-being outcomes between multiracial young adults and their monoracial minority and White peers. An area of future study might more comprehensively examine the well-being outcomes of specific multiracial mixes in relation to their constituent racial groups for young adults.

Multiracial Identity Development and Well-being

Hypothesis 3 attempted to examine the stage theories of multiracial identity development which hypothesize that people move through monoracial phases to eventually develop a multiracial identity that integrates their multiple heritages and leads toward better adjustment (Jacobs, 1992; Kerwin & Ponterotto, 1995; Kich, 1992; Poston, 1990). However, no differences in well-being outcomes were found among the three paths of racial identification from adolescence (Wave I) to young adulthood (Wave III) defined in hypothesis 3: monoracial-to-multiracial; multiracial-to-monoracial; multiracial-to-multiracial. The one exception was drug abuse, and the multiracial-to-monoracial group reported the highest (best) scores when they were hypothesized to score the lowest of the three developmental paths across the outcomes.

The current study only examined racial identification and not racial identity and identity development. The lack of support for hypothesis 3, however, questions how best to examine the widely held premise of the stage theories that posit that the development of a multiracial (versus monoracial) identity leads to healthier adjustment and well-being. These stage theories are almost universally cited in multicultural literature reviews. The empirical research that actually supports the stage theories, however, is very meager. Brown (1995) was one of the few studies that reported strong findings. He found among 119 multiracial young adults 18-35 years old that they reported a clear trend from elementary school to post-high school of moving from a monoracial identity to a multiracial identity, and a correlating decrease in inner conflict and emotional turmoil. There are also many anecdotal references in the literature that support the notion that a

multiracial identity is a healthy racial identity option (Collins, 2000; Aikins, as cited in Mukoyama, 1998; Williams, 1999). Yet it should be noted that Brown's (1995) study was conducted more than 10 years ago and more recently several researchers have questioned the stage approach (Renn, 2000; Rockquemore & Laszloffy, 2003). The more recently developed concurrent theories (Root, 2003) do not posit the same premise of staged development and focus more on the fluid nature and variety of ways multiracial people can and do identify. These multiple ways of identifying have all been seen as potentially psychologically healthy (Field, 1996; Root, 2003). Rockquemore and Laszloffy, who studied Black/White young adults, contended that a multiracial identity choice was not necessary for healthy adjustment, rather, it was whether the choice was validated (accepted) by others, a finding reinforced by other researchers (Field, 1996). The current findings are more supportive of the concurrent theories than the stage theories.

Another surprising finding in hypothesis 3 was the greater number of participants moving from selecting a multiracial- to-monoracial identification (from Wave I to Wave III) than the reverse. It is important to keep in mind that the current study only examined the racial identification categories selected by participants rather than directly assessing the complex construct of racial identity and identity development. Given that limitation, i.e., to the extent that racial identity is reflected by racial identification, the current findings seem opposite to what might be predicted by the stage theories. There are several alternative ways to view this finding.

From a negative perspective, this could reflect young people ceding to society's

dictates. Brunnsma and Rockquemore (2002) reported that among the 177 Black/White young people in their study who reported having a multiracial identity, more than half said they felt their identity was invalidated by the environment around them in that they were treated exclusively like a Black person. Rockquemore and Laszloffy (2003) discuss this painful experience in the case study of an adolescent Black/White girl who repeatedly found color lines being drawn around her and the insistent push to choose even though she felt that she was multiracial. Gillem et al. (2001) report on their case study of a Black/White college young woman who identified multiracially as a pre-adolescent, but her peer and environmental experiences during the teen years shaped her current identification as a Black person. It is interesting that many of the examples of the pressure toward a monoracial identity reflect experiences of Black/White young people. This raises the question of the difference in experiences depending on one's multiracial mix, i.e., there is evidence that non-Black mixes such as Asian/White and White/American Indian perceive themselves as much more able to adopt a White identity. For example, the Add Health Wave I participants who reported being multiracial were asked to identify the best single race that described them. Harris and Sim (2002) studied these responses and reported that 17.1% of White/Black adolescents answered by selecting White, while 47.4% of White/Asian adolescents and 85.9% of White/American Indian adolescents selected White. Rockquemore and Laszloffy contend that, while there are similarities in the multiracial mixes, the Black/White multiracial people have unique experiences in contrast to their multiracial counterparts due to three factors: greater social distance between the Black and White races; legacy of slavery and the one-drop rule; and

the legacy of skin color stratification and physical appearance.

From a more positive perspective, the hypothesis 3 results support the growing body of evidence for the fluidity and dynamic nature of racial identity among multiracial people as opposed to monoracial people (Hall, 2001b). Quite simply, race as a psychosocial construct may be perceived differently by multiracial people than monoracial people. The monoracial lense can be seen in a comment by Udry et al. (2003). In reporting on the large numbers of multiracial adolescents in the Add Health Wave I data that changed their racial designations between the school survey and the in-home survey versus monoracial children, the authors conjectured that this might be due to a lack of a fully developed self-concept. The multiracial lens is reflected in Root's (2003) comment about the same phenomena which she calls situational race identity. She contends that it is evidence of a flexible and adaptive attitude toward racial identity, and points out that this attitude toward race by multiracial people is often misunderstood by researchers. Root (2004) has also observed that in terms of generational cohort, the multiracial generation that was born after 1980 has grown up in a much more diverse environment and often encounter other multiracial counterparts. They feel more empowered about racial self-definition and the notion of symbolic race has emerged among some, in which they acknowledge their multiple heritages but don't have much attachment to them. Therefore, for example, White/Asian young people may identify with the White label, particularly if their peer group is predominantly White, without feeling they have denied their other heritage. While this more flexible view of racial identity doesn't explain the trend from multiracial to monoracial identification among multiracial young adults found

in the current study, it does suggest that such a change may be due to multiple factors and may not be associated with negative causes.

Another explanation for the trend found in hypothesis 3 toward a monoracial identification by young adults is that it could reflect an important developmental step in identity solidification that is more congruent with the view of self, how one is viewed by others and in the general environment. Young adulthood could be an important period between the dependence of childhood and the turmoil of adolescence, and the transition to full adult independence as young people sort out their own choices. Williams (1999) as a Black/White person shared her own experience of this path. As an adolescent she keenly felt the rejection and humiliation in her predominantly White neighborhood “I began to understand why I was not invited to friends’ birthday parties. I learned that my entire being was reduced to one thing: not White.” (p. 32). In college she began to immerse herself in Black culture. “I dove into Black literature and poetry. I devoured Black history...I was Black.” (p. 33). Later, in adult life she claimed her right to be multiracial “[the] Courage to claim one’s own experience despite resistance and judgment from others allows biracial people like me to begin to forge an authentic self.” (p. 34). So the shift toward a monoracial identification found in the current study may reflect a point in time along a longer developmental path (Hall, 2001b) that has yet to fully play out in the lives of the Wave III young adults. This would be a fascinating followup study should the Add Health project move forward with future waves.

Root’s (2003) ecological model also provides a context for assessing the trend from a multiracial identity as adolescents to a monoracial identity as young adults. First,

while Root's model does not support the prevailing stage theories, her model does support a developmental framework for racial identity that envisions the salience of different aspects of identity to change over time. Jones and McEwen (2000) also reported on the relative salience of different dimensions of identity at different times. These approaches might suggest that the salience of race and the meaning of choosing a racial identity during young adulthood could be different than during adolescence and may lead to changes in how racial identity is expressed.

There are several aspects of multiracial identity in relation to the data used for hypothesis 3 that suggest a cautious interpretation of the results. First, only well-being outcomes at young adulthood were compared, not the change over time from adolescence. Such a longitudinal comparison was not possible since the same items (and the interpretation of those items by participants) were not used at both Wave I and Wave III. Therefore, hypothesis 3 did not truly track well-being outcomes related to racial identity development over time; rather, it examined these outcomes at one point in time. Second, several researchers have reported on the phenomenon that many multiracial people express of having a public and private racial identity. Brown (1995) reported, for example among the Black/White participants in his study, that while 64.7% reported choosing the Black racial category on forms, 66.4% would define themselves multiracial in the absence of societal pressure (i.e., messages received by the participants in regard to their racial group membership from family and friends, acceptance by Blacks within their social milieu, and larger social environmental cues). To the extent this difference between public/private identity occurs, it complicates drawing connections from the

public box checking on forms to the internalized self concept. Root (2004) reports on how the multiracial generation born after 1980 (essentially the same generation surveyed in the Add Health project) can be comfortable checking one box yet not feel they have abandoned their other racial heritage. Third, in line with the issue of public versus private identity and as mentioned previously, hypothesis 3 used the racial identification reported by participants and did not directly assess the complex construct of identity or identity development. To be sure checking of the race category boxes has not been a trivial issue in the multiracial community. There was significant effort by many associations and groups to convince the Census to change its approach in 2000 to allow multiple race box checking. Therefore, on the one hand checking the box has received a lot of attention and analyzing this information is informative about how multiracial people view themselves. However, given that some multiracial people distinguish between their public versus private racial identities, the situational nature of race identity among many multiracial people, and the multiple ways in which multiracial people define themselves, and the distinction between racial identity and selection of a racial category (Brown, 1995; Brunson & Rockquemore, 2002; Harris & Sim, 2002; Root, 2003), mean that interpreting the relationship of box checking to racial identity and identity development, and healthy adjustment and well-being must be undertaken with caution.

Limitations

Limitations of the current study are identified in this section. These include the potential for response bias due to participant selection; reduced information due to aggregating racial categories; interpretation of the Hispanic category; difficulties in racial

identification; limits on using college attendance as a proxy for college experience; disadvantages of using the archival Add Health data; and limitations in the SEM analysis.

These are discussed further below.

Response bias. While the Add Health researchers took great pains to create initial samples that were generalizable to the targeted (7th-12th grade) U.S. school population, the Wave III followup exhibited several response biases. In comparing those who were eligible to participate in Wave III compared to those who actually participated, the Add Health researchers found there was no statistically significant difference in response rates for type of school (public, private, or catholic) or for schools with different sizes of enrollment. However, statistically significant differences, though modest, were found in metropolitan area (urban, suburban, rural), percent White enrollment, and region of the country. They found that Wave III respondents were more likely to have been sampled from rural, predominantly White schools, and less likely to have attended a school in the Northeast.

The participants who were retained in the Wave III and Wave I-III subsets defined in the current study were compared against the participants who were not retained in order to assess non-response bias. The participants who were not retained were missing key demographic data, a large quantity of items, or responses that were essential to the study objectives. The retained subsets were found to be comprised of participants who were more White, college attending and female than the participants who were removed. The retained subsets, however, were very similar demographically to the initial Wave III sample (see Table 2). While an analytical comparison of the Wave III and Wave I-III

subsets and the full Wave III sample was not run, the mean scores of items randomly selected from the Wave I factors (e.g., depression, self worth, school experience, family experience) and Wave III factors (depression, self worth, delinquency, drinking, drug abuse, general health and physical limitations) were compared across these three samples (Wave III, Wave I-III and full Wave III sample) and found to be virtually the same. So while the subsets used in the current study cannot be presented as generalizable they are none-the-less representative of a broad cross section of the U.S. adolescent and young adult population incorporating regional, urban/rural, school size and type, percent White/Black, and curriculum differences. The subsets used in the current study overcome many of the limitations in previous quantitative research on multiracial participants that have typically included small, convenience samples from limited geographical locales.

Aggregating racial groups. The current study intended to use, and build upon, the results from three important works that used the Add Health data to research the multiracial experience: Cooney and Radina (2000), Milan and Keiley (2000), and Udry et al. (2003). The current study followed the methodology for defining the racial grouping of participants in a manner consistent with two of these studies, Cooney and Radina, and Milan and Keiley. The methodology aggregated the monoracial minority participants into one group (included Black, Asian and American Indian), and aggregated multiracial participants into one group (versus defining multiracial specific combinations, e.g., Asian/White, American Indian/Black). White participants were maintained as a separate group. A limitation in this approach is that it did not allow specific relationships between individual racial groups to be examined.

The aggregate method was chosen for two reasons. First, it served the purpose of the current study to examine the multiracial participants as a whole in order to reach conclusions about their overall well-being. This was consistent with the goals of Cooney and Radina (2000) and Milan and Keiley (2000). Udry et al. (2003), in contrast, broke down participants into specific multiracial combinations (e.g., Asian/White) and compared these groups to their constituent monoracial groups (e.g., Asian and White). While providing the value of more specific information, Udry et al.'s approach did not enable them to reach global conclusions about multiracial participants.

The second reason that the aggregate method was chosen related to the practical consideration of insufficient cell sizes for all of the specific multiracial combinations. The current study had sample sets more comparable to Cooney and Radina (2000) and Milan and Keiley (2000). Udry et al. (2003) used the full Add Health database which included, after reductions made by the authors, 83,135 in-school respondents and a follow-up at-home of a subset of 18,924 respondents. The smaller subset of 18,924 had cell sizes as small as $n = 6$ (Asian/American Indian). The authors did not disclose any limitations in power. Milan and Keiley used a public-use data set (smaller than the full data set) which included 6,504 respondents. Cooney and Radina also used the public-use data set and produced a further subset of 2,901 participants for their study. The current study used two subsets of 14,644 and 8,978. Even in the larger subset of 14,644, specific racial mixes became as small as $n = 4$ (see Table 14), and the SEM analysis relied wholly on the smaller subset of 8,978.

The use of aggregated data enabled the current study to focus on the issues of

well-being and comparison related to the overall multiracial young adult population. It enabled investigating global questions about the multiracial experience and drawing analytically based conclusions which would not be feasible if the data were analyzed at the level of specific racial mixes. Indeed, one of the weaknesses of the study by Udry et al. (2003) is that the authors attempted to make overall conclusions about the multiracial population when they had no direct analyses to support these conclusions.

Hispanic category. The Add Health data used by the current study followed the practice of the U.S. 2000 Census in treating the Hispanic category separate from race. The initial concern for the current study was that many Hispanic participants who shared the multiracial experience in reality (e.g., Mexican/Black; Latino/Asian) if not technically according to the Census would be excluded from being defined as multiracial in the current study. This concern was lessened after investigating the 2,477 participants in Wave III who reported being Hispanic. Of these participants, 91.6% marked one or more race categories in addition to marking the Hispanic category. This suggests that these participants viewed their race as something separate from being Hispanic. From a practical standpoint, if the current study had treated Hispanic as equivalent to and mutually exclusive of the race categories, then 91.6% of the participants reporting Hispanic would have been included in the multiracial group, changing the demographics of the multiracial group significantly.

Racial identification. There is reoccurring evidence in the literature of the fluid and multiple ways multiracial people identify racially (Harris & Sim, 2002; Rockquemore & Brunnsma, 2002). They might identify monoracially, multiracially or change depending

upon the situation (Renn, 2000; Root, 2003) and many express a distinction between their public versus private racial identity (Brown, 1995; Root, 2004). Root's (2003) ecological model suggests there can be differences developmentally and generationally in how multiracial people see their racial identity. Jones (1997) speaks about the complex way the meaning of race is woven into one's identity. This creates a basic problem of how to determine who is multiracial and the meaning of being multiracial. The current study followed accepted practice in the literature for racial identification, i.e., self reported selection of racial categories, and conformed to the U.S. 2000 Census approach, however, it was beyond its scope to further explicate this complicated issue. An area of future research would be to examine more thoroughly the definition of the multiracial category and the characteristics or bases for inclusion in this category. A helpful addition to the knowledge in this area would be a qualitative investigation of the lived experience through the eyes of multiracial people with a specific focus to define the unique characteristics of this racial category.

College attendance. College attendance was used as a proxy for the college experience to see if it affected well-being outcomes of young adults. College attendance, however, included two year community colleges, commuters, distant learners and no doubt many other students who had limited access to the full breadth of the college experience. The value of the collegiate experience to multiracial young adults has been framed in the literature around finding a community of other multiracial students (Renn, 2000), claiming a positive ethnic identity (Fukuyama, 1999), and experiencing more wholeness and immersion in culture (Williams, 1999). There were no data items in the

Add Health data set that would have enabled the current study to differentiate the quality of the college experience of the participants in order to more accurately assess its impact on the well-being of multiracial young adults. College attendance did define higher well-being outcomes among Wave III participants so it obviously reflected some measure of difference. However, this difference could be traced back in general to these participants when they were adolescents during Wave I. Therefore, the current study did not find any potential mediating influence linked to college attendance as might be conjectured based on some of the personal accounts mentioned previously by Fukuyama and Williams. A future, qualitative study might focus on discovering if there are in fact specific characteristics of the college experience that correlate to improved well-being outcomes.

Archival Add Health data. There are disadvantages to using the Add Health archival data. The primary limitation is that the data were predetermined. Add Health collected a wealth of data related to areas of research interest in the current study regarding multiracial people, i.e., psychological adjustment, behavior and health outcomes, and environmental factors that might influence these outcomes. The sheer size of the item set - Wave I had 2,820 variables and Wave III had 2,283 variables - ensured a reasonable selection of relevant data. However, as illustrated by the limitations on using college attendance as a proxy for college experience, the archival data was not tailored specifically to the research questions in the current study. Another limitation of the archival Add Health data that was used in the current study is that it consisted entirely of self reported responses to items that were not part of intact scales. Multitrait-multimethods of data collection (e.g., self report, behavior, other's observations) are

superior to single sources of information because they can help to establish construct validity (Ponterotto, 1996). The current study used several methods to validate the factors used, including: determining the alpha reliability of summed scales; using confirmatory and exploratory factor analysis; and testing different measurement assumptions using SEM.

The archival Add Health data, however, had several important advantages. It represented a rare opportunity to examine multiracial young people in comparison to their monoracial counterparts at two different points in time. Its large size and close approximation to a generalizable sample meant that it transcended several of the major drawbacks of the existing quantitative multiracial literature, which consists almost entirely of small, regionally localized, convenience samples. The quality and rigor of the data collection, coordinated by the University of North Carolina, Chapel Hill, would have been difficult to match. Finally, the opportunity to build upon the work already completed by three other research studies (Cooney & Radina, 2000; Milan & Keiley, 2000; Udry et al., 2003) of multiracial young people using the same database was a way to add knowledge coherently to the field.

SEM analysis. The current study initially proposed two, alternative a priori theoretical models; however, only one was included in the final analysis. The alternative a priori model that was not used had college attendance as a mediator variable between the Wave I predictors and the Wave III overall well-being construct as a way to examine this variable's influence on well-being outcomes of multiracial young adults. However, the initial series of univariate analysis of variance of Wave III outcomes clearly showed

that college attendance would not change the relationship of multiracial young adults reported well-being outcomes compared to their monoracial counterparts. Therefore, since college attendance did not seem central to improved well-being outcomes for multiracial young adults relative to their monoracial counterparts, maintaining its role as a critical (single) mediating variable in an alternative SEM model no longer seemed justified, and this alternative model was dropped from the study. Derivations of alternative models were considered, however, the factors included in the a priori model used in the current study were most relevant to Root's (2003) ecological model which was used as the theoretical underpinning of environmental factors affecting the multiracial experience. All major factors relevant to Root's model that could be located within the Add Health data were included for testing in the SEM initial measurement model. Additionally, visual inspection of the SEM model did not suggest any plausible, alternative models, in part because the model was very straightforward, i.e., there weren't many other ways to draw the paths between constructs. It would have been preferable to have maintained an alternative, a priori model to protect against confirmation bias in the SEM analysis. Martens (2005) found the lack of alternative a priori models to be fairly common, 52.4% of 105 SEM or path analysis studies he examined in the *Journal of Counseling Psychology* between 1987 and 2003 lacked such alternative models, and the trend was toward less use in the more recent years. He none-the-less encourages researchers to use alternative a priori models that may better account for the relationships among the data. Further investigation into alternative a priori models would have been useful to attempt to identify other ways to explain, or perhaps better explain, the

observable covariance matrix, i.e., the relationships between the exogenous and endogenous variables in the study.

Another limitation of the SEM related to modifications made to the initial model in order to improve the fit indices. Such model modification can shape a model that fits only the data used in the current study and would not generalize to other samples.

However, the large size of the data set used for the current study and its similarity to the original nationally drawn data set, probably reduced the likelihood that the model would not fit another sample of the same youth populations.

Implications for practice

The purpose of the current study was to advance in some way the knowledge about the multiracial young adult population as it relates to psychological adjustment, health and behavior problems. Three findings warrant particular highlighting. First, while the current study found statistical evidence of lower well-being in comparing multiracial young adults to their monoracial minority and White peers, the effect sizes were so small as to question the meaningfulness of these differences. Therefore, while previous Add Health researchers reported findings of lower well-being among multiracial adolescents in comparison to their monoracial minority and White peers, the current findings suggest these differences have diminished six years later as young adults. Second, the current findings point toward the importance of intervening to improve psychological adjustment during adolescence when there is greater evidence of well-being problems. Further, the current findings suggest that psychological adjustment as an adolescent seems predictive of psychological adjustment as a young adult. Therefore,

intervening during adolescence can benefit well-being outcomes as young adults. Third, in the area of multiracial identification, the current study did not find evidence that participants who selected a multiracial identification versus a monoracial identification exhibited higher levels of well-being as young adults. There are implications of potential value from these findings in the areas of counseling, psycho-education, consultation and advocacy for the multiracial population. The current section will focus primarily on the therapeutic implications for counseling multiracial young people.

A first step can be to recognize the unique experiences and challenges faced by the multiracial population in our society. While the current study did not find meaningful evidence (due to low effect sizes) of continuing lower well-being among the multiracial young adult population, the pattern of statistically higher levels of depressive symptoms, drug abuse and physical limitations, and lower levels of self worth compared to monoracial young adults may reflect the lingering difficulties from adolescence reported by other researchers. This points to the importance of focusing on healthy adjustment during adolescence or earlier as a way to shape the development process for multiracial young people and improve well-being outcomes as young adults. Help providers should pay attention to the signals of difficulties such as depressive symptoms, lower self worth and feelings of not being accepted by others during the teen age or pre-teen years. When working with multiracial children it seems important to be aware of the potential significance of racial issues even when they aren't explicitly acknowledged. Nishimura (1995) noted that school counselors should be aware that the problems of multiracial children that come to their attention may not be directly identified as related to the child's

multiracial heritage, rather there can be evidence of poor school performance, off-task behavior, poor social skills, negative attitude about adults, social isolation, sadness and depression that may not be viewed as linked to race and ethnicity. Others have shared stories of multiracial children with presenting issues that disguised the difficulties related to race (Rockquemore & Laszloffy, 2003).

Therapeutic approaches that focus on helping multiracial adolescents process and make meaning out of their experiences, to validate their own sense of self, build self worth and to reduce depressive symptoms are goals of counseling that might prove particularly useful to multiracial clients. Several authors recommend relational narrative approaches with multiracial clients (Benedetto & Olisky, 2001; Milan & Keiley, 2000; Rockquemore & Laszloffy, 2003) to enable them to give voice to their stories and make meaning out of their experiences. Edwards (2004) contends that solution-focused, narrative approaches, fostering resilience, and hope therapy are particularly suited to helping multiracial women and girls develop a healthy sense of themselves and their strengths and assets. Interpersonal approaches (Teyber, 1997) that enable multiracial clients to get in touch with issues of shame and guilt surrounding race issues, and to provide corrective emotional experiences to validate their racial identity and sense of self are worth considering. Bowles (1993) found that feelings of shame, isolation, feeling false and not being real were prevalent in his multiracial clients, and that development of a sense of ethnic self and acceptance of their multiracial heritages led to increased self esteem and lower anxiety levels. Approaches like these, used early with a multiracial child may provide the support needed to counter the potential pattern of negative well-

being established as an adolescent.

The current study did not find evidence that multiracial self identification was superior to a monoracial self identification in terms of higher measures of well-being. It is unclear how self reported racial identification relates to the complex construct of racial identity, but clinicians have noted the importance of multiracial clients integrating their multiple heritages into their sense of self (Bowles, 1993). Gibbs (1989) proposed that the central issue for the clinician is to help in this integration of dual racial heritage so that the client can move on to resolve the developmental tasks related to identity achievement.

Since the current study's findings suggest the self reported racial classification of a multiracial person isn't indicative of their level of well-being than the clinician should look toward other markers to understand the relevance of identity to overall well-being for the client, e.g., how is the client interpreting the meaning of their racial identity in relation to their sense of self and in their relationships with others?

Help providers can take steps to be better equipped in understanding the unique dimensions of the multiracial experience and the special issues these clients may face. Deters (1997) conducted a qualitative study using structural interviews with six therapists of diverse backgrounds to explore how they might work with multiracial clients. The author explored their internalized rules of racial categorization and accompanying racial stereotypes. Common themes included the lack of any training or background about how to understand the developmental tasks for multiracial individuals and a sense of helplessness felt at some point in their work with multiracial clients. Deters concludes that therapists will be helped by having more information about the social construction of

race, working from a non-oppressive theoretical perspective (e.g, recognizing the reality of racism), and exploring their own internalized rules about race. Williams (1999) as a multiracial therapist in a university counseling center recommends focusing on certain core aspects of therapy for multiracial clients, including: breaking the tendency to be silent around race issues; processing difficult feelings (including the therapist's own attitudes around race); and appreciating the complexities of race and culture.

The SEM analysis reported on the significance of living with both biological parents on well-being outcomes for multiracial adolescents. This is a new finding and little is known why this correlation exists. Several authors have provided suggestions meant to be generally helpful to family based practitioners working with multiracial families. Bruno et al. (1996) recommended that practitioners help multiracial families give voice to the traditions and rituals that make up the family's legacy. Herring (1995) suggests that there are special areas of focus when interacting with multiracial youth and interracial families: (1) ensure positive relationships; (2) help multiracial children with their presenting problems since they may have internalized societal biased attitudes; (3) provide self-ventilation for the client; (4) help the client develop self-esteem; and (4) become prepared through education to deal with the family system. These suggestions are helpful, but future research might investigate healthy multiracial family environments with both, one or neither biological parent living in the household to better understand the underlying characteristics of these health family systems.

Even though findings in the current study suggest that multiracial people can choose from several racial self-identification options and still have healthy well-being

outcomes, there is one qualification to this suggestion that is brought up several times in the literature. Black/White individuals who identify as White seem to have more adjustment difficulty (Field, 1996; Twine, 1996). It is unclear if the difficulties reported are due to intra-psychic issues in identifying as White or are influenced by other factors more related to societal acceptance. Many individuals who are other racial mixes, e.g., White/Asian, Indian/White and ethnic mixes, e.g., White/Hispanic, clearly identify as White (Harris & Sim, 2002) and in the literature there seems less evidence that this is inherently problematic (Root, 2004). Is it less problematic because people in these other racial mixes are better adjusted or that society accepts their self perception of identifying as White more so than it accepts this in a Black/White individual? Several researchers point out the unique importance of skin color and appearance in how Black/White individuals are categorized by society (Field, 1996; Rockquemore & Laszloffy, 2003; Root, 2003). In some cases identifying as White is accompanied by negative or unfavorable feelings toward affiliating with Black people. The counseling implication in these cases might be to help individuals work through the reasons why they want to solely identify as White and perhaps help them develop a more healthy integrated sense of their racial identity. For example, several researchers have noted the particular adjustment difficulties that can be created for female children of Black/White partners, in which the White mother tries to raise the child with a White identity (Bowles, 1993; Rockquemore & Laszloffy, 2003).

Areas of Future Research

Multiracial identity. The current study had several interesting findings that may

be related to multiracial identity and identity development and would be excellent topics for future research. First, it did not find a relationship between multiracial participants' self identification (multiracial or monoracial) and well-being outcomes. Future research could examine more closely the relationship between how a multiracial person self-identifies, publicly and privately, and their level of healthy adjustment and well-being. Second there was a trend from self identification as multiracial to monoracial from Waves I to III. Was the trend a transitional phase or a permanent pattern? A future study, particularly if Add Health conducts another survey of the Wave III participants, could examine the changing pattern of racial identification over three points in time. Third, the study of multiracial identity and identity development could benefit from a convergence of differing theoretical approaches. Three approaches have been defined in the literature: stage theories (Kerwin & Ponterotto, 1995; Kich, 1992; Poston, 1990), concurrent theories (Rockquemore & Brunsma, 2002; Root, 1999), and an ecological approach (Root, 2003). The stage theories recognize the developmental process but do not seem to adequately accommodate the dynamic and situational nature of multiracial identity, while the concurrent approaches support the variety of ways multiracial people identify but do not address developmental aspects. Root's (2003) ecological approach seems to capture the broad micro and macro environmental influences, the dynamic and multiple ways of identifying and the developmental and generational aspects of multiracial identity. Greater use by future researchers of her model as the basis for theoretical underpinnings would benefit the multiracial identity literature by bringing more research into coherent lines of knowledge building.

Childhood and the family experience. What are the experiences prior to adolescence for multiracial young people? Are they also predictive in terms of outcomes in adolescence? Studying multiracial children in the pre-teen years would help in our understanding of the continuum of development. How early do multiracial children potentially begin to first experience the sense of not fitting in, and the acrimony that can exist in extended families, and perhaps even difficulties their parents are experiencing because of race related issues? Research that can help parents in these earlier years in terms of raising a successful multiracial child is an important arena of future study. Relatedly, the current study reported on the benefit of intact families with both biological parents. Future research might examine the specific characteristics of how an intact, interracial family creates a healthy environment (Leslie & Letiecq, 2004) both before and during the teen years (Radina & Cooney, 2000).

Factors predicting well-being. The current study provided an intriguing glimpse into potential predictive factors during adolescence that relate to well-being outcomes as young adults. The use of the SEM was an a priori approach, based on Root's (2003) ecological model, to examine these factors. Another more exploratory approach might be useful in further mining the value of the large Add Health database. For example, a cluster analysis that used well-being outcomes to identify the common characteristics associated with higher and lower functioning multiracial young adults might lead to interesting findings and the discovery of other factors that extend the information provided by the SEM.

Qualitative exploration. The current study used quantitative data provided

through Add Health to examine the well-being status of multiracial young adults. A qualitative study that seeks to gather the stories of multiracial young people and reflect their personal accounts of their adolescence and young adulthood in terms of well-being would complement the quantitative work and provide a fuller perspective of the lived experience of multiracial young people. The same or similar hypotheses could be used. In a qualitative approach they could reflect on their adolescence and pre-adolescence environments related to how their multiracial background played into their experiences either positively or negatively, instead of answering predetermined and close ended questions such as those used in quantitative investigations. They could reflect on the importance of different influences on their adjustment and identity, including immediate school and peers, and local neighborhood. Their relationship with each parent (as well as the parents' families) and how these relationships may have influenced their racial identity and adjustment could also be examined. Young adults could describe their own sense of well-being, measured by whatever considerations are important to them, for example romantic relationships and career clarity, or other topics that weren't included in the current study. For those attending college, the value of the college experience could be more thoroughly explored and how this experience might best be used to help in the growth and development of multiracial young adults. Finally, a qualitative study would enable a more rich and insightful perspective into identity development, exploring how they've chosen their racial and ethnic 'label', whether it has changed over time, how it might change in the future, and reflections on how their racial self-identity has affected their psycho-social development and adjustment.

Benefits of being multiracial. The current study focused on the problems evident in the multiracial experience, trying to further the understanding reported by previous researchers. There is substantial evidence that many multiracial people view their experiences very positively, in terms of greater understanding and appreciation of differences and commonalities, greater ease and competence in interacting with people of different backgrounds, and positive motivation to bridge societal differences and improve race relations (Kerwin, Ponterotto, Jackson & Harris, 1993; Mukoyama, 1998; Shih & Sanchez, 2005). This is a potentially rich area of study that might affirm the multiracial experience in ways that through the simple reporting of such findings, and the self-knowledge gained, could represent an intervention to counter some of the negative outcomes currently being found (Lee, 2004).

In summary, this study sought to examine whether multiracial young adults continued to report lower levels of well-being relative to their monoracial peers and whether these outcomes were moderated by college attendance or racial identification. These outcomes were modeled after psychological adjustment, behavior and health findings reported by previous researchers who used the Add Health data to study multiracial adolescents. In doing so this study builds coherently on this previous research and adds knowledge to the multiracial literature, which is comprised primarily of disconnected, stand alone studies of small convenience samples. The current study also investigated factors during adolescence that could predict well-being outcomes for multiracial young adults. These factors were drawn from Root's (2003) ecological model of multiracial identity development which includes both micro and macro environmental

contexts. The importance of healthy psychological adjustment found in the current study as a factor during adolescence can be useful for practitioners, educators and parents in helping multiracial young people to cultivate a stronger sense of self and self worth related to their unique racial heritage as early as possible. It is hoped the current study will generate future research into the well-being of multiracial youth with the goal of helping young people lead better lives.

APPENDIX A - Add Health Project Description

The National Longitudinal Study of Adolescent Health (Add Health) is a nationally representative study that explores the causes of health-related behaviors of adolescents in grades 7 through 12 and their outcomes in young adulthood. Add Health seeks to examine how social contexts (families, friends, peers, schools, neighborhoods, and communities) influence adolescents' health and risk behaviors.

Initiated in 1994 under a grant from the National Institute of Child Health and Human Development (NICHD) with co-funding from 17 other federal agencies, Add Health is the largest, most comprehensive survey of adolescents ever undertaken. Data at the individual, family, school, and community levels were collected in two waves between 1994 and 1996. In 2001 and 2002, Add Health respondents, 18 to 26 years old, were re-interviewed in a third wave to investigate the influence that adolescence has on young adulthood.

Multiple datasets are available for study, and more than 1,000 published reports and journal articles have used the data to analyze aspects of these complex issues.

Add Health has been designed and coordinated by J. Richard Udry, Kenan Professor of Maternal and Child Health and Sociology (PI), of the Carolina Population Center, University of North Carolina at Chapel Hill.

The Add Health study collected information on areas such as: suicidal intentions/thoughts, substance use/abuse, diet, physical activity, health-service use, morbidity, injury, violence, sexual behavior, contraception, sexually transmitted infections, pregnancy, runaway behavior, with the third wave adding items such as work force experiences and relationships with partners.

Participants

Wave I consisted of a school sample and in-home sample. The school sample was a stratified, random sample of all high schools in the US. A feeder school—a school that sent graduates to the high school and that included a 7th grade—was also included. High schools were stratified into clusters by: Region (Northeast, Midwest, South, West); Urbanicity (Urban, suburban, rural); School size (25 or fewer, 126–350, 351–775, 776 or more students); School type (public, private, parochial); Percent White (0, 1–66, 67–93, 94–100); Percent Black (0, 1–6, 7–33, 34–100); Grade span (K–12, 7–12, 9–12, 10–12); and Curriculum (general, vocational/technical, alternative, special education). 80 high schools were randomly selected from these clusters. A feeder school was selected for each high school. Because some high schools included the middle school grades, 52 feeder schools were selected.

The in-school sample of 90,118 included all students in attendance on the day of the questionnaire whose parents consented to their participation. Their ages ranged from 12 to 18 years old. The questionnaire included student's and parent's background; friends; school life; school work and school activities; general health status and health-related behaviors. School administrators also completed a questionnaire about the school.

The in-home sample of 20,745, a response rate of 78.9%, consisted of a core sample of 12,105 adolescents derived by selecting a random sample of 200 students from each of the selected schools. At two schools, all of the students (saturation sample) were selected in order to collect data about friendship relationships (2,553 adolescents, in addition to the 200 students selected for the core) Oversamples were included of Black adolescents with college-educated parents (1,038); Cuban (450) and Puerto Rican (437) adolescents; Chinese adolescents (334); adolescents who reported having a limb disability (471); and samples of siblings (full siblings - 1,186, half siblings - 783); twins (1,981), sibling of twins (162) and unrelated adolescents (415) who reside in the same household. In addition, parents were asked to complete a questionnaire about family and relationships. The students completed an at-home questionnaire that included additional topics such as self efficacy, feelings, suicidality, delinquency, family, neighborhood, and daily activities.

Wave II consisted of an in-home interview sample of 14,738 adolescent from the Wave I in-home interview sample, a response rate of 88.2%, and was conducted one year after Wave I. In addition, school administrators were contacted by telephone to update school information. Information about neighborhoods/communities was gathered from a variety of previously published databases. Wave II data was not used in this study.

Wave III sample consisted of 15,197 Wave I respondents, a response rate of 77.4% (of eligible students), who could be located and re-interviewed six years later, from August 2001-April 2002 when they were between 18 and 26 years old. A sample of 1,507 partners of original respondents was also interviewed. Samples of urine and saliva were also collected to assess the presence of STDs and HIV antibodies. Wave III also collected High School Transcript Release Forms. The questionnaire was designed to obtain relationship, marital, childbearing, and educational histories, and key labor force events. Some questions were unchanged from earlier waves. To enhance longitudinal measures, new sections focused on topics more relevant to young adults.

Wave III data collection was conducted nationwide (including Hawaii and Alaska). Wave I respondents who were out of the country were omitted from Wave III. Every effort was made to re-interview respondents who were located in correctional facilities. To maintain confidentiality, no paper questionnaires were used. As in earlier waves, data were recorded on laptop computers. For less sensitive material, the interviewer read the questions and entered the respondent's answers. For more sensitive material, the respondent entered his or her own answers in privacy. The average length of a complete interview was 134 minutes. The laptop interview took approximately 90

minutes and was followed immediately by the collection of biological specimens. Most interviews were conducted in respondents' homes.

Instruments

Wave I

90,118 In-School Questionnaires (September 1994–April 1995)
 164 School Administrator Questionnaires (September 1994–April 1995)
 20,745 Adolescent In-Home Interviews (April 1995–December 1995)
 Add Health Picture Vocabulary Test (April 1995–December 1995)
 17,700 In-Home Parent Questionnaires (April 1995–December 1995)

Wave II

128 School Administrator Questionnaires (May 1996–June 1996)
 14,738 adolescent In-Home Interviews (April 1996–August 1996)

Wave III

15,197 young adult In-Home Interviews and biomarker collection (August 2001–April 2002)
 Add Health Picture Vocabulary Test Scores (August 2001–April 2002)
 1,507 partners In-Home Interviews (August 2001–April 2002)

Wave III Detail

Since Wave III is the primary data used in the current study it is described in more detail. Because respondents are older at Wave III, the social contexts shaping their health outcomes are different from those in earlier waves. For many, college or work contexts are likely to be more important. Dense peer groups associated with school-based networks likely have given way to smaller networks of friends drawn from diverse settings. Relationships with romantic partners likely are more influential as respondents approach decisions about cohabitation and marriage; family effects may be less prominent. Wave III is designed to provide data on these new domains of young adult life, enabling researchers to model the dynamic processes of change over time.

Wave III included these specific aims: locating 1995 Wave I Add Health in-home respondents; collecting longitudinal data on Add Health respondents; collecting data on subsamples of married, cohabiting, and dating partners of respondents; collecting specimens of saliva and urine for assays of HIV and STDs, in order to develop prevalence estimates; collecting geocodes for respondents' addresses at the time of interview.

Wave III In-Home Questionnaire Sections:

Add Health Picture Vocabulary Test
Overview and Demographics
Household Roster and Residence History
Parental Support and Relationships
Retrospective ADHD
Relationships with Siblings
Friends
Education
Labor Market Experience and Active-Duty Military Service
General Health and Diet
Access to Health Services, Health Insurance
Illnesses, Medications, Physical Disabilities
Social Psychology and Mental Health
Mentoring
Marriage/Cohabitation History and Attitudes
Economics and Personal Future
Sexual Experiences and STDs
Table of Relationships
Table of Pregnancies
Relationships in Detail
BEM Inventory
Propensity for Risk
Completed Pregnancies
Current Pregnancies
Live Births
Children and Parenting
Delinquency and Violence
Involvement with the Criminal Justice System
Tobacco, Alcohol, Drugs, Self-Image
Mistreatment by Adults
Civic Participation and Citizenship
Religion and Spirituality
Gambling
Daily Activities
Biological Specimen Participation
Interviewer's Report

Partner Sample: Wave III

Approximately 50 percent of the original sample was flagged to be evaluated for partner recruitment. Recruitment was determined by a computer algorithm that evaluated the relationship history provided by a respondent. Criteria required that a partner be

current, of the opposite sex, at least 18 years old, and in a relationship with the original Add Health respondent for at least three months.

A sample of 1,507 partners of respondents was interviewed at Wave III, representing a wide spectrum of relationship intimacy and commitment. The sample consisted of one-third married, one-third cohabiting, and one-third dating partners. Because partners were being interviewed for the first time, they were asked for name, age, and gender. Questions about previous parent figures, friends, and siblings were not administered to partners.

Special Features of Data Collection at Wave III

Residential latitude and longitude were collected using a GPS device.

Interviews of original Add Health respondents were pre-loaded with some Wave I and Wave II data, including the name, age, and sex of the respondent and identifications of parent figures, friends, and siblings from earlier waves.

A monthly Event History Calendar (EHC) was designed to help respondents remember when events occurred, in a time continuum relative to pre-loaded public events. Important personal or relationship events entered by a respondent were automatically displayed in the calendar, which appeared on screen each time he/she was asked to date an event. The EHC could be accessed at any time during the interview and dates could be corrected after they were entered.

Wave III also collected High School Transcript Release Forms. A separately funded NICHD study used them to collect and code transcript information for Wave III respondents. These data eventually will become part of Add Health datasets.

Biological Specimen Collection

At Wave III, Add Health respondents were asked to provide saliva and urine specimens for HIV and STD testing. A subsample of full siblings and twins was also asked to provide a saliva sample for genetic analysis.

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APPENDIX B - Initial and Final Items

Initial items and final items are shown below. Predictor (Wave I) items are followed by Outcome (Wave III) items. Latent constructs are shown in bold, followed by factors in underline, and individual items within each factor.

Initial Items	Final Items
Predictors (Wave I)	
Psychological Adjustment	Depression1
<u>Depression1</u>	<u>Depression1 A</u>
You were bothered by things that usually don't bother you.	
You didn't feel like eating, your appetite was poor.	
You felt that you could not shake off the blues, even with help from your family and your friends.	You felt that you could not shake off the blues, even with help from your family and your friends.
You felt that you were just as good as other people.	
You had trouble keeping your mind on what you were doing.	
You felt depressed.	You felt depressed
You felt that you were too tired to do things.	
You felt hopeful about the future.	
You thought your life had been a failure.	You thought your life had been a failure.
You felt fearful.	
You were happy	You were happy
You talked less than usual.	<u>Depression1 B</u>
You felt lonely.	You felt lonely.
People were unfriendly to you.	

You enjoyed life.	You enjoyed life.
You felt sad.	You felt sad.
You felt that people disliked you.	
It was hard to get started doing things.	
You felt life was not worth living.	You felt life was not worth living.
	Acceptance
<u>Self Worth1</u>	<u>Self Worth1</u>
I have a lot of good qualities.	I have a lot of good qualities.
I have a lot to be proud of.	I have a lot to be proud of.
I like myself just the way I am.	I like myself just the way I am.
I feel like I am doing everything just right.	I feel like I am doing everything just right.
I feel loved and wanted.	I feel loved and wanted.
	I feel socially accepted [loaded from Child's school experience]
School Environment	
<u>Child's School Experience</u>	<u>Child's School Experience</u>
Since school started this year, how often have you had trouble getting along with your teachers?	
Since school started this year, how often have you had trouble getting along with other students?	
How strongly do you agree or disagree with each of the following statements?	
- I feel close to people at this school.	- I feel close to people at this school
- I feel like I am part of this school.	- I feel like I am part of this school.

- The students at this school are prejudiced.	
- I am happy to be at this school.	- I am happy to be at this school.
- I feel socially accepted.	[retained , loaded in Self Worth1]
- I feel safe in my school.	
- The teachers at this school treat students fairly.	- The teachers at this school treat students fairly.
- How much do you feel that your teachers care about you?	
<u>Friends Activities</u>	
How much do you feel that your friends care about you?	
Friendship activity level: Identify up to 5 <u>male</u> and 5 <u>female</u> friends and select up to five different activities with each friend in the past week (e.g., went to his/her house). Derived variable. Sum total activities, 0-50.	
Friendship reciprocity. Number of Friends picked by respondent who picked respondent as friend also. Scale is 0 to 10 (friends).	
Friendship network size. Total number of friends identified by the respondent and the number of other students that identified the respondent as a friend (these could be students different from those under friendship reciprocity).	
School-wide cross racial friendships : Amount of cross racial friendships at the school. School-level measure continuous variable, values from -1(pure out-group preference) to +1 (pure in-group preference).	
<u>Biological parents</u>	<u>Biological parents</u>
Derived answer of Yes/No. Yes means the adolescent lived with both biological mother and father derived through questions asked of the adult completing the parent questionnaire: are they the biological mother or father, and if not, is	Derived answer of Yes/No. Yes means the adolescent lived with both biological mother and father derived through questions asked of the adult completing the parent questionnaire: are they the biological mother or father, and if not, is

the biological mother or father living in the same household.	the biological mother or father living in the same household.
Family Environment	Family Environment
<u>Child's family experience</u>	<u>Child's family experience A</u>
How close do you feel to your mother and father (average of mom and dad)?	How close do you feel to your mother and father (average of mom and dad)?
Most of the time, your parents are warm and loving toward you.(average of mom and dad).	Most of the time, your parents are warm and loving toward you. (average of mom and dad)?
You are satisfied with the way your parents and you communicate with each other (average of mom and dad).	You are satisfied with the way your parents and you communicate with each other (average of mom and dad)?
	<u>Child's family experience B</u>
Overall, you are satisfied with your relationship with your parents (average of mom and dad).	Overall, you are satisfied with your relationship with your parents (average of mom and dad)?
Your mother encourages you to be independent.	Your mother encourages you to be independent.
When you do something wrong that is important, your mother talks about it with you and helps you understand why it is wrong.	When you do something wrong that is important, your mother talks about it with you and helps you understand why it is wrong.
How much do you think they care about you (average of mom and dad)?	
How much do you feel that your parents care about you?	
How much do you feel that people in your family understand you?	
How much do you feel that you and your family have fun together?	
How much do you feel that your family pays attention to you?	
How much do you feel you want to leave home?	
<u>Parent's family experience</u>	

How often would it be true for you to make each of the following statements about (your child) ?	
- You get along well with (him/her).	
- (Your child) and you make decisions about (his/her) life together.	
- You just do not understand (him/her).	
- You feel you can really trust (him/her).	
- (He/she) interferes with your activities.	
Neighborhood Environment	
<u>Child's Neighborhood Experience</u>	
I feel safe in my neighborhood.	
Derived variable. Sum the number of yeses to the 4 questions to define 'neighborhood connectedness'. Indicate whether each of the following statements is true for you: 1. You know most of the people in your neighborhood; 2. In the past month, you have stopped on the street to talk with someone who lives in your neighborhood; 3. People in this neighborhood look out for each other; 4. Do you usually feel safe in your neighborhood?	
On the whole, how happy are you with living in your neighborhood?	
If, for any reason, you had to move from here to some other neighborhood, how happy or unhappy would you be?	
<u>Parent's Neighborhood Experience</u>	
If you saw a neighbor's child getting into trouble, would you tell your neighbor about it?	
If a neighbor saw your child getting into trouble,	

would your neighbor tell you about it?	
How much would you (parent) like to move away from this neighborhood?	
Outcomes (Wave III)	
Psychological Adjustment	Psychological Adjustment
<u>Depression3</u>	<u>Depression3</u>
In the past 12 months, how often have you laughed a lot?	
In the past 12 months, how often have you cried a lot?	In the past 12 months, how often have you cried a lot?
Now, think about the past seven days. How often was each of the following things true during the past seven days?	Now, think about the past seven days. How often was each of the following things true during the past seven days?
You were bothered by things that usually don't bother you.	You were bothered by things that usually don't bother you.
You could not shake off the blues, even with help from your family and your friends, during the past seven days.	You could not shake off the blues, even with help from your family and your friends, during the past seven days.
You felt that you were just as good as other people, during the past seven days.	
You had trouble keeping your mind on what you were doing, during the past seven days.	You had trouble keeping your mind on what you were doing, during the past seven days.
You were depressed, during the past seven days.	You were depressed, during the past seven days.
You were too tired to do things, during the past seven days.	
You enjoyed life, during the past seven days.	You enjoyed life, during the past seven days.
You were sad, during the past seven days.	You were sad, during the past seven days.
You felt that people disliked you, during the past	You felt that people disliked you, during the past

seven days	seven days
<u>Self Worth3</u>	<u>Self Worth3</u>
Compared to other people your age, how intelligent are you?	
Do you agree or disagree that you have many good qualities?	Do you agree or disagree that you have many good qualities?
Do you agree or disagree that you have a lot to be proud of?	Do you agree or disagree that you have a lot to be proud of?
Do you agree or disagree that you like yourself just the way you are?	Do you agree or disagree that you like yourself just the way you are?
Do you agree or disagree that you feel you are doing things just about right?	Do you agree or disagree that you feel you are doing things just about right?
How intelligent are you?	
How popular are you?	
How confident are you of yourself?	
How independent are you?	
How attractive are you?	
How considerate are you?	
<u>Gen'l life satisfaction</u>	
How satisfied are you with your life as a whole?	How satisfied are you with your life as a whole? [loaded with Self Worth3]
<u>Maturity</u>	<u>Maturity</u> [used for hypotheses 1, 1a., & 3, but not for 2]
How immature are you?	How immature are you?

In general, how old do you feel compared with others your age?	In general, how old do you feel compared with others your age?
How often do you think of yourself as an adult?	How often do you think of yourself as an adult?
In terms of social maturity, would you say you grew up faster, slower, or at about the same rate as other people your age?	In terms of social maturity, would you say you grew up faster, slower, or at about the same rate as other people your age?
In terms of taking on adult responsibilities, would you say you grew up faster, slower, or at about the same rate?	In terms of taking on adult responsibilities, would you say you grew up faster, slower, or at about the same rate?
Maladaptive Behaviors	Maladaptive Behaviors
<u>Delinquency</u>	<u>Delinquency</u>
In the past 12 months, how often did you deliberately damage property that didn't belong to you?	In the past 12 months, how often did you deliberately damage property that didn't belong to you?
In the past 12 months, how often did you steal something worth more than \$50?	In the past 12 months, how often did you steal something worth more than \$50?
In the past 12 months, how often did you go into a house or building to steal something?	In the past 12 months, how often did you go into a house or building to steal something?
In the past 12 months, how often did you use or threaten to use a weapon to get something from someone?	In the past 12 months, how often did you use or threaten to use a weapon to get something from someone?
In the past 12 months, how often did you sell marijuana or other drugs?	
In the past 12 months, how often did you steal something worth less than \$50?	In the past 12 months, how often did you steal something worth less than \$50?
In the past 12 months, how often did you buy, sell, or hold stolen property?	In the past 12 months, how often did you buy, sell, or hold stolen property?
In the past 12 months, how often did you use someone else's credit card, bank card, or automatic teller card without their permission or knowledge?	
In the past 12 months, how often did you	

deliberately write a bad check?	
<u>Problem Drinking</u>	<u>Problem Drinking</u>
During the past 12 months, how many times has each of the following things happened?	During the past 12 months, how many times has each of the following things happened?
You had problems at school or work because you had been drinking?	You had problems at school or work because you had been drinking?
You had problems with your friends because you had been drinking?	You had problems with your friends because you had been drinking?
You had problems with someone you were dating because you had been drinking?	You had problems with someone you were dating because you had been drinking?
Over the past 12 months, how many times:	
were you hung over?	
were you sick to your stomach or threw up after drinking?	
did you get into a sexual situation that you later regretted because you had been drinking?	
<u>Drug Abuse</u>	<u>Drug Abuse</u>
During the past 12 months, how often did you have problems at school or work because you had been using drugs?	During the past 12 months, how often did you have problems at school or work because you had been using drugs?
During the past 12 months, how often did you have problems with your friends because you had been using drugs?	During the past 12 months, how often did you have problems with your friends because you had been using drugs?
During the past 12 months, how often did you have problems with someone you were dating because you had been using drugs?	During the past 12 months, how often did you have problems with someone you were dating because you had been using drugs?
During the past 12 months, how often did you get into a sexual situation that you later regretted because you had been using drugs?	During the past 12 months, how often did you get into a sexual situation that you later regretted because you had been using drugs?
During the past 12 months, how often were you high on drugs at school or work?	During the past 12 months, how often were you high on drugs at school or work?

Health	Health
<u>General Health</u>	<u>General Health</u>
In general, how is your health?	In general, how is your health?
In the past month, how often did a health problem cause you to miss a day of school or work?	In the past month, how often did a health problem cause you to miss a day of school or work?
In the past seven days, how often did you fall asleep when you should have been awake (for example during class or work)?	In the past seven days, how often did you fall asleep when you should have been awake (for example during class or work)?
<u>Physical Limitation</u>	<u>Physical Limitation</u>
Does your health limit you in any of these activities? If so, are you limited a little or a lot?	Does your health limit you in any of these activities? If so, are you limited a little or a lot?
vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	vigorous activities, such as running, lifting heavy objects, participating in strenuous sports
climbing several flights of stairs	climbing several flights of stairs
bending, kneeling , or stooping	bending, kneeling , or stooping
walking more than a mile	walking more than a mile
bathing and dressing your self	bathing and dressing your self

APPENDIX C - Wave I and III Item Comparison

The following table is a comparison of the items used by three studies that used Wave I data from Add Health and comparable items in Wave III of Add Health. The three Wave I studies are: Milan and Keiley (2000), Cooney and Radina (2000) and Udry et al. (2003). The table is organized by outcome factors.

Self Worth

Wave I Studies			Wave III
Milan and Keiley	Cooney and Radina	Udry et al.	
<p>How much do you agree with the following statements:</p> <p>I have a lot of good qualities</p> <p>I have a lot to be proud of</p> <p>I like myself as I am</p> <p>I do everything just right</p> <p>I feel loved and wanted</p>	<p><none></p>	<p><none></p>	<p>Do you agree or disagree that you:</p> <p>have many good qualities</p> <p>have a lot to be proud of?</p> <p>like yourself just the way you are?</p> <p>feel you are doing things just about right?</p> <p>Compared to other people your age, how intelligent are you?</p> <p>How popular are you?</p> <p>How confident are you of yourself?</p> <p>How independent are you?</p> <p>How attractive are you?</p> <p>How considerate are you?</p>

Depression

Wave I Studies

Milan and Keiley	Cooney and Radina	Udry, et al.	Wave III
<p>In the past week, how often have you:</p> <p>felt depressed. been bothered by things had the blues. had trouble keeping your mind focused. felt people disliked you felt too tired to do things enjoyed life felt sad had a poor appetite. felt hopeful about the future felt like a failure felt fearful felt happy talked less than usual felt lonely felt people were unfriendly towards you had a hard time starting things felt life is not worth living</p> <p>In the past year, have you thought about suicide, attempted suicide</p>	<p>19 items used, similar to Milan & Keiley but only a few listed:</p> <p>during past week:</p> <p>had trouble keeping mind focused</p> <p>hopeful about the future</p> <p>talked less than usual</p> <p>felt people dislike me.</p>	<p>In the last month how often did you feel depressed or blue?</p> <p>During the past 12 mo., did you ever seriously think about committing suicide?</p>	<p>During the past seven day you:</p> <p>You were depressed were bothered by things that usually don't bother you. You could not shake off the blues, even with help from your family and your friends You had trouble keeping your mind on what you were doing You felt that people disliked you You were too tired to do things You enjoyed life You felt that you were just as good as other people You were sad</p> <p>In the past 12 months, how often have: you laughed a lot? you cried a lot?</p>

Maturity

Wave I Studies

Wave III

Milan and Keiley

Cooney and Radina

Udry et al.

<none>

<none>

<none>

How immature are you?

In general, how old do you feel compared with others your age?

How often do you think of yourself as an adult?

Some people grow u p faster than others, some grow up slower.
In terms of social maturity, would you say you grew up faster ,
slower, or at about the same rate as other people your age?

In terms of taking on adult responsibilities, would you say you
grew up faster, slower, or at about the same rate?

General Life Satisfaction

Wave I Studies

Wave III

Milan and Keiley

Cooney and Radina

Udry et al.

<none>

<none>

<none>

How satisfied are you with your life as a whole?

Substance Abuse

Wave I Studies

Wave III

Milan & Keiley Cooney & Radina Udry et al.

<none>

Smoked at least 1
cigarette/day for
30 days

During the past
twelve months
how often did
you smoke
cigarettes?

Ever used (even
once) alcohol

During the past
twelve months
how often did
you drink beer,
wine, or liquor?

Ever used (even
once) chewing
tobacco

Ever used (even
once) marijuana

During the past
twelve months
how often did
you get drunk?

Ever used (even
once) cocaine

Ever used (even
once) inhalants,
and other illegal
drugs

Problem Drinking

During the past 12 months, how many times has each of the following things happened?

- You had problems at school or work because you had been drinking?
- You had problems with your friends because you had been drinking?
- You had problems with someone you were dating because you had been drinking?

Over the past 12 months, how many times:

- were you hung over?
- were you sick to your stomach or threw up after drinking?
- did you get into a sexual situation that you later regretted because you had been drinking?

Drug Abuse

During the past 12 months, how often did you :

- have problems at school or work because you had been using drugs?
 - have problems with you r friends because you had been using drugs?
 - have problems with someone you were dating because you had been using drugs?
 - get into a sexual situation that you later regretted because you had been using drugs?
 - were you high on drugs at school or work?
-

Delinquency

Wave I Studies		Wave III items
Milan and Keiley	Cooney and Radina	Udry, et al.
In the past year how often have you:		<none>
damaged property	in past 12 months:	In the past 12 months, how often did you
stolen items worth more than \$50	damaging property	deliberately damage property that didn't belong to you?
burglarized a building	shoplifting	steal something worth more than \$50?
used or threatened someone with a weapon	taking part in a group fight	go into a house or building to steal something?
sold drugs	seriously injuring someone	use or threaten to use a weapon to get something from someone?
stolen items worth less than \$50	running away from home	sell marijuana or other drugs?
taken part in a group fight		steal something worth less than \$50
carried a weapon to school		buy, sell, or hold stolen property?
lied to parents about whereabouts		use someone else's credit card, bank card, or automatic teller card without their permission or knowledge?
shoplifted		deliberately write a bad check?
been in a serious physical fight		
seriously injured someone		
shot or stabbed someone		
run away from home		
stolen a car		
been loud or rowdy in a public place		
spent the night away without permission		
skipped school		

Health/Somatization

Wave I Studies

Wave III

Milan & Keiley

Cooney &
Radina

Udry et al.

In the past year, how often
have you

had headaches

felt hot

had stomachaches

had cold sweats

felt physically weak

had a sore throat/cough

been very tired for no
reason

had frequent or painful
urination

felt very sick

woken up feeling tired

had skin problems/acne

felt dizziness

had chest pains

had muscle/joint aches or
pains

had a poor appetite

had insomnia

In general, how is your
health?

In the last month how often
did you:

- have a headache?

- wake up feeling tired?

- have skin problems, such as
itching or pimples?

- have aches, pains, or
soreness in your muscles or
joints?

- have trouble falling asleep
or staying asleep?

In general, how is your health?

In the past m month, how often did a
health problem cause you to miss a day of
school or work?

Physical Limitation

Does your health limit you in any of these
activities? If so, are you limited a little or a
lot?

- vigorous activities, such as running,
lifting heavy objects, participating in
strenuous sports

- climbing several flights of stairs

- bending, kneeling , or stooping

- walking more than a mile

-bathing and dressing your self

REFERENCES

- Aldarondo, F. (2001). Racial and ethnic identity models and their applications: Counseling biracial individuals, *Journal of Mental Health Counseling*, 3, 238-255.
- Astin, A. W. (1993). Diversity and multiculturalism on campus: How are students affected? *Change*, 25, 44-49.
- Bearman, P.S., Jones, J. & Udry, J.R. (1997). *The National Longitudinal Study of Adolescent Health: Research Design, National Longitudinal Study of Adolescent Health*. Available: <http://www.cpc.unc.edu/projects/addhealth/>
- Benedetto, A. E., & Olisky, T. (2001). Biracial youth: The role of the school counselor in racial identity development. *Professional School Counseling*, 5, 66-70.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238-246.
- Blum, R. W., Kelly, A., & Ireland, M. (2001). Health-risk behaviors and protective factors among adolescents with mobility impairments and learning and emotional disabilities. *Journal of Adolescent Health*, 28, 481-490.
- Bowles, D. D. (1993). Bi-racial identity: children born to African-American and White couples. *Clinical Social Work Journal*, 21, 417-428.
- Bracey, J. R., Bamaca, M. Y., & Umana-Taylor, A. J. (2004). Examining ethnic identity and self-esteem among biracial and monoracial adolescents. *Journal of Youth and Adolescence*, 33, 123-132.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development:

- Research perspectives. *Developmental Psychology*, 22, 723-742.
- Brown, U. M. (1995). Black/White interracial young adults: Quest for a racial identity. *American Journal of Orthopsychiatry*, 65, 125-130.
- Brown, N. G., & Douglass, R. E. (1996). Making the invisible visible: The growth of community network organizations. In M. P. P. Root (Ed.), *The multiracial experience: Racial borders as the new frontier* (pp. 323-340). Thousand Oaks, CA: Sage.
- Bruno, O., Bibb, A., & Mahboubi, J. (1996). Family-centered practice with racially/ethnically mixed families. *Families in Society: The Journal of Contemporary Human Services*, (1996, November), 573-582.
- Brunsma, D. L., & Rockquemore, K. A. (2001). The new color complex: Appearances and biracial identity. *Identity: An International Journal of Theory and Research*, 3, 225-246.
- Bukatko, D., & Daehler, M. W. (1995). *Child development: A thematic approach* (2nd ed.). Boston: Houghton Mifflin Company.
- Cauce, A. M., Hiraga, Y., Mason, C., Aguilar, T., Ordonex, N., & Gonzales, N. (1992). Between a rock and a hard place: Social adjustment of biracial youth. In M. P. P. Root (Ed.), *Racially mixed people in America* (pp. 207-222). Newbury Park, CA: Sage.
- Collins, J. F. (2000). Biracial Japanese American identity: An evolving process. *Cultural Diversity and Ethnic Minority Psychology*, 6, 115-133.
- Cooney, T. M., & Radina, M. E. (2000). Adjustment problems in adolescence: Are

- multiracial children at risk? *American Journal of Orthopsychiatry*, 70₂, 433-444.
- Cross, W. E. (1987). A two-factor theory of Black identity: Implications for the study of identity development in minority children. In J. S. Phinney & M. J. Rotherham (Eds.), *Children's ethnic socialization: Pluralism and development* (pp. 117-133). Newbury Park, CA: Sage.
- Cruz-Janzen, M. I. (1999). 'You are not enough': The 'faceless' lives of biethnic and biracial Americans: A challenge for truly inclusive multicultural education. *Multicultural Perspectives*, 1(4), 3-8.
- Deters, K. A. (1997). Belonging nowhere and everywhere: Multiracial identity development. *Bulletin of the Menninger Clinic*, 61, 368-384.
- Edwards, L. M. (2004). Utilizing the strengths of our cultures: Therapy with biracial women and girls. *Women & Therapy*, 27, 33-43.
- Erikson, E. H. (1968). *Identity, youth and crisis*. New York: Norton.
- Fears, D., & Deane, C. (2001, July 5). Biracial couples report tolerance - Survey finds most are accepted by family. *The Washington Post*, page A1.
- Field, L. D. (1996). Piecing together the puzzle: Self-concept and group identity in biracial Black/White youth. In M. P. P. Root (Ed.), *The multiracial experience: Racial borders as the new frontier* (pp. 211-226). Thousand Oaks, CA: Sage.
- Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, 7₂, 286-299.
- Fong, R., & Spickard, P. R. (1995). A multiracial reality: Issues for social work. *Social*

Work, 40, 725-728.

- Fukuyama, M. A. (1999). Personal narrative: Growing up biracial. *Journal of Counseling & Development*, 77, 12-15.
- Gaines, S. O., Jr., & Liu, J. H. (2000). Multicultural/multiracial relationships. In C. Hendrick & S. S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp 97-108). Thousand Oaks, CA: Sage.
- Garson, D. (n.d.). Structural equation modeling. In *PA 765 Statnotes: An online textbook*. Retrieved October 26, 2005, from <http://www2.chass.ncsu.edu/garson/pa765/structur.htm>
- Gerard, J. M., & Buehler, C. (2004). Cumulative environmental risk and youth problem behavior. *Journal of Marriage and Family*, 66, 702-720.
- Gelso, C. J., Kelley, F. A., Fuyertes, J. N., Marmarosh, C. Holmes, S. E., Costa, C, & Hancock, G. R. (2005). Measuring the real relationship in psychotherapy: Initial validation of the therapist form. *Journal of Counseling Psychology*, 52, 640-649.
- Gillem, A. R., Cohn, L. R., & Throne, C. (2001). Black identity in biracial Black/White people: A comparison of Jacqueline who refuses to be exclusively Black and Adolphus who wishes he were. *Cultural Diversity and Ethnic Minority Psychology*, 7, 182-196.
- Gibbs, J. T. (1987). Identity and marginality: Issues in the treatment of biracial adolescents. *American Journal of Orthopsychiatry*, 57, 265-278.
- Gibbs, J. T. (1998). Biracial adolescents. In J. T. Gibbs & L. N. Huang (Eds.), *Children of color: Psychological interventions with culturally diverse youth* (pp305-332).

San Francisco, CA: Jossey-Bass.

Gibbs, J., T., and Hines, A., M. (1992). Negotiating ethnic identity: Issues for Black-

White biracial adolescents. In M. P. P. Root (Ed.), *Racially mixed people in*

America (pp. 223-238). Newbury Park, CA: Sage.

Gordon, L. R. (1995). Critical 'mixed race'? *Social Identities, 1*, 381-396.

Grove, K. J. (1991). Identity development in interracial, Asian/White late adolescents:

Must it be so problematic? *Journal of Youth and Adolescence, 20*, (6-),

Hall, C. S., Lindzey, G., & Campbell, J. B. (1998). *Theories of personality* (4th ed.). New

York: John Wiley & Sons.

Hall, R. E. (2001a). Biracial sensitive practice: Expanding social services to an invisible

population. *Journal of Sociology and Social Welfare, 28*, 23-36.

Hall, R. E. (2001b). Identity development across the lifespan: a biracial model. *The*

Social Science Journal, 38, 119-123.

Harris, D. R., & Thomas, J. L. (2002). The educational costs of being multiracial:

Evidence from a national survey of adolescents. *PSC Research Report, No. 02-*

521, August 2002. Population Studies Center, Univ. Of Michigan.

Harris, D. R., & Sim, J. J. (2002). Who is multiracial? Assessing the complexity of lived

race. *American Sociological Review, 67*, 614-627.

Harris, H. L. (2002). School counselors' perceptions of biracial children: A pilot study.

Professional School Counseling, 6, 120-130.

Helms, J. E. (Ed.). (1990). *Black and White racial identity: Theory, research, and*

practice. New York: Greenwood Press.

- Herring, R. D. (1995). Developing biracial ethnic identity: A review of the increasing dilemma. *Journal of Multicultural Counseling and Development, 23*, 29-38.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Jacobs, J. H. (1992). Identity development in biracial children. In M. P. P. Root (Ed.), *Racially mixed people in America* (pp. 190-206). Newbury Park, CA: Sage.
- Johnson, R., C., and Nagoshi, C. J. (1986). The adjustment of offspring within group and interracial/intercultural marriages: A comparison of personality factor scores. *Journal of Marriage and the Family, 48*, 279-284.
- Jones, N. A., & Smith, A. S. (2001). The two or more races population: 2000 (Census 2000 brief C2KBR/01-6). *U.S. Department of Commerce: U.S. Census Bureau*.
- Jones, S. R. (1997). Voices of identity and difference: A qualitative exploration of the multiple dimensions of identity development in women college students. *Journal of College Student Development, 38*, 376-386.
- Jones, S. R. & McEwen, M. K. (2000). A conceptual model of multiple dimensions of identity. *Journal of College Student Development, 41*, 405-414.
- Kerwin, C. & Ponterotto, J. G. (1995). Biracial identity development: Theory and research. In J. G. Ponterotto, J. M. Casas, L. A. Suzuki, & C. M. Alexander (Eds.), *Handbook of multicultural counseling* (pp. 199-217). Thousand Oaks: Sage Publications.
- Kerwin, C., Ponterotto, J. G., Jackson, B. L., & Harris, A. (1993). Racial identity in

- biracial children: A qualitative investigation. *Journal of Counseling Psychology*, 40, 221-231.
- Kich, G. K. (1992). The developmental process of asserting a biracial, bicultural identity. In M. P. P. Root (Ed.), *Racially mixed people in America* (pp. 304-317). Newbury Park, CA: Sage.
- Lee, W. M. L. (2004). Therapeutic considerations in work with biracial girls. *Women & Therapy*, 27, 203-216.
- Lent, R. W., Tracey, T. J. G., Brown, S. D., Soresi, S., & Nota, L. (2006). Development of interests and competency beliefs in Italian adolescents: An exploration of circumplex structure and bidirectional relationships. *Journal of Counseling Psychology*, 53, 181-191.
- Leslie, L. A., & Letiecq, B. L. (2004). Marital quality of African American and White partners in interracial couples. *Personal Relationships*, 11, 559-574.
- Lesure-Lester, G. E. (2001). Dating competence, social assertion and social anxiety among college students. *College Student Journal*, 35, 317-320.
- Luke, C. (1994). White women in interracial families: Reflections on hybridization, feminine identities, and racialized othering. *Feminist Issues*, 14, 49-73.
- Marcia J. (1980). Identity in adolescence. In J. Adelson (Ed.), *Handbook of adolescent psychology* (pp. 159-187). New York: John Wiley.
- Martens, M. P. (2005). The use of structural equation modeling in counseling psychology research. *The Counseling Psychologist*, 33, 269-298.
- Martinez, R. O., & Dukes, R. L. (1997). The effects of ethnic identity, ethnicity, and

- gender on adolescent well being. *Journal of Youth and Adolescence*, 26, 503-516.
- Mass, A. I. (1992). Interracial Japanese Americans: The best of both worlds or the end of the Japanese American community? In M. P. P. Root (Ed.), *Racially mixed people in America* (pp. 265-279). Newbury Park, CA: Sage.
- Mattanah, J. F., Hancock, G. R., & Brand, B. L. (2004). Parental attachment, separation-individuation, and college student adjustment: A structural equation analysis of mediational effects. *Journal of Counseling Psychology*, 51, 213-225.
- Milan, S., & Keiley, M., K. (2000). Biracial youth and families in therapy: Issues and interventions. *Journal of Marriage & Family Counseling*, 26, 305-315.
- Miller, R. L., & Miller, B. (1990). Mothering the biracial child: Bridging the gaps between African-American and White parenting styles. *Women and Therapy*, 10, 2
- Mukoyama, T. H. (1998). Effects of heritage combination on ethnic identity, self-esteem, and adjustment among American biethnic adults. (Doctoral dissertation, California School of Professional Psychology, Los Angeles, 1998). *Dissertations Abstracts International*.
- Newswanger, J. F. (1996). The relationship between White racial identity attitudes and the experience of having a Black college roommate. *Journal of College Student Development*, 37, 536-542.
- Nishimura, N. J. (1995). Addressing the needs of biracial children: An issue for counselors in a multicultural school environment. *School Counselor*, 43, 52-58.
- Pascarella, E. T., Edison, M., Nora, A., Hagedorn, L., & Terenzini, P. T. (1996). Influences on students' openness to diversity and challenge in the first year of

- college. *Journal of College Student Development*, 67, 174-195.
- Pinderhughes, E. (1995). Biracial identity - Asset or handicap? In H. W. Harris, H. C. Blue, & E. E. H. Griffith (Eds.), *Racial and ethnic identity: Psychological development and creative expression* (pp. 73-93). New York: Routledge.
- Phinney, J. S. (1990). Ethnic identity in adolescents and adults: Review of research. *Psychological bulletin*, 108, 499-514.
- Phinney, J. S. , & Alipuria, L. L. (1996). At the interface of cultures: Multiethnic/multiracial high school and college students, *Journal of Social Psychology*, 136, 139-159.
- Ponterotto, J. G. (1996). Evaluating and selecting research instruments. In F. T. L. Leong & J. T. Austin (Eds.), *The psychological research handbook: A guide for graduate students and research assistants* (pp. 73-82). Thousand Oaks, CA: Sage.
- Poston, W. S. C. (1990). The biracial identity development model: A needed addition. *Journal of Counseling & Development*, 69, 152-155.
- Radina, M. E. and Cooney, T. M. (2000). Relationship quality between multiracial adolescents and their biological parents. *American Journal of Orthopsychiatry*, 70, 445-454.
- Renn (2000). Patterns of situational identity among biracial and multicultural college students. *The Review of Higher Education*, 23, 399-420.
- Reynolds, A. L., & Pope, R. L. (1991). The complexities of diversity: Exploring multiple oppressions. *Journal of Counseling and Development*, 70, 174-180.
- Robbins, S. B. & Kliever, W. L. (2000). Advances in theory and research on

- subjective well-being. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (3rd ed., pp. 310-345). New York: John Wiley & Sons, Inc.
- Rockquemore, K. A., & Brunsma, D. L. (2002). Socially embedded identities: Theories, typologies, and processes of racial identity among Black/White biracials. *The Sociological Quarterly, 43*, 335-356.
- Rockquemore, K. A., & Brunsma, D. L. (2002). *Beyond Black: Biracial identity in America*. Thousand Oaks: Sage Publications.
- Rockquemore, K. A., & Laszloffy, T. A. (2003). Multiple realities: A relational narrative approach in therapy with Black-White mixed-raced clients. *Family Relations, 52*, 119-128.
- Root, M. P. P. (1990). Resolving "other" status: Identity development of biracial individuals. In L. Brown & M. P. P. Root (Eds.), *Diversity and complexity in feminist therapy* (pp. 185-205). New York: Haworth.
- Root, M. P. P. (1998). Experiences and processes affecting racial identity development: Preliminary results from the biracial sibling project. *Cultural Diversity and Mental Health, 4*, 237-247.
- Root, M. P. P. (1999). The biracial baby boom: Understanding ecological constructions of racial identity in the twenty-first century. R. H. Sheets, & E. R. Hollins (Eds.), *Aspects of human development: Racial and ethnic identity in school practices* (67-89). Mahwah, NJ: Lawrence Erlbaum.
- Root, M. P. P. (2003). Multiracial families and children: Implications for educational research and practice. In J. A. Banks and C. A. McGee Banks (Eds.), *Handbook of*

- research on multicultural education* (2nd ed.), pp. 110-124. San Francisco: Jossey-Bass.
- Root, M. P. P. (2004). From exotic to a dime a dozen. *Women & Therapy, 27*, 19-31.
- Rosenblatt, P. C. (1999). Multiracial families. In M. E. Lamb, et al. (Eds.), *Parenting and child development in "nontraditional" families* (pp 263-278). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Ross, D. (1995). In their own words: Mixed-heritage children in the United States (Doctoral dissertation, University of Massachusetts Amherst, 1995). *Dissertation Abstracts International*.
- Salgado de Snyder, N., Lopez, C. M., & Padilla, A. M. (1982). Ethnic identity and cultural awareness among the offspring of Mexican interethnic marriages. *Journal of Early Adolescence, 2*, 277-282.
- Shih, M. & Sanchez, D. T. (2005). Perspectives and research on the positive and negative implications of having multiple racial identities. *Psychological Bulletin, 131*, 569-591.
- Spencer, M. S., Icard, L. D., Harachi, T. W., Catalano, R. F., Oxford, M. (2000). Ethnic identity among monoracial and multiracial early adolescents. *Journal of Early Adolescence, 20*, 365-388.
- Spikard, P. R. (1997). What must I be? Asian Americans and the question of multiethnic identity. *Amerasia Journal, 23*, 43-60.
- Stephan, C. W., & Stephan, W. G. (1989). After intermarriage: Ethnic identity among mixed-heritage Japanese-Americans and Hispanics. *Journal of Marriage and the*

Family, 51, 507-519.

- Stephan, W. G., & Stephan, C. W. (1991). Intermarriage: effects on personality, adjustment, and intergroup relations in two samples of students. *Journal of Marriage and the Family, 53, 241-250.*
- Stonequist, E. B. (1937). *The marginal man: A study in personality and culture conflict.* New York: Russell & Russell.
- Swahn, M. H., & Donovan, J. E. (2004). Correlates and predictors of violent behavior among adolescent drinkers. *Journal of Adolescent Health, 34, 480-492.*
- Teyber, E. (1997). *Interpersonal process in psychotherapy: A relational approach (3rd ed.).* Pacific Grove: Brooks/Cole Publishing Company.
- Twine, F. W. (1996). Brown skinned White girls: Class, culture and the construction of White identity in suburban communities. *Gender, Place & Culture: A Journal of Feminist Geography, 3, 205-225.*
- Udry, J. R., Li, R. M., & Hendrickson-Smith, J. H. (2003). Health and behavior risks of adolescents with mixed-race identity. *American Journal of Public Health, 93, 1865-1870.*
- Wachtel, P. L. (1997). *Psychoanalysis, behavior therapy, and the relational world.* Washington D.C.: American Psychological Association.
- Wardle, F. (2000). Multiracial and multiethnic students: How they must belong. *Multicultural Perspectives, 2, 11-17.*
- Williams, C. B. (1999). Claiming a biracial identity: Resisting social constructions of race and culture. *Journal of Counseling & Development, 77, 32-36.*

Winn, N. N., & Priest, R. (1993). Counseling biracial children: A forgotten component of multicultural counseling, *Family Therapy, 20*, 29-36.

Zweig, J. M., Phillips, S. D., & Lindberg, L. D. (2002). Predicting adolescent profiles of risk: Looking beyond demographics. *Journal of Adolescent Health, 31*, 343-353.