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## Autonomy and Relatedness in Inner-City Families of Substance Abusing Adolescents

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### Abstract

This study examined parent-adolescent autonomous-relatedness functioning in inner-city, ethnic minority families of adolescents exhibiting drug abuse and related problem behaviors. Seventy-four parent-adolescent dyads completed a structured interaction task prior to the start of treatment that was coded using an established autonomous-relatedness measure. Adolescent drug use, externalizing, and internalizing behaviors were assessed. Parents and adolescents completed assessment instruments measuring parenting style and family conflict. Confirmatory factor analysis found significant differences in the underlying dimensions of parent and adolescent autonomous-relatedness in this sample versus previous samples. It was also found that autonomous-relatedness was associated with worse adolescent symptomatology and family impairment. Results based on both self-report and observational measures contribute to the understanding of key family constructs in this population and provide insight for both researchers and the treatment community.

### Keywords

Substance abuse; adolescent; family

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Understanding the role of family relationships in the causes and course of substance abuse problems in adolescence is critical for two main reasons. First, adolescent substance use is a growing problem, with recent population-based surveys identifying high rates of drug use and national trends toward increased rates of use (PRIDE, 1995; SAMHSA, 1998; USDHHS, 1995). Moreover, reports suggest that adolescents are initiating use at earlier ages (Johnston, Bachman, & O'Malley, 1997) and overall rates of illicit drug use appear to be increasing (Johnston, Bachman, & O'Malley, 1995). Second, family relationships have been found to play a major role in adolescent drug abuse. Among the list of parent-centered and family functioning variables implicated in the etiology and symptom picture of adolescent

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drug use, researchers have identified family relationship characteristics such as parental support and closeness (Hays, Stacy, Widaman, DiMatteo, & Downey, 1986), parental hostility (Johnson & Pandina, 1991), parenting style (Baumrind, 1991; Fletcher, Darling, & Steinberg, 1995), aspects of the parent-adolescent attachment relationship (Brook, Brook, Gordon, Whiteman, & Cohen, 1990; Brook, Whiteman, Gordon, & Cohen, 1986), and levels of family cohesion (Piercy, Volk, Trepper, Sprenkle, & Lewis, 1991).

Given the array of evidence that indicates family factors are influential in this serious, growing social problem, family relations are a critical developmental context for understanding adolescent substance abuse. However, one important family process, parent-adolescent autonomous-relatedness, has been largely overlooked in the scientific literature. Autonomy refers to the ability for independent regulation of one's decision-making, and a sense of self-reliance (Ryan & Lynch, 1989; Sessa & Steinberg, 1991; Steinberg & Silverberg, 1986). Relatedness can be considered equivalent to maintaining emotional connectedness with one's family (Allen, Hauser, Bell, & O'Connor, 1994). Historically, within the conceptualization of adolescence as a time of conflict and detachment, autonomy and relatedness were considered separate and contrary processes, such that individuation or strivings for autonomy were believed to be hindered or stunted by the maintenance of emotional ties with parents (Steinberg, 1990). However, in more recent conceptualizations of adolescence, autonomy and relatedness are considered to be a unitary construct, one which is widely viewed as a crucial developmental process in adolescence (Allen, Hauser, Bell, & O'Connor, 1994; Grotevant & Cooper, 1985; Steinberg & Silverberg, 1986; Steinberg, 1990).

Autonomous-relatedness reflects the contemporary view that adolescent development is optimized within the context of a supportive, connected relationship with parents (e.g., Allen, Hauser, Bell, & O'Connor, 1994; Grotevant & Cooper, 1985; Hauser, Powers, Noam, Jacobson, Weiss, & Follansbee, 1984). Autonomy and relatedness have been conceptually and empirically linked to important indices of adolescents' psychosocial development. Research has revealed that adolescents' autonomous-relatedness functioning is associated with adolescents' ego development (Allen, Hauser, Bell, & O'Connor, 1994), identity development (Fullinwider-Bush & Jacobvitz, 1993), parent-adolescent cohesion (Foster & Robin, 1997), and parent-adolescent attachment relationships (Kobak, Sudler, & Gamble, 1992). Others have tied aspects of impaired autonomy and relatedness to indices of poorer adjustment in adolescence. Emotional detachment from parents has been associated with increased experimentation with substances (Turner, Irwin, & Millstein, 1991), increased acts of delinquency (Kuperminc, Allen, & Arthur, 1996), externalizing behaviors (Allen, Hauser, Eickholt, Bell, & O'Connor, 1994), heightened family conflict (Allen, Hauser, O'Connor, Bell, & Eickholt, 1996), and social impairment (Hodges, Finnegan, & Perry, 1999). Impaired individuation has also been linked to a variety of indices indicating maladjustment, most notably depressed affect (Allen, Hauser, Eickholt et al., 1994). Furthermore, adolescents' poor attachment relationships with parents have been linked to criminal behavior and use of drugs (Allen, Hauser, & Borman-Spurrell, 1996), deviant behavior in adolescence (Allen, Aber, & Leadbeater, 1990), greater feelings of depression and anxiety (Papini & Roggman, 1992), and vulnerability to psychopathology (Allen & Hauser, 1996).

Research has shown that autonomy and relatedness play significant roles in families of adolescent drug abusers. For instance, families of adolescent drug abusers are characterized by several factors that may impair adolescents' striving for autonomy. Specifically, factors such as parental hostility (Johnson & Pandina, 1991; Norem-Hebeisen et al., 1984), authoritarian parenting style and discipline practices (Jurich, Polson, Jurich, & Bates, 1985), and problems in psychological autonomy-granting and mutual problem-solving (Hawkins, Catalano, & Miller, 1992; Steinberg, Fletcher, & Darling, 1994) have been associated with

adolescent drug use. Furthermore, parent-adolescent relationships characterized by hostility and control (Ratti, Humphreys, & Lyons, 1996) and rigidity (Friedman, Utada, & Morrissey, 1987) are also associated with drug use. Additionally, characteristics such as high levels of cohesion combined with low levels of adaptability (Smart, Chibucos, & Didier, 1990) and low levels of flexibility (Needle, Lavee, Su, Brown, & Doherty, 1988) may hinder or prevent adolescents' normative striving for autonomy.

Normative needs for relatedness or attachment to parents may also be undermined in families of adolescent drug abusers. Families of adolescent drug users are characterized by parental hostility (Johnson & Pandina, 1991), maternal coldness and unresponsiveness (Shedler & Block, 1990), maternal over-permissiveness (Brook, Whiteman, Gordon, & Cohen, 1986), and perceptions of low parental support (Anderson & Henry, 1994). Other characteristics of such families include less communication and involvement between adolescents and their parents (Baumrind, 1991; Newcomb & Felix-Ortiz, 1992), deficiencies in parental monitoring (Clark, Neighbors, Lesnick, Lynch, & Donovan, 1998; Steinberg et al., 1994), and family conflict (Brook et al., 1990). Lastly, low levels of family cohesion (Friedman et al., 1987; Needle et al., 1988), family member disengagement (Volk, Edwards, Lewis, & Sprenkle, 1989), and emotional detachment (Turner et al., 1991), often characteristics of families of adolescent drug abusers, may impair parent-adolescent attachment relationships.

Although there has been extensive consideration of family characteristics associated with adolescent substance abuse and adolescent problem behavior, two serious gaps remain. One limitation is that the majority of these studies have examined family characteristics and interactional processes through the use of self-report methodology (e.g., Brook et al., 1986; Johnson & Pandina, 1991; Newcomb & Felix-Ortiz, 1992; Smart et al., 1990; Turner et al., 1991; Volk et al., 1989). Self-report instruments do not provide the many advantages associated with observational methods (Margolin et al., 1998). For example, observational measures allow the assessment of whole family characteristics independently of individuals' description of family functioning (Copeland & White, 1991), enable the researcher to study processes and behavior sequences outside of family members' awareness (Copeland & White, 1991), and fit with family systems theories by enabling the study of interaction sequences and systemic functioning (Filsinger, Lewis, & McAvoy, 1981). The use of observational methods to study parent-adolescent relationships with families of drug abusing adolescents is particularly relevant given the range of family variables associated with adolescent drug abuse. One relevant study that examined family member interactions with the use of an observational measure, found that families with a polydrug dependent adolescent daughter, as well as the other clinical families, had deficits in both connectedness and autonomy during interactions (Ratti et al., 1996).

The literature is also limited in a second way: the concentration on European American middle- to upper-income families. The majority of studies in this area either focus strictly on European American families or include only small percentages of ethnic minority, lower income families. For example, of the many studies reviewed for this article that included ethnic minority families, percentages were as low as 3% African American (Brook et al., 1990), less than 5% ethnic minority participants (Volk et al., 1989), 10% ethnic minority (Johnson & Pandina, 1991), 12.5% African American (Smart et al., 1990), and 17% African American (Clark et al., 1998). The focus on primarily European American middle and upper SES families is disconcerting given the data indicating that ethnic minorities living in disadvantaged, inner-city neighborhoods have high prevalence rates of substance use (Cole & Weissberg, 1995; Mensch & Kandel, 1988) and are more likely to progress toward heavy use (Kandel & Davies, 1991). Moreover, evidence indicates that particular family variables have different meanings in different cultures and contexts (Amey & Albretcht, 1998).

Parental responses to adolescents' normative autonomy striving may serve a different function in the context of an impoverished, dangerous neighborhood (Allen, Moore, & Kuperminc, 1997). Parental responses to such strivings may serve to protect the adolescent from dangers in the surrounding environment. Similarly, economic hardship and subsequent psychological distress influence parents' coping skills and child-rearing behaviors in inner-city African American families, thereby impacting the socio-emotional development of their children (McLoyd, 1990). Thus, research on substance use in adolescents of ethnic minorities families living in disadvantaged neighborhoods is sorely needed.

Research with ethnic minority families has typically involved at-risk or substance abuse treatment studies, both of which highlight the importance of studying key aspects of family functioning. Studies looking at autonomy and relatedness in at-risk samples that include a large proportion of ethnic minority adolescents have pointed to the importance of studying family functioning (Kuperminc et al., 1996; McFarland & Marsh, 2000). Similarly, family functioning has been a key focus in the substance use treatment literature. A growing body of substance abuse treatment literature, most with ethnic minority samples, points to the efficacy of family-based therapies for treating adolescent substance abuse and criminal behavior.

Accordingly, a number of researchers have documented the effectiveness of family-based treatments for substance use (Friedman, Tomko, & Utada, 1991; Lewis, Piercy, Sprenkle, & Trepper, 1990; Liddle & Dakof, 1995; Schmidt, Liddle, & Dakof, 1996; Stanton, 1979; Stanton & Radish, 1997) and behavior problems (Szapocznik et al., 1989). A direct examination of parent-adolescent autonomous-relatedness in an ethnic minority, drug-abusing population would provide much needed information regarding this critical developmental process.

The sample of 74 parent-adolescent dyads in the current study consists of primarily male African American adolescents and represents a common sample seen by clinicians in the inner-city substance abuse and juvenile delinquent treatment communities. Among other studies examining adolescent problem behavior, research conducted by Henggeler, Melton, Smith, Schoenald, and Hanley (1993), Henggeler, Melton and Smith (1992), and Longshore and Grills (2000) included large percentages of African American adolescents. Moreover, such clinical samples are often predominately male (i.e., Longshore, 1997; Longshore & Grills, 2000; Piercy et al., 1991; Stoolmiller, Duncan, Bank, & Patterson, 1993). The moderate sample size of the current study is also typical of research on adolescents referred for clinical services. Numerous studies examining adolescent problem behavior in clinical samples have utilized similar sample sizes (Gavazzi, Anderson, and Sabatelli, 1993; Henggeler et al., 1992; Henggeler et al., 1993; Lewis et al., 1990; Stoolmiller et al., 1993).

The current study is intended to help to fill the void in family-based research on autonomous-relatedness functioning in inner-city families of adolescent substance abusers, by investigating the degree to which the key developmental process of autonomous-relatedness is compromised in these families. This study examined parent-adolescent autonomous-relatedness functioning with the use of an observational measure of autonomy and relatedness. First, the factor structure of an empirically validated observational-based measure of parent-adolescent autonomous-relatedness was examined in this ethnic minority sample. Second, we examined the extent to which adolescents' levels of drug use, externalizing behaviors, and internalizing behaviors were predicted by parent-adolescent autonomous-relatedness functioning, with the expectation that undermining behaviors would be associated with greater problem behavior. Third, several variables, such as parental acceptance and involvement and family conflict, were investigated as potential moderators of the relation between autonomous-relatedness and adolescent symptomatology.

## METHOD

### Participants

Participants in the study included 74 parent-adolescent dyads (63 male adolescents) who completed a family interaction task at the point of pre-treatment assessment for a randomized clinical trial comparing family-based versus individual treatment for adolescent substance abuse in a large northeastern city (see Liddle & Hogue, 2001). Families' yearly household income included 40% less than \$10,000, 20% between \$10,000-\$20,000, 20% between \$21,000-\$34,000, and 20% over \$35,000. The sample included 65 (88%) mother-adolescent dyads and nine (12%) father-adolescent dyads. Of the 74 adolescents, 70% were African American, the majority (69%) lived with a single parent, and adolescents' average age was 15.4 years ( $SD = 1.13$ ). All adolescents either reported that substance use was a significant problem in their lives or there was evidence of a positive urine screen at intake. Most adolescents qualified for substance use disorders (92%) and conduct or oppositional disorder (78%) based on DSM-III-R diagnoses assessed using the Diagnostic Interview Schedule for Children-2nd Version (DISC-2: Fisher, Wicks, Shaffer, Piacentini, & Lapkin, 1992). The DISC-2 has been found to have acceptable psychometric properties when used with adolescent drug abusers (Edelbrock & Costello, 1988; Edelbrock, Costello, Dulcan, Kalas, & Conover, 1985; Costello, Edelbrock, & Costello, 1985). The majority of families within the randomized clinical trial were referred for treatment from the juvenile justice system (80%), with the remaining families referred from schools, other community agencies, or self-referred.

### Assessment of Adolescent Functioning

**Timeline Follow-Back**—The Timeline Follow-Back (TLFB: Sobell & Sobell, 1992) is an interview-based assessment of alcohol use. This interview requires that subjects present a retrospective account of their alcohol use for up to 30 days. Self-report reliability is enhanced through the use of several memory aids (e.g., a visual calendar, identification of key dates such as holidays). Others who have used the TLFB for the measurement of illicit drug use have reported acceptable psychometric properties. Test-retest values have been reported as ranging from .69 to .99, depending on the kind of drug use measured (Ehrman & Robbins, 1994). Similarly, Ehrman and Robbins (1994) found acceptable correlation between the TLFB and weekly urinalysis results. Fals-Stewart, Farrell, Freitas, McFarlin, and Rutigliano (2000) reported high reliability, temporal stability (most test-retest correlations above .85), and convergent validity with other measures of substance use with a sample of adolescents and adults. The total number of days of marijuana use for a 30-day period was used in the current study as the measure of drug use.

**Youth Self-Report**—The Youth Self-Report (YSR: Achenbach & Edelbrock, 1987; Achenbach, 1991) is a self-report checklist completed by the adolescent that measures child behavior problems and social competencies for adolescents between the ages of 11 and 18 years old. The YSR yields broad band *t*-scores on Internalizing (Withdrawn + Somatic + Anxious/Depressed scales) and Externalizing (Delinquent + Aggressive scales) dimensions. The psychometric properties of the scale, including the presence of these two independent dimensions, have been widely supported (e.g., Achenbach, 1991; Song, Singh, & Singer, 1994; Thurber & Hollingsworth, 1992). Furthermore, the YSR is based on norms from a nationally representative sample and effectively discriminates between clinically referred and normal adolescents (Achenbach, 1991). For the purposes of the current study, adolescents' raw scores on the Internalizing and Externalizing dimensions were used, with high scores indicative of higher levels of symptomatology.

## Assessment of Parent-Adolescent Dyadic Functioning

**Autonomy and Relatedness Coding System**—The Autonomy and Relatedness Coding System (ARCS version 2.13: Allen, Hauser, Bell, McElhaney, Tate, Insabella, & Schlatter, 1994) is an observational coding system designed to measure an individual's autonomy and relatedness behaviors during a conflictual interaction. Although it is a measure of individual behaviors, the ARCS is based on the theoretical and empirical belief that autonomy and relatedness are key components of the parent-adolescent relationship, such that individual behaviors during an interaction are thought to reflect the dyadic relationship. The ARCS includes three summary scales for each participant in the interaction: Autonomous-Relatedness, Undermining Autonomy, and Undermining Relatedness. These three scales are based on nine different subscales labeled as Reasons, Confidence, Recant, Blurs, Pressures, Validates, Engaged, Distracting/Cut-off, and Hostile. Confidence and Engaged behaviors are coded based on a global assessment of the entire interaction, whereas the other seven subscales are coded statement by statement based on their frequency and intensity/salience. Statements are scored from 0 to 4 with half-point intervals and then calculated using an algorithm to arrive at a final score. Based on this algorithm, a high score reflects a high degree of frequency and/or intensity/salience of the respective behaviors. Every dyad receives two sets of scores, one reflecting parent behaviors toward the adolescent in the interaction and the other reflecting adolescent behaviors toward the parent(s).

Intraclass correlation coefficients for the three summary scales have been reported as .84 for Autonomous-Relatedness, .82 for Undermining Relatedness, and .70 for Undermining Autonomy (Allen, Hauser, Bell, & O'Connor, 1994; Allen, Hauser, O'Connor et al., 1996; Allen & Hauser, 1996). The construct and predictive validities of the ARCS were established in studies linking the summary scales with relevant indices of adolescent psychosocial functioning (e.g., ego development, self-esteem) (Allen, Hauser, Bell, & O'Connor, 1994). The ARCS was also found to predict additional variance over an existing observational measure of constraining and enabling behaviors in a revealed-differences interaction task (Allen, Hauser, Bell, & O'Connor, 1994). The authors also report consistency between the theoretical groupings of the scales and factor loadings generated through confirmatory factor analysis loadings (GFI = .92) (Allen, Hauser, Bell, & O'Connor, 1994). The ARCS has shown acceptable reliability and predictive validity with samples including ethnic minority, lower SES adolescents (Insabella, 2000; McElhaney & Insabella, 2000; McFarland & Marsh, 2000).

## Assessment of Family Functioning

**Family Environment Scale**—The Family Environment Scale (FES: Moos & Moos, 1986) is a self-report measure completed separately by the adolescent and parent(s). The FES contains 90 items to which the respondents are asked to indicate whether or not the statements are “true” or “false” of their family home life. The FES is a linear scale that consists of 10 subscales intended to capture environmental characteristics of the respondent's family home life. Test-retest reliability estimates range from .68 to .86 over a two-month period, and internal consistencies of the 10 subscales range from .61 to .78 (Moos & Moos, 1981). The FES has been used to distinguish between normal families and families with drug abusing adolescents (Friedman et al., 1991; Friedman & Utada, 1992). Studies have supported the use of the Conflict subscale to distinguish distressed from non-distressed families (Hibbs, Hamburger, Kruesi, & Leanne, 1993; Moos & Moos, 1981). The subscale Conflict was used in this study, and parent and adolescent raw scores were averaged in order to obtain composite scores.

**Parenting Style Questionnaire**—The Parenting Style Questionnaire (PSQ; Steinberg, 1993) is a 26-item self-report instrument completed separately by the adolescent and parent(s). This measure yields parenting style scores based on Baumrind's (1967, 1991) classification of parenting styles. The PSQ also yields three distinct, continuous parenting scales labeled as Acceptance/Involvement, Behavioral Control, and Psychological Control. High scores on these subscales indicate high levels of these aspects of parenting style. The Acceptance/Involvement subscale measures both perceptions of parental warmth (sample item: "I can count on my parents to help me out if I have some kind of problem") and parental involvement in the adolescent's life (sample items: "My parents help me with my school work if there is something I don't understand"; "My parents know who my friends are"). Steinberg, Mounts, Lamborn, and Dornbusch (1991) reported an internal consistency coefficient of .72. Other studies have shown that the PSQ maintains acceptable psychometric standards when used with adolescents from diverse backgrounds (Steinberg, Elmen, & Mounts, 1989; Steinberg et al., 1994). The PSQ also exhibits acceptable predictive validity when used to predict levels of drug use and antisocial behavior within a normative teenage population (Fletcher et al., 1995; Steinberg et al., 1994). The Acceptance/Involvement subscale was examined as a potential moderator of autonomous-relatedness given research highlighting variables such as parental involvement (Baumrind, 1991; Newcomb & Felix-Ortiz, 1992) and maternal coldness and unresponsiveness (Shedler & Block, 1990) as key aspects of families of adolescent drug abusers. Parent and adolescent raw scores were averaged in order to obtain a composite score for the Acceptance/Involvement subscale.

## PROCEDURES

### Data Collection and Family Interaction Coding

Parents and adolescents were interviewed separately at pre-treatment and all self-report measures were completed. After completing two warm-up interaction tasks ("plan a meal" task and "discuss likes and dislikes about each other" task), family members were asked to complete a 7-minute interaction task in which they were instructed to discuss a recent conflict. The task was explained by a research assistant who instructed the parent and adolescent as follows: "You have seven minutes to discuss a recent argument or conflict that you have had. Please discuss what happened, who was involved, what you said or did, and how it was resolved if it was resolved." These videotaped interactions were transcribed by a team of undergraduate transcribers. Typical topics discussed in the interactions included household rules (43%), school attendance and/or grades (24%), family communication and relationships (20%), adolescent's use of drugs (18%), money (15%), adolescent's friends (11%), siblings (11%).

Four graduate students in Developmental Psychology were trained on the use of the Autonomy and Relatedness Coding System (Allen, Hauser, Bell, McElhaney et al., 1994) by one author of the instrument (who had also served as a trainer for other ARCS coding groups). Training involved three months of 2-hour weekly conferences reviewing the coding of ARCS training videotapes (nine different family interactions drawn from prior studies conducted by J. P. Allen, S. T. Hauser and associates). All training tapes consisted of a 10-minute parent and adolescent discussion of a conflict based on a dyadic revealed differences task. Three of these tapes involved African-American parent-adolescent dyads. Conference calls focused on training all coders to be reliable with the preestablished scores and with each other's scores. This study represented the first time the ARCS was used with an ethnic minority, substance abusing population. Therefore, training was extended past the typical training tapes to include a subset of five family interactions drawn from the same parent study as the participants in the current study. This was done in order to track the

transportability and measurement equivalence of the ARCS system for this population. Reliability, as measured by the intraclass correlation coefficient, reached an adequate level ( $ICC_{(3,4)} = .70$ ). Weekly reliability meetings continued every other week for the duration of the coding process in order to track reliability and prevent rater drift. Coders were kept unaware of the intent of the study and were randomly assigned to the videotapes. Two coders rated each interaction used in the current study and the resulting scores were averaged. One-way, random, average measure intraclass correlation coefficients (Shrout & Fleiss, 1979) at the completion of coding ranged from .72 to .87 for the parent and adolescent ARCS summary scales.

## RESULTS

First, confirmatory factor analysis was conducted on the ARCS adolescent data and the parent data separately using the Maximum Likelihood (ML) method of estimation based on the covariance matrices.<sup>1</sup> Hoyle and Panter (1995) cite the ML method as the standard method used in structural equation modeling. Furthermore, ML is appropriate for suboptimal conditions such as small sample sizes (Hoyle & Panter, 1995). Second, regression analyses were run to examine the extent to which parent and adolescent autonomous-relatedness predicted adolescent symptomatology. Third, regression analyses were run to test for potential moderators of adolescent autonomous-relatedness and adolescent symptomatology. For all regression analyses, gender was entered as the first step in order to control for potential gender effects. Females comprised 15% of the sample and were retained in order to maximize sample size (and therefore study power) and enhance the inclusiveness and generalizability of the sample.

### Autonomy and Relatedness: Adolescent Data

Confirmatory factor analysis was conducted to examine the extent to which the underlying conceptual model of the ARCS (see Figure 1), which had been confirmed in previous studies using middle-class European American samples (i.e., Allen, Hauser, Bell, & O'Connor, 1994; Allen, Hauser, O'Connor et al., 1996), fit the data acquired from the current sample. The current study examined the model fit for both the adolescents' data and the parents' data separately.

The initial test of the ARCS model using the adolescents' data yielded an unacceptable fit:  $\chi^2(24, N = 74) = 84.97, p < .00, GFI = .80, RMSR = .044, RMSEA = .19$ . Efforts to respecify the model required consideration of the modification indices produced. First, an examination of the covariance matrix of the latent variables indicated a high degree of multicollinearity in the model. Undermining Relatedness and Undermining Autonomy had a covariance value of 1.06. Accordingly, Undermining Autonomy and Undermining Relatedness were collapsed into a single latent factor, Undermining Autonomous-Relatedness, as depicted in Figure 2. The collapsing of these two factors falls in line with the original theoretical conception of autonomous-relatedness given that both Undermining Autonomy and Undermining Relatedness represent ways to detract from an interaction. Additionally, an examination of the modification indices led to allowing covariances among

<sup>1</sup>Although the covariance matrices were used in the factor analyses, Hoyle and Panter (1995) recommend reviewing the correlation matrix and relevant standard deviations in confirmatory factor analysis. These authors also recommend rounding to three decimal places to enhance precision. Accordingly, the correlation matrix for the observed endogenous adolescent variables was analyzed prior to the utilization of the covariance matrix in the factor analyses. The respective correlations were consonant for the most part with the subsequent findings based on the covariance matrix. Although the revised factor model resulted in the subscale Engaged to have a negative loading on UAR, Engaged was not negatively correlated with the undermining subscales in the raw score correlations. The adolescent ARCS summary scores, based on the revised two-factor model, were checked against the raw summary scores calculated for those two factors. Again, the correlations were consonant with the derived values. Of note, adolescent AR was positively correlated with adolescent UAR ( $r(74) = .387, p \leq .001$ ).

a few error terms. Moreover, a modification index produced in the initial output indicated that model fit was likely to improve if the observed endogenous variable Engaged was allowed to load on the latent variable Undermining Autonomous-Relatedness.

The two-factor model resulted in an acceptable chi square value and appropriate fit indices (see Table 1). In an effort to determine the extent to which the respecified model exhibited a statistically significant improvement in fit over the original model (see Figure 1), the difference in fit between the two models was tested by the use of a chi-square (Byrne, 2001).<sup>2</sup> The respecified Autonomy and Relatedness model resulted in a  $\Delta\chi^2 = 54.63$  ( $\Delta df = 2$ ), which indicated that the respecified model fit was a significant improvement at the .05 probability level. Appropriately, the Estimated Cross-Validation Index (ECVI) value of 1.05 fell below the values produced for the saturated model and the independence model.<sup>3</sup>

Figure 2 lists the parameter estimates associated with the respecified model. Those parameter estimates with values greater than  $\pm 1.96$  are statistically significant. Although the observed variable Recant is associated with a nonsignificant factor loading, it was retained in the model and subsequent calculation of factor scores. The original confirmatory analysis of the ARCS (Allen, Hauser, Bell, & O'Connor, 1994) also yielded a low factor loading for Recant on Undermining Autonomy. Given that the current study represents the first examination of the ARCS with this particular population, Recant was retained to incorporate all indicators of the original model and for overall interpretability of the scale. The model fit indices support the revised factor structure.

Factor scores to be used in all subsequent analyses were created by calculating the factor score for each individual latent variable, even those with a nonsignificant critical ratio value, by multiplying the observed raw score (average of coder 1 and coder 2) on each identified manifest variable by the regression weight for that variable. In the event of a negative factor loading, the portion of the score indicated by the regression weight was subtracted from the aggregate score.

### Autonomy and Relatedness: Parent Data

Analysis of the parent data was identical to that of the adolescent data. The initial test of the original ARCS conceptual model using the parents' data yielded an unacceptable fit (see Table 2). Efforts to respecify the model required consideration of the modification indices produced. As with the adolescent data, an examination of the covariance matrix of the latent variables indicated a high degree of multicollinearity in the model. Undermining Relatedness and Undermining Autonomy had a covariance value of .95. Accordingly, Undermining Autonomy and Undermining Relatedness were collapsed into one latent factor, Undermining Autonomous-Relatedness, as depicted in Figure 3. Examination of the modification indices led to allowing covariances among a few error terms. Also, as with the adolescents' data, a modification index produced in the initial output indicated that model fit was likely to improve if the observed endogenous variable Engaged was allowed to load on the latent variable Undermining Autonomous-Relatedness. The addition of Engaged as an

<sup>2</sup>Smaller sample sizes impose a greater likelihood for Type I error when utilizing the chi square value in structural equation hypothesis testing. The current sample size compromises statistical power when interpreting the chi square value, as it falls short of the acceptable 5–10 subjects per parameter to be estimated. The chi square value in sample sizes with low statistical power can often result in a nonsignificant value and thus the failure to reject the model (Hoyle & Panter, 1995). Similarly, the chi square value can be misleading in overly large sample sizes (Hoyle & Panter, 1995). In light of the small sample size in the current study, care was taken to consider those fit indices that are less reliant on overall sample size (i.e., Goodness-of-Fit Index).

<sup>3</sup>The ECVI represents the extent to which the solution obtained would fit another sample of similar size from the same population (Cudeck & Henly, 1991). The ECVI coefficient indicates a well-fitting model whenever the coefficient falls below the ECVI produced for both the saturated model and the independence model (Byrne, 2001). Based on the output produced for the model under consideration, the ECVI value of 1.05 (confidence intervals of .93 and 1.30) falls below the ECVI values produced for the saturated model (1.23) and the independence model (5.33).

indicator of Undermining Autonomous-Relatedness yielded a negative factor loading with an associated significant critical ratio value (C.R. = - 3.60). The respecified model resulted in acceptable fit indices (see Table 2). Additionally, a comparison of the two models yielded a  $\Delta\chi^2 = 46.87$  ( $\Delta df = 3$ ), which is statistically significant at the .05 probability level. The ECVI value of 1.14 fell below the values produced for the saturated model and the independence model. Figure 3 lists the parameter estimates acquired after model respecification. The procedure for calculating factor scores was the same as that described above for the adolescent data.

### Descriptive Statistics

Descriptive statistics for all the dependent variables were examined (see Table 3). Summary scales calculated from the raw data, as opposed to factor score loadings, for the respecified ARCS model resulted in scale  $ICC_{(1,2)}$  values of .86 for adolescent AR, .86 for adolescent UAR, .86 for parent AR, and .77 for parent UAR. Similarly, internal consistency (Cronbach's  $\alpha$ ) values were .79 for adolescent AR, .70 for adolescent UAR, .57 for parent AR, and .74 for parent UAR. Descriptive statistics for the ARCS summary scales calculated from factor scores are listed in Table 4.

Table 5 includes correlations among all study variables, including the ARCS summary scales. Of note are the moderately high, and counterintuitive, positive correlations between adolescent AR and adolescent UAR ( $r(74) = .51, p < .01$ ), as well as between parent AR and parent UAR ( $r(74) = .37, p < .01$ ). These correlations stand in contrast to those reported in the initial validation of the ARCS (Allen, Hauser, Bell, & O'Connor, 1994). Allen et al. reported that Autonomous-Relatedness was uncorrelated with Undermining Autonomy and Undermining Relatedness. A closer look at the AR factor, as obtained in the current study, provides an explanation for this seemingly counterintuitive positive correlation. In this sample AR is largely defined by the indicators Reasoning and Confidence. Within the coding of Reasons an individual can receive a high score regardless of whether his or her reasoning involves negative qualities, such as anger and stubbornness, positive qualities, or neutral qualities. Confidence is coded regardless of whether one asserts him/herself in a positive, healthy manner or asserts him/herself through obstinance and inflexibility. AR in this sample likely depicts a qualitatively different individual than an individual from a sample in which AR was fairly equally comprised of all its four indicators. Thus, the conceptualization of these indicators allows for high scores even when Reasoning and Confidence involve essentially negative qualities. Accordingly, AR in this sample is associated with adolescent symptomatology. Of particular note, moderate correlations were found between adolescent AR and Externalizing ( $r(74) = .29, p < .01$ ) and UAR and drug use ( $r(74) = .31, p < .01$ ).

Correlations between adolescents' ARCS summary scales and all other study variables were moderate. AR was correlated with Conflict ( $r(66) = .29, p < .05$ ), and UAR was also correlated with Conflict ( $r(66) = .29, p < .05$ ). Parents' AR and UAR were virtually uncorrelated with adolescents' Drug Use and Externalizing. However, a moderate correlation was found between parent AR and adolescents' Internalizing ( $r(74) = .23, p < .05$ ). Additionally, parent UAR was moderately correlated with Conflict ( $r(66) = .29, p < .05$ ). Parent AR and parent UAR were not significantly correlated with any other variable. Thus, adolescent AR and UAR were associated with adolescent problem behavior and family conflict.

### Predicting Adolescent Symptomatology

Hierarchical multiple regression was used to examine the extent to which parent and adolescent autonomous-relatedness predicted adolescent Drug Use, Externalizing, and

Internalizing behaviors. For all regression analyses gender was entered at step 1, adolescent AR and UAR were entered at step 2, and parent AR and parent UAR were entered in step 3.

It was expected that adolescent AR and adolescent UAR would predict adolescents' Drug Use. It was also expected that parent AR and parent UAR would predict Drug Use after accounting for adolescent AR and UAR. Adolescent AR and adolescent UAR as a set were significantly related to Drug Use ( $F(3, 74) = 3.95, p = .01$ ). Examination of individual predictors (see Table 6) revealed that adolescent UAR was the most salient predictor ( $\beta = .39, p < .01$ ). Parent AR and UAR did not add significantly to the model ( $\Delta F = .01, ns$ ).

Regression analysis revealed that adolescent AR and adolescent UAR as a set were significantly related to externalizing ( $F(3, 74) = 2.74, p = .05$ ) (see Table 7). Inspection of individual predictors revealed that adolescent AR was the most salient predictor ( $\beta = .26, p = .05$ ). Thus, higher rates of AR were predictive of higher rates of externalizing behaviors. Parent AR and parent UAR, after accounting for adolescent AR and UAR, did not result in a significant improvement ( $\Delta F = 1.47, ns$ ).

Adolescent internalizing was regressed onto adolescent AR and UAR and parent AR and UAR. Adolescent AR and adolescent UAR did not predict internalizing behavior ( $F(3, 74) = 1.94, ns$ ), and parent AR and parent UAR, after accounting for adolescent AR and UAR, did not predict adolescent internalizing.

### Moderators of Autonomous-Relatedness

The variables adolescent age, parental acceptance/involvement, family conflict, and parent AR were examined to see if they moderated relations between adolescent AR and UAR and adolescent symptomatology. A series of 12 separate regressions was run to see if each of these potential variables moderated the relations between adolescent AR and UAR and the dependent variables of adolescent Drug Use, Externalizing, and Internalizing. For each regression analysis gender was entered at step 1, adolescent AR and adolescent UAR at step 2, the potential moderator variable at step 3, and the relevant interaction terms at step 4. Given the difficulty in identifying moderating variables in non-experimental data (McClelland & Judd, 1993), these analyses were run without controlling for familywise error. Results indicated that the relevant interaction terms created for adolescents' age, family conflict and parent AR did not moderate the relations between adolescent autonomous-relatedness and adolescent Drug Use, Externalizing, or Internalizing.

Acceptance/involvement, however, was found to moderate the relation between adolescent autonomous-relatedness and adolescent internalizing. The addition of the interaction term for AR and acceptance/involvement and the interaction term for UAR and acceptance/involvement in the hierarchical regression was associated with a significant  $F$  ( $\Delta F = 3.34, p = .04$ ). More specifically, the addition of the moderator acceptance/involvement and UAR showed that parental acceptance/involvement moderated the relation between adolescents' UAR and internalizing at trend level ( $\beta = -2.52, p = .06$ ). Follow-up analyses were performed in order to probe the interaction. Two subgroups were created by dividing the sample based on the median split of the variable acceptance/involvement. This method of probing the interaction, as opposed to other methods (Aiken & West, 1991), was selected in light of the small sample size. Correlational analysis indicated that those families who reported high levels of parental acceptance/involvement had a significant inverse relation between adolescent UAR and internalizing behavior ( $r(45) = -.35, p < .05$ ). In contrast, families who reported low levels of parental acceptance/involvement had a significant positive association between adolescent UAR and internalizing ( $r(29) = .39, p < .05$ ). Thus, within the context of high parental acceptance and involvement, adolescents' undermining autonomous-relatedness behaviors were associated with fewer internalizing symptoms.

However, in the context of low levels of parental acceptance and involvement, more undermining behaviors were associated with greater internalizing symptoms.

## DISCUSSION

This study found that the structure of observed parent-adolescent autonomous-relatedness was transformed in an inner-city, ethnic minority, drug abusing sample. Moreover, findings indicated that adolescent autonomous-relatedness was related to adolescent drug use, externalizing, and internalizing behaviors in this sample.

Our analysis of this sample of drug abusing adolescents and their families generally confirmed the theoretical structure of the measure of autonomous-relatedness that had been found for middle-class European American families. However, there were several important differences from previous studies. First, autonomous-relatedness is conceptualized to include three components: Autonomous-Relatedness (AR), Undermining Autonomy (UA), and Undermining Relatedness (UR) (Allen, Hauser, Bell, & O'Connor, 1994). For both the adolescents and the parents in the current sample, the two types of undermining behaviors were related to the extent that they represented a single construct, referred to here as Undermining Autonomous-Relatedness (UAR). Within the original conceptualization, UA and UR include behaviors that detract from an interaction. For instance, UA is comprised of behaviors such as recanting one's position, blurring, and pressuring, and has been found to be predictive of concurrent and later levels of hostility (Allen, Hauser, O'Connor et al., 1996). Likewise, UR is comprised of cutting off another person, distracting behaviors, and hostility, and has been associated with adolescents' externalizing behaviors (Allen, Hauser, Eickholt et al., 1994). The collapsing of these two factors into one factor is therefore theoretically plausible, as all the behaviors represent ways to detract from an interaction.

A second important aspect of the resulting nature of autonomous-relatedness in these families deserves consideration. The factor AR is conceptualized to consist of four types of behaviors: reasoning, confidence, validating, and engagement. Prior research utilizing the ARCS has found all four constructs to comprise AR, with behaviors reflecting engagement representing the strongest component. Thus, in other families AR is expressed primarily through positive behaviors such as engagement and validating. For both the parent model and the adolescent model in the current sample, AR was largely defined by behaviors indicative of reasoning and confidence. Family members can express large amounts of reasoning and confidence regardless of whether corresponding behaviors involve negative qualities, positive qualities, or even neutral qualities. Moreover, both the adolescents' and parents' AR and UAR were positively correlated, further highlighting the transformed nature of AR. Thus, for both the adolescents and the parents in the current study, AR is expressed primarily through reasoning and self-assertion and is directly related to undermining characteristics.

Autonomous-Relatedness and Undermining Autonomous-Relatedness were positively correlated in the current sample. Allen, Hauser, Bell and O'Connor (1994) reported that within the validation of the original three-factor model, undermining autonomy and undermining relatedness were not correlated with autonomous-relatedness, but did indicate that there was some evidence of undermining and relatedness behaviors being correlated in other samples (Allen, personal communication). Consideration of the variables comprising the summary scales provides some explanation. As discussed previously, autonomous-relatedness for both the parent data and adolescent data is primarily comprised of the behaviors reasoning and confidence. These two types of behaviors do not necessarily reflect positive traits. Thus, autonomous-relatedness seems to represent something qualitatively different in this sample than was originally conceptualized by the creators of the ARCS. In

the current sample autonomous-relatedness is associated with negative indices, thus making its correlation with undermining autonomous-relatedness both feasible and coherent within the context of other study findings.

The transformed nature of the AR factor with this sample provides a critical context for understanding the clinical picture of these families and the subsequent relations among autonomous-relatedness and adolescent symptomatology. For instance, AR is positively associated with adolescents' externalizing behaviors and levels of family conflict. These findings are contrary to other studies in which aspects of undermining, rather than promoting, autonomous-relatedness were associated with a variety of indices of adolescent maladjustment (Allen, Hauser, Eickholt et al., 1994; Allen, Hauser, O'Connor et al., 1996; Kuperminc et al., 1996). Additionally, the current findings stand in contrast to research that has tied autonomous-relatedness to positive outcomes in adolescent psychosocial development such as ego development and self-esteem, attachment security and coherence of mind in attachment relationships, social problem-solving and academic competence, and young adult occupational attainment (Allen, Hauser, Bell, & O'Connor, 1994; Allen & Hauser, 1996; Bell, Allen, Hauser, & O'Connor, 1996; Best, Hauser, & Allen, 1997; Kuperminc et al., 1996).

Undermining Autonomous-Relatedness was also associated with a number of important indicators of adolescents' problem behaviors. Adolescents' UAR functioning was positively associated with concurrent drug use and levels of family conflict. Parents' UAR was also positively correlated with family conflict. These findings are generally in line with research that indicating that impaired autonomy and relatedness are associated with poorer adjustment in adolescence. Impaired relatedness has been linked with increased acts of delinquency (Kuperminc et al., 1996) and externalizing behaviors (Allen, Hauser, Eickholt, Bell, & O'Connor, 1994). Undermining Autonomy has been associated with depressed affect (Allen, Hauser, Eickholt et al., 1994) and adolescent hostility (Allen, Hauser, O'Connor et al., 1996).

Interestingly, parental acceptance and involvement, based on both parents' and adolescents' report, moderated the relation between adolescents' undermining autonomous-relatedness and adolescents' internalizing behaviors. In the context of low levels of parental warmth and encouragement, as well as low levels of involvement in various aspects of an adolescent's life (i.e., school and friendships), undermining behaviors were likely to be related to higher levels of internalizing symptoms. However, within the context of high parental warmth and involvement, adolescents' undermining behaviors were less likely to be associated with high levels of internalizing symptoms. These findings highlight the importance of considering the indirect relations of various family and contextual variables.

Contrary to expectations, parent characteristics were not related to adolescent symptomatology once adolescent characteristics were taken into account. First, in light of the use of an observationally-based predictor and adolescent self-report outcome variables, this finding is not the result of shared method variance. Second, in this cross-sectional study the current sample was comprised of highly impaired adolescents whose autonomous-relatedness functioning, not parent autonomous-relatedness functioning, served as the most salient predictor of indices of concurrent symptomatology. Longitudinal or intervention studies examining parent-adolescent autonomous-relatedness over time are needed to further clarify the parents' contribution in explaining adolescents' problem behavior.

Despite the importance of these findings, the study is characterized by methodological limitations. The sample size in the current study serves as a limitation in that statistical power is compromised in factor analyses. Observationally-based studies often suffer from

issues related to low sample size given the practical and economical constraints that prevent the sampling of larger numbers of subjects. Confirmatory factor analysis involves the specification of a factor model and then enables the examination of its goodness-of-fit to the data in question (Bryant & Yarnold, 1995). While this process offers the advantages of (1) allowing measurement errors to be either correlated or uncorrelated and (2) error variance due to shared methods of assessment to be partialled out (Bryant & Yarnold, 1995), the current model respecification needs to be cross-validated in other samples. Indeed, the findings in the current study could be considered largely preliminary, yet a justifiable examination of the complex data obtained.

Moreover, observationally-based coding measures frequently require extensive coder training and time allotted to the coding process, imposing practical constraints on the number of observations to be considered. The original factor analysis conducted on the ARCS utilized a sample size of 77 adolescents and reported an acceptable GFI value of .92 (Allen, Hauser, Bell, & O'Connor, 1994). Nonetheless, future studies would benefit from utilizing a larger sample size and the corresponding increase in statistical power, particularly those using confirmatory factor analyses. Secondly, the ethnic composition and lack of equal numbers of males and females in the current study, although ecologically representative, precludes a precise examination of ethnic and gender differences. Additional research with more tailored samples would provide valuable information to the treatment community. Third, the cross-sectional nature of the data also serves as a methodological limitation. Longitudinal studies are needed to better elucidate the developmental role of autonomous-relatedness in these families.

The explication of autonomous-relatedness functioning in a treatment-seeking population offers particular insights for the clinical community. Specifically, the findings point to the need to identify and build positive parent-adolescent relationship characteristics. In this sample the low levels of validating behaviors indicate the need for clinicians to foster such behaviors during parent-adolescent interactions. Similarly, the complex role of levels of parental acceptance and involvement highlights the importance of systemic efforts at repairing family relationships and subsequently reducing adolescent symptomatology. Treatment studies have identified family interactional processes such as structure, flexibility, and conflict resolution as critical in understanding family functioning and adolescent drug use (Ozechowski & Liddle, 2000; Schmidt et al., 1996; Szapocznik et al., 1989). The unexpected positive association between the undermining and promoting autonomous-relatedness emphasizes that family variables can have different meanings in different cultures and different contexts (Amey & Albrecht, 1998). For instance, autonomy strivings may take on a different meaning in the context of an inner-city setting (Allen, Moore, & Kuperminc, 1997), thereby highlighting the need for clinicians to consider contextual variables in the assessment and treatment of families.

Future research examining autonomous-relatedness in samples similar to the current one would provide further clarification of the conceptual model of autonomous-relatedness obtained in the current study. As this study is one of the first to examine observed autonomous-relatedness in an inner-city, ethnic minority, clinically impaired sample, further evidence of the measurement and predictive validity of these constructs are needed. Such studies would provide vital information to the treatment community. Moreover, longitudinal studies identifying both negative and positive characteristics of parent-adolescent functioning, as associated with adolescent outcomes, would offer much to the understanding of autonomous-relatedness in these families. The inclusion of self-report measures that conceptually parallel observationally-based measures would provide added clarification of the meaning and interrelations of the variables of interest.

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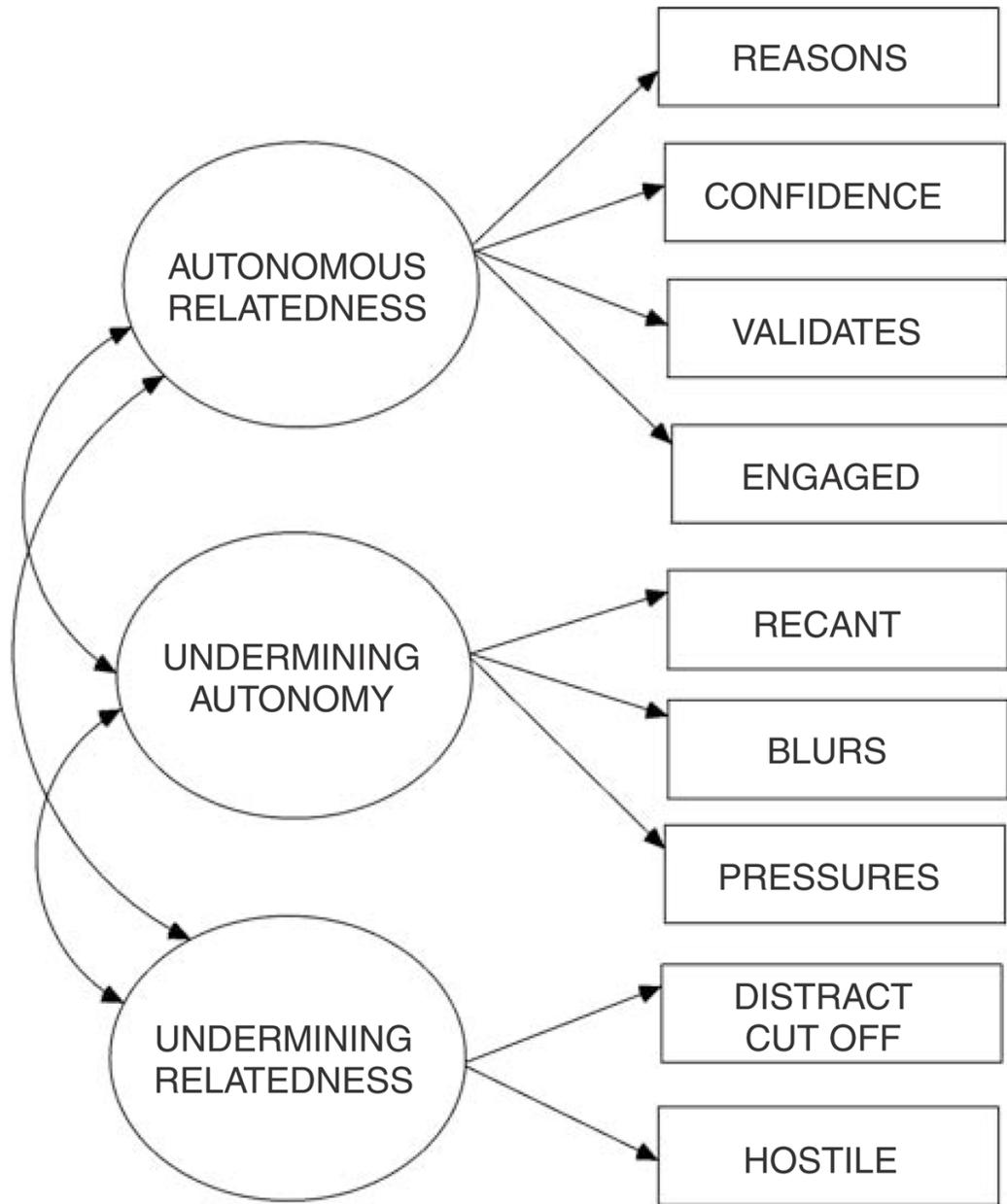
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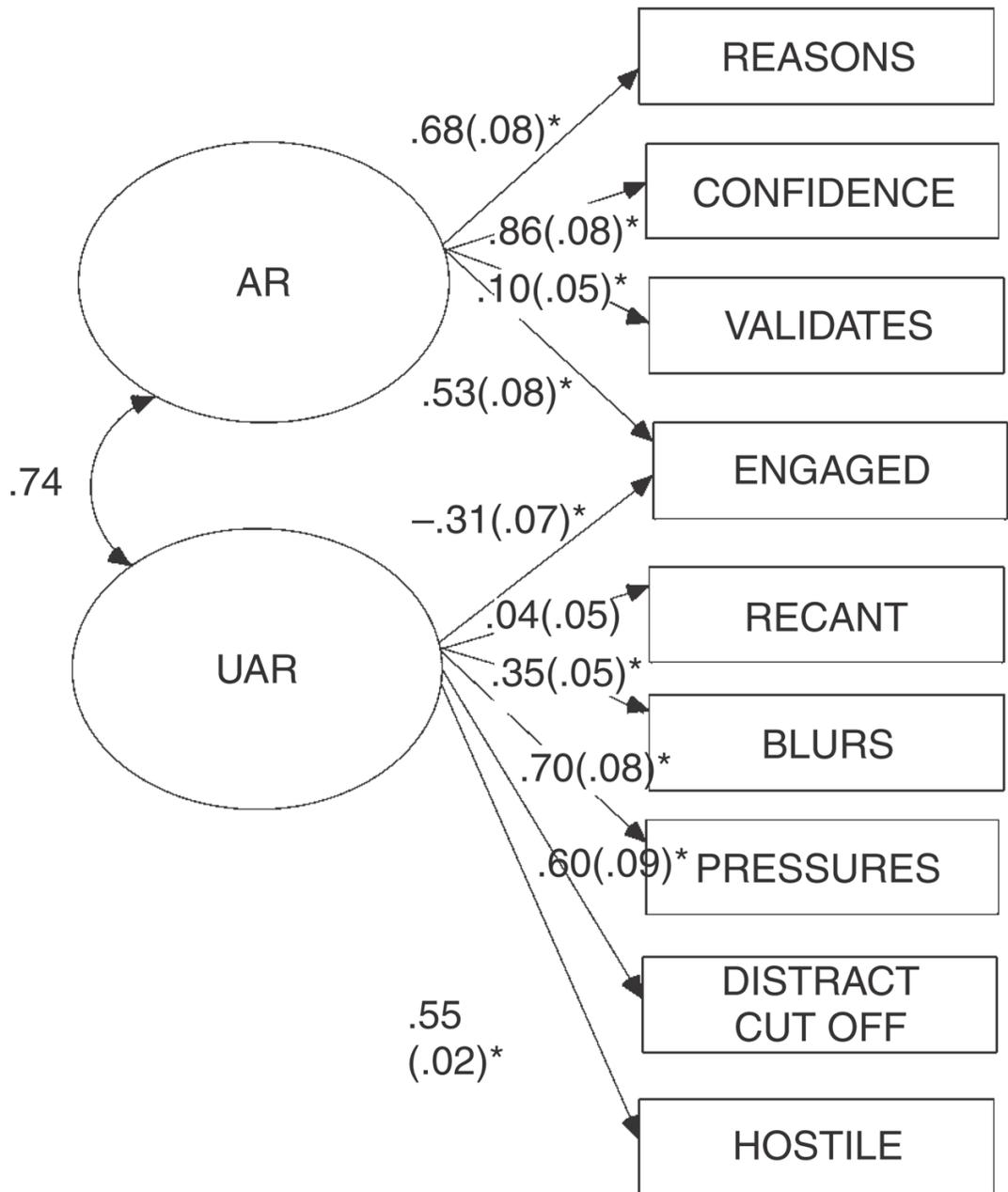
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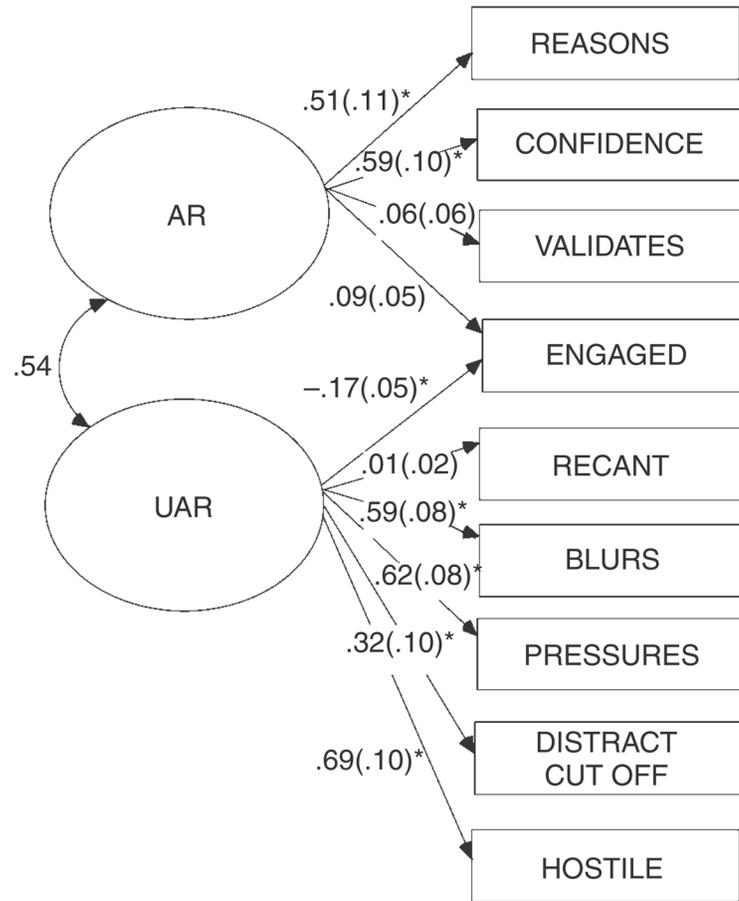
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**FIGURE 1.**  
Autonomy and Relatedness: Conceptual Model.



**FIGURE 2.** Adolescent Autonomy and Relatedness: Respecified Model with Parameter Estimates. AR = Autonomous-Relatedness; UAR = Undermining Autonomous-Relatedness.  $\chi^2(22, N = 74) = 30.34, p = .11$ ; Goodness-of-Fit Index (GFI) = .92; Root Mean Square Residual (RMSR) = .02; Root Mean Square Error of Approximation (RMSEA) = .07. (Coefficients Associated with Structural Paths Represent Unstandardized Estimates; Parenthesized Values Represent Standard Errors.)  
 \*C.R.>+/- 1.96. Error terms and covariances of error terms are omitted for ease of viewing.



**FIGURE 3.** Parent Autonomy and Relatedness: Respecified Model with Parameter Estimates. AR = Autonomous-Relatedness; UAR = Undermining Autonomous-Relatedness.  $\chi^2(21, N = 74) = 35.20, p = .03$ ; Goodness-of-Fit Index (GFI) = .91; Root Mean Square Residual (RMSR) = .03; Root Mean Square Error of Approximation (RMSEA) = .09. (Coefficients Associated with Structural Paths Represent Unstandardized Estimates; Parenthesized Values Represent Standard Errors.)  
\*C.R.>+/- 1.96. Error terms and covariances of error terms are omitted for ease of viewing.

TABLE 1

Confirmatory Factor Analysis Goodness of Fit Statistics for a Two-Factor Model of Adolescents' Autonomy and Relatedness (N = 74)

Model	$\chi^2$	df	p	GFI	AGFI	CFI	RMSR	RMSEA
Original	84.97	24	.00	.80	.63	.82	.04	.19
Respecified	30.34	22	.11	.92	.84	.98	.02	.07

Note: GFI = Goodness-of-Fit Index; AGFI = Adjusted Goodness-of-Fit Index; CFI = Comparative Fit Index; RMSR = Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation.

**TABLE 2**  
 Goodness of Fit Statistics for CFA Two-Factor Model for Parents' Autonomy and Relatedness (N = 74)

Model	$\chi^2$	df	p	GFI	AGFI	CFI	RMSR	RMSEA
Original	82.07	24	.00	.81	.64	.72	.04	.18
Respecified	35.20	21	.03	.91	.81	.93	.03	.09

Note: GFI = Goodness-of-Fit Index; AGFI = Adjusted Goodness-of-Fit Index; CFI = Comparative Fit Index; RMSR = Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation.

TABLE 3

Descriptive Statistics of Dependent Variables

Variable	M	SD	Range	Skew	Kurtosis
Acceptance/Involvement (N = 74)	3.35	.32	1,28	-.29	-.30
Conflict (N = 66)	4.33	1.47	6	.09	-.89
Drug Use (N = 74)	9.54	7.89	31	.76	-.68
Externalizing (N = 74)	19.32	9.21	39	.49	-.04
Internalizing (N = 74)	10.03	6.94	26	.84	-.03

**TABLE 4**

Descriptive Statistics of ARCS Summary Scales Calculated from Factor Scores (N = 74)

Variable	M	SD	Range	Skew	Kurtosis
Adolescent AR	3.92	1.45	6.13	-.18	-.65
Adolescent UAR	1.45	1.39	5.74	.86	.34
Parent AR	3.37	.72	2.92	-.41	-.31
Parent UAR	2.68	1.51	7.11	.41	-.38

Note: AR = Autonomous-Relatedness, UAR = Undermining Autonomous-Relatedness.

**TABLE 5**  
Correlations Among Adolescent and Parent ARCS Summary Scales and Study Variables (N = 74)

	1	2	3	4	5	6	7	8	9	10
1. A-AR	1.00									
2. A-UAR	.51***	1.00								
3. P-AR	.15	-.07	1.00							
4. P-UAR	.34***	.48***	.37***	1.00						
5. Drug Use	.07	.31**	-.09	.14	1.00					
6. Externalizing	.29**	.18	.20	.07	-.05	1.00				
7. Internalizing	.17	-.03	.23*	-.05	-.10	.68**	1.00			
8. Accept/Involve	.08	-.14	.05	.02	.05	-.15	-.09	1.00		
9. Conflict	.29*	.29*	.19	.29*	-.03	.36**	.17	-.37***	1.00	
10. Self-Worth	.08	-.02	.13	-.04	.06	.18	.41**	-.03	.02	-1.00

Note:

\*\*\*  
 $p < .01$

\*  
 $p < .05$ .

A-AR = Adolescent Autonomous-Relatedness; A-UAR = Adolescent Undermining Autonomous-Relatedness; P-AR = Parent Autonomous-Relatedness; P-UAR = Parent Undermining Autonomous-Relatedness.

**TABLE 6**

Hierarchical Regression Analysis of Adolescents' and Parents' Autonomous-Relatedness Predicting Drug Use (N = 74 Dyads)

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>F/ΔF</i>
Step 1				.20
Adolescent Gender	-3.30	2.57	-.15	
Step 2				3.95*
Adolescent Gender	-4.20	2.46	-.19	
Adolescent AR	-.62	.70	-.11	
Adolescent UAR	2.25	.73	.39*	
Step 3				.01
Adolescent Gender	-4.23	2.58	-.19	
Adolescent AR	-.61	.73	-.11	
Adolescent UAR	2.29	.88	.40*	
Parent AR	.01	1.46	.00	
Parent UAR	-.09	.77	-.02	

Note: AR = Autonomous-Relatedness; UAR = Undermining Autonomous-Relatedness.  $R^2 = .022$  for Step 1;  $\Delta R^2 = .12$  for Step 2;  $\Delta R^2 = .00^*$  for Step 3.

\*  $p < .01$ .

**TABLE 7**

Hierarchical Regression Analysis of Adolescents' and Parents' Autonomous-Relatedness Predicting Externalizing (N = 74 Dyads)

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>F/AF</i>
Step 1				.14
Adolescent Gender	4.42	2.98	.17	
Step 2				2.74*
Adolescent Gender	3.51	2.94	.14	
Adolescent AR	1.64	.83	.26*	
Adolescent UAR	.22	.87	.03	
Step 3				1.47
Adolescent Gender	2.22	3.02	.09	
Adolescent AR	1.41	.85	.22	
Adolescent UAR	1.00	1.02	.15	
Parent AR	2.88	1.70	.23	
Parent UAR	-.96	.90	-.16	

Note: AR = Autonomous-Relatedness; UAR = Undermining Autonomous-Relatedness.  $R^2 = .03$  for Step 1;  $\Delta R^2 = .08$  for Step 2;  $\Delta R^2 = .04^*$  for Step 3.

\*  $p < .05$ .