Stability and Change of Social Goals in Adolescence

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Abstract

Objective—This study provides a comprehensive analysis of continuity and change in social goals using the interpersonal circumplex (IPC) model across adolescence (ages 11 – 16). Five complementary definitions of stability were examined: structural, rank-order, absolute, individual, and ipsative.

Method—Data were taken from a longitudinal study of early adolescent problem behavior. Social goals were assessed during each wave with data collection occurring at three annual intervals (Wave 1, ages 10-12). A community sample of adolescents (*n* = 387) was recruited. Adolescents were evenly split on gender and a majority (82.7%) was White.

Results—Results suggest a modest increase in stability across social goals; yet, significant interindividual heterogeneity. Although levels of Agentic and Communal factors increase over time, these patterns were driven by decreases in the Submissive and Separate octants.

Conclusions—This offers evidence for the utility of examining lower-order facets of interpersonal dispositions as it provides a nuanced picture of adolescent personality development. Furthermore, findings suggest that change and continuity in social goals may both be relevant in this developmental period. The difficulty is accounting for trait stability as well as change, and the IPC model may be particularly useful for meeting this challenge.

Keywords

Social Goals; Personality Development; Interpersonal Circumplex; Personality Stability; Personality Change

Researchers have long been interested in understanding stability and change in adult personality. Individual differences in personality are predictive of academic achievement (Judge, Higgins, Thoresen, & Barrick, 1999), divorce (Kokko, Bergman, & Pulkinnen, 2003), and psychopathology (Caspi & Shiner, 2008). More recently, examinations of change and stability of personality have included earlier developmental periods (e.g., Blonigen, Carlson, Hicks, Krueger, & Iacono, 2008; Donnellan, Conger, & Burzette, 2007). Although there has been a growing interest in examining age-related differences in personality, findings have been equivocal at best. Among personality domains, the most inconsistent

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findings have been demonstrated in more interpersonal traits (e.g., Extraversion and Agreeableness; Soto, Gosling, John, & Potter, 2011). This is a notable concern as interpersonal domains reflect central features of personality. Namely, social goals are a major aspect of interpersonal domains (DeYoung, Weisberg, Quilty, & Peterson, 2013) especially in adolescence. The current study assesses normative development, stability, and change in social goals across adolescence.

Broad Domains Versus Facets of Personality

Broad personality trait classification systems, such as the five factor model (McCrae & John, 1992), organize basic dispositional tendencies (Roberts & Robins, 2000). Despite their significant utility, summarizing personality with broad factors inherently leads to some loss of information (Roberts, Walton, & Viechtbauer, 2006; Soto, et al., 2011). Some suggest (Soto et al., 2011) that discrepancies regarding stability and change across studies may be due in part to level of analysis (broad factors versus facets). Extraversion, in particular, is highlighted as a salient example of how a lack of fine-grained analysis may produce misleading conclusions (Caspi & Shiner, 2008; Roberts & DelVecchio, 2000; Soto, et al., 2011). When examined at the broad level, Extraversion demonstrates little change across adulthood (e.g., McCrae et al., 1999). Yet, at the facet level, social dominance increases, whereas social vitality decreases with age across adulthood (Helson & Kwan, 2000). These findings highlight the importance of considering a more fine-grained analysis of change when examining personality, especially within interpersonally oriented domains. Similar benefits of a fine-grained analysis for understanding inconsistencies in change and stability within interpersonal dispositions across adolescence are likely. Some studies indicate that personality is stable (Costa & McCrae, 2002), whereas others suggest that adolescence is characterized by substantial mean changes in personality (Roberts & DelVecchio, 2000). Moreover, some studies demonstrate that Extraversion increases (Allik, Laidra, Realo, & Pullmann, 2004), others report a general decline, and still others report that Extraversion is stable across early to late adolescence (McCrae et al., 2002). To our knowledge, a fine-grained analysis of stability and change in interpersonal facets of personality has not been tested prospectively in adolescence. This is a notable limitation given the salience of interpersonal relationships and the significant degree of developmental changes that occur during this age.

Adolescence as a Key Developmental Period of Change

Adolescence is a developmental period of great interest for personality researchers since it is generally characterized by instability and rapid change relative to other developmental periods (Roberts, Caspi, & Moffitt, 2001). Psychologically, early adolescence is characterized by identity formation (De Fruyt et al., 2006), including self-exploration with respect to interpersonal goals (Roberts, et al., 2006). Namely, an individual's social needs of companionship and acceptance (Sullivan, 1953) as well as striving for autonomy (Erickson, 1968) organize personality. Cognitively, adolescents develop abstract thinking, allowing for a nuanced formulation of personality as multifaceted and a greater preoccupation with understanding the self in relation to others (Collins, 1997). Time spent with peers increases and become the primary social context that impacts development (Rubin, Bukowsi, &

Parker, 2006). This period is marked by a heightened concern in social involvement, gaining autonomy, developing status, and an increased impetus to rely on peers to address these social needs (Buhrmester, 1996). Taken together, these developmental changes contribute to the presence of remarkable individual differences in interpersonal goals that comprise personality and predict adjustment in adulthood.

Interpersonal goals reflect individual strivings when interacting with others, or the value an individual places on appearing a certain way in social interactions (e.g., assertive, warm). It is through consistent patterns of interactions and adopted social roles where youth develop identities reflecting how to manage social acceptance, conflict, and status negotiations (Roberts & Robins, 2000). Social goals represent an important aspect of personality because they are critical in the development of social adjustment and behavior including aggression, social avoidance, affiliation, and the quality of peer relationships (e.g., Markey, Markey, & Tinsley, 2005; Trucco, Wright, & Colder, 2013). Despite ample theory and empirical support for the role of social goals in interpersonal functioning, little research has considered normative changes in social goal development of youth (Buhrmester, 1996; Rose & Rudolph, 2006). Empirically testing the developmental timing of social goals in adolescence using a fine-grained analysis will help elucidate inconsistencies in prior work. It will also provide a greater understanding of social motivations that organize youths' social lives and adjustment in later developmental periods.

Conceptualizing and Assessing Social Goals

The Interpersonal Circumplex (IPC; see Figure 1) organizes interpersonal functioning using two major factors: Agency and Communion (Locke, 2000; Pincus & Ansell, 2013; Wiggins, 1979). Social goals are aspects of interpersonal functioning that fit into this framework. Indeed, Extraversion and Agreeableness dimensions are closely associated with social goals (Roberts & Robins, 2000) and Extraversion and Agreeableness have a structure corresponding to Agentic and Communal factors of the IPC (DeYoung et al., 2013). Each point on the IPC is defined as a weighted combination of levels of both factors, reflecting all combinations of Agency and Communion (Wiggins, 1979). IPC-based measures are generally divided into eight scales (octants) with four scales capturing the poles of Agency (e.g., dominance, status) vs. Submissiveness (e.g., avoiding arguments by going along with others) and Communion (e.g., belongingness, warmth) vs. Separation (e.g., concealing feelings and thoughts from others), with the remaining four assessing blends of these factors. These categories map on to social goals examined in research on social processes in youth. For example, relationship (Rose & Asher, 1999), and relationship maintenance (Erdley & Asher, 1996) motives reflect Communal goals. Whereas, control (Rose & Asher, 1999), dominance (Lochman, Waymond, & White, 1993), and maintaining assertive reputation (Erdley & Asher, 1996) motives reflect Agentic goals.

Research suggests that by adolescence, Agentic and Communal goals become differentiated, whereby they load on two distinct factors with distinct correlates. For example, strong Agentic goals are associated with aggression, substance use, and inattentive behavior, while strong Communal goals are related to positive friendship quality, peer acceptance, prosocial behaviors, and social intimacy (Lochman et al., 1993; Markey, et al., 2005; Ojanen,

Grönroos, & Salmivalli, 2005; Rose & Asher, 1999). Changes in social goals may contribute to the presence of pervasive individual differences in personality throughout adolescence that predict personality, personality pathology, and adjustment decades later in life (Shiner, 2009).

Prior work on adolescent social goals has largely focused on interpersonal dispositions in circumscribed contexts, such as conflict (Rose & Asher, 1999). Although this research is useful for understanding how social goals lead to aggression, it is less useful for understanding general interpersonal proclivities. Moreover, the few studies using IPC-based measures to assess social goals in adolescence, limit their examination to broad dimensions (e.g., Ojanen et al., 2005; Salmivalli & Peets, 2009), which, as noted, is particularly problematic for interpersonal facets. As such, studies focusing on conflict situations and broad dimensions of social goals likely limit progress in developing and testing theories of youth social behavior and development.

Conceptualizing social goals using an IPC model provides greater specificity and thus a more in-depth understanding of patterns in development, stability and change (Wright, Pincus, & Lenzenweger, 2012). For example, Wright and colleagues (2012) used the IPC to examine change in interpersonal traits in young adulthood (18-22 year olds). There was a significant increase in the affiliation (i.e., communion) factor. This was primarily due to increases in ingenuousness, decreases in arrogance, but not increases in pure warmth. In contrast, the dominance factor was stable, masking significant increases in assuredness, decreases in submissiveness, and remarkable stability in extraversion and gregariousness. Findings support the strength of the IPC as an organizing framework for considering a fine-grained analysis of change. Yet, similar longitudinal investigations in adolescent social goals remain to be tested.

The current study offers a fine-grained longitudinal examination of social goals using an IPC-based measure, which may help clarify inconsistencies in the adolescent personality literature. The Interpersonal Goals Inventory for Children, Revised (IGI-CR; Trucco et al., 2013) has good psychometric properties (i.e., good internal consistency, construct validity, and fit to a circumplex structure) and assesses broad social goals. Adopting a model that synchronizes with adult measures of personality and social goals (i.e., the Circumplex Scales of Interpersonal Values [CSIV]; Locke, 2000) allows for greater continuity of social goal assessment across development, thus moving towards scientific cohesion. The aim of this study was to examine stability and change of social goals during adolescence using the IGI-CR.

Measuring Development, Stability, and Change

Five complementary approaches to measure stability and change in personality development have been routinely employed: structural stability, rank-order stability, absolute stability, individual stability, and *ipsative stability* (e.g., De Fruyt et al., 2006; Donnellan et al., 2007; Roberts et al., 2001; Robins, Fraley, Roberts, & Trzesniewski, 2001). Structural stability refers to the stability in covariation among variables across time. To our knowledge relatively few studies have examined structural stability of personality in childhood and

adolescence compared to adulthood. One study noted that personality trait structure matures in adolescence and is indistinguishable from adult personality by age 16 (Allik, et al., 2004), and that personality dimensions are largely invariant across time (De Fruyt, et al., 2006). Accordingly, we expected that the IGI-CR would be structurally invariant across time-points.

Rank-order stability reflects the maintenance of inter-individual position over time. Rank-order stability can be assessed using Pearson correlations among scales across time. Test-retest correlations of .50 reflect medium values and .70 reflect large values of stability (Robins et al., 2001). Overall, stability coefficients around .43 are noted between the ages of 6 and 17.9 when controlling for time interval, (Roberts & DelVecchio, 2000) and .30 to .63 in youth ages 12 to 18 across personality dimensions (McCrae et al., 2002). Research suggests that two-week test-retest reliability of social goals in adolescence is between .50 and .73 (Ojanen et al., 2005). We expected rank-order stability to be more modest in our study given longer intervals between annual assessments. Rank-order stability was also expected to be more modest between the first and the third assessment, given the longer period between assessments (Roberts, et al., 2006).

Absolute (normative) stability refers to changes in mean level over time. Mean-level differences in traits over time indicate whether the sample as a whole is increasing or decreasing on a trait. Communal and Agentic goals were expected to increase given prior research (Ojanen et al., 2005). At the octant level, it was expected that adolescents would increase in Agency and decrease in Separateness, as youth tend to increase in social dominance and decrease in shyness over time (Ganiban, Saudino, Ulbricht, Neiderhiser, & Reiss, 2008; Roberts, et al., 2006).

Individual stability examines variation in individual trajectories. Individual growth curve (IGC) modeling offers a sophisticated approach to charting variability in individual trajectories (Singer & Willett, 2003). Heterogeneity is examined in linear rates of change. Given prior work demonstrating significant interindividual variability in rates of personality change over time (e.g., Wright, Pincus, & Lenzenweger, 2011) we expected significant interindividual heterogeneity in trajectories of interpersonal goals.

Ipsative stability assesses change in an individual's personality profile across time. It is a person-centered approach to change, capturing intraindividual variability or stability in multiple dimensions of personality. Most commonly, ipsative stability has been measured using Cronbach & Gleser's (1953) D^2 statistic or the q-correlation (i.e., the product-moment correlation of individual profiles) across time-points; both are considered in the current study. The D^2 statistic reflects total difference between an individual's profiles at two time-points. It is unbounded on the upper end, and is calculated as the sum of the squared differences between individual scales in the profile. Therefore, it is a gross measure of the difference between two profiles, sensitive to changes in elevation, scatter, and shape. In contrast, the q-correlation controls for mean level and scatter in the profiles. It provides a measure of consistency in the patterning of two profiles. Research suggests that in youth, average q-correlations can exceed .70 (Block, 1971), with average q-correlations ranging from .43 to .71, with significant variation across children and adolescents (i.e., −.44 to .92;

Asendorpf & van Aken, 1991). High stability in individual profiles, but significant variation in stability across adolescents was expected in this study.

Methods

Participants

This community sample of early adolescents was part of a larger three-year longitudinal study investigating risk factors for substance use initiation. The sample was recruited utilizing a random-digit-dial (RDD) sample of telephone numbers generated for Erie County, New York. Inclusion criteria comprised of an 11 or 12 year-old child at the time of recruitment with no language or physical disability that would preclude them from understanding or completing the assessment, and a caregiver willing to participate.

The final sample included 387 adolescents. The participation rate was 52.4%, which is well within the range of that found in population-based studies requiring extended and extensive subject involvement (Galea & Tracy, 2007). Demographic information is presented in Table 1. Total attrition for the study was 7.5% (29/387). The Time 2 assessment occurred approximately one year after the initial interview. The attrition rate was 4% (14/387). Families who did not complete the Time 2 assessment were not significantly different on any demographic variables (i.e., adolescent gender, marital status, race, level of education, and income) compared to families that did. The mean age for adolescents at Time 2 was 13 (range 12 to 14 years). The Time 3 assessment occurred approximately one year after the Time 2 assessment. Families not completing the Time 3 assessment (20/387) did not differ on any demographic variables at Time 1 compared to families that did. Thus, attrition likely had a minimal impact on the results. The mean age for adolescents at Time 3 was 14 (ranged 13 to 16 years).

Procedure

The larger study was described to parents and adolescents as an investigation of the transition into adolescence. Interviews were conducted in a research laboratory on a university campus. Before the interview, the caregiver was asked to give consent and the adolescent was asked to provide assent. Adolescents completed self-report measures including social goals. All items were read aloud and responses were entered directly into the computer to minimize random responding and missing data. Data for this paper are taken from all three adolescent assessments. Each interview took approximately 2½ hours to complete. Families were compensated $75 for their participation during the first wave, $85 during the second, and $125 during the third wave.

Measures

Social goals—Social goals were assessed using the Interpersonal Goals Inventory for Children, Revised (IGI-CR; Trucco, et al., 2013). The IGI-CR is a 32-item self-report measure and is administered with the following instructions, "When with your peers, in general how important is it to you that...?" rated using a 5-point Likert-scale ranging from 0 (*not at all important to me*) to 4 (*extremely important to me*). The IGI-CR assesses each of the octant scales (4-items per octant) of the IPC representing different combinations of

Agentic (dominance, status) and Communal (belongingness, warmth) social goals: Agentic (appearing dominant, independent), Agentic-Separate (getting even), Separate (appearing detached and not disclosing thoughts or feelings to others), Submissive-Separate (appearing distant and avoiding rejection from others), Submissive (going along with peers to avoid arguments), Submissive-Communal (putting others' needs first, valuing approval from others), Communal (valuing solidarity and belongingness), and Agentic-Communal (expressing oneself openly, being respected). Factor scores were also calculated for Agentic and Communal goals following common IPC procedures (Wiggins, Phillips, & Trapnell, 1989). Internal consistency for factor and octant scales by wave is provided in Table 2. The IGI-CR conformed to a circumplex structure and demonstrated good construct validity using self- and collateral-report measures of social behaviors and adjustment (Trucco, et al., 2013).

Analysis and Results

Structural Stability

To test for structural stability among the interpersonal scales over time, we used multi-group structural equation modeling to compare two models. Modeling was conducted in Mplus 6.11 (Muthén & Muthén, 1998-2011) using robust maximum likelihood estimation. The baseline model was estimated with individual latent factors for each octant scale defined by fixing the loading of the observed scales to 1.00 and the error variance of the observed scales at 0.00. Also, factor correlations were freely estimated within and across each wave of data. This creates a pattern of factor correlations that are equivalent to the manifest covariance matrix within each wave, and a fully saturated model. In the second, constrained model, factor correlations and variances were fixed to be invariant across time-points. A non-significant chi-square (χ^2) for the constrained model would be indicative of structural stability. The resulting model fit indicated that the IGI-CR was structurally invariant across all three time-points ($df = 72$; $\chi^2 = 85.30$; $p = 0.14$). Fit statistics indicate excellent adherence to structural stability (RMSEA = 0.02, 90% CI = 0.00-0.04; CFI = 1.00; TLI = 1.00; Standardized Root Mean Square Residual = 0.04). As an additional step, we tested fit to circumplex structure at each wave using CIRCUM (Browne, 1992), a specialized structural equation modeling program for estimating circumplex models. Circumplex structure (using unconstrained communalities and angles) provided adequate to excellent fit to the data (depending on fit statistic) at each wave: Wave 1 RMSEA = .090, 90% CI = .063-.119, CFI = .98, TLI = .95; Wave 2 RMSEA = .118, 90% CI = .091-.148, CFI = .97, TLI = .92; Wave 3 RMSEA = .104, 90% CI = .076-.133, CFI = .98, TLI = .94.

Rank-Order Stability

Rank-order stability was assessed using Pearson correlations between time-points. Results are summarized in the three rightmost columns of Table 2. The rank-order stability between the first two time points (r_{12}) is more modest than the rank-order stability between the second two (r_{23}), suggesting a modest increase in stability in social goals as adolescents age. The stability values between Wave 1 and Wave 3 (r_{13}) are generally the smallest, suggesting that stability is also associated with temporal distance, which is common in the personality stability literature (Roberts & Mroczek, 2008).

Mean and Individual Level Stability

Mean-level and individual-level stability were examined using an IGC approach within a multilevel modeling framework. We modeled the effects of age (a continuous variable) on change in the factors and the octant scales. In this approach, repeated measurements (Level 1) are treated as nested within individuals (Level 2). The Level 1 model contains two estimated growth parameters—the intercept and slope. The individual intercept parameter represents the mean elevation of the slope at the origin of the time scale. In this study, time was centered on the youngest participant's age of entry to the study (11.03 years). The individual slope parameter represents the rate of change per unit of time (i.e., per year). IGC modeling allows the coefficients for the intercept and slope parameters to vary randomly to model interindividual variation (i.e., random effects) in intercept and slope in the sample. That is to say, each individual is allowed to take on his or her own values for intercept and slope, which in turn can be explained by introducing between-person predictors (e.g., sex) at Level 2 in the model. The models were fitted employing robust maximum likelihood estimation using the multilevel option. Fixed effects were tested using Wald tests, while random effects were tested using likelihood ratio tests with adjusted p-values for the difference between models with freely estimated random effects (Berkhof & Snidjers, 2001; Hox, 2010).

These results are summarized in Table 3. Interpersonal scales were first standardized using the first assessment wave, thus all values are in standard units. To be comprehensive, all effects associated with the intercept of the IGC models are provided. Because the IGI-CR variables were standardized within the first wave of data, and the intercept was set at the age of the youngest individual in the study, the fixed effect coefficient for the intercept represents the difference in scaled scores between the mean age of Wave 1 (12.10 years) and 11.03 years. At the broadest level, the sample showed mean increases in Agency (.07, $p = .00$, effect size $r = .28$) and Communion (.08, $p = .00$, effect size $r = .26$). Effect sizes of .10 reflect small effects, .24 medium effects, and .37 large effects (Rosenthal & Rosnow, 1991, p. 446). These factors are quite broad and by examining the results of the octants a more nuanced picture emerges.

All octant scales of the IGI-CR, with the exception of Agentic-Communal, decrease in absolute level over the course of the study. Yet, only four octants exhibit significant change. However, the structure of circumplex scales is such that decreases in a given octant may represent increases in the broader factors of Agency and Communion. Keeping this in mind, we find that there are significant decreases in Submissive-Separate, Submissive, and Submissive-Communal, all of which are comprised of submissive content. Coupled with no significant change in Agentic-Separate, Agentic, and Agentic-Communal, it appears that the increase in overall Agentic goals is being driven primarily by decreases in Submissive goals. Across time, adolescents become less motivated to be withdrawn, follow what others tell them to do, and remain acquiescent. There is a significant decrease in the Separate octant. Thus, the increase in Communal goals is driven by decreases in Separate and Submissive-Separate octants, suggesting that adolescents become less detached and socially reticent, although they are not becoming more warm and engaging. Importantly, although these mean changes appear modest, these capture rate of change *per year*, and thus they do not represent

the total change over the study. Moreover, mean change says nothing about the variability in that change, which we turn to next.

The random effects in Table 3 represent the variability around the mean and slope parameters. For all of the octants and both factors of the IPC there is significant variability in intercept values. In terms of slopes, again all octants and both factors exhibited significant individual variability in slopes. Therefore, we observed rich inter-individual heterogeneity in the trajectories of interpersonal goal development, both in initial value and rate of change.

We then fitted conditional growth curve models, which included biological sex as a Level 2 predictor of intercept and slopes.[1] Overall, there were few significant relationships to report. Sex was related to initial values in Agency, Communion, Agentic-Separate, and Communal octants. Boys were more Agentic (.16, $p = .01$, ES $r = .14$) and less Communal (−.24, $p = .00$, ES $r = .17$) at the factor level at age 11. More specifically, they were more Agentic-Separate (.37, $p = .01$, ES $r = .14$) and less Communal (−.30, $p = .02$, ES $r = .12$) at the octant level. Boys also showed more modest increases in factor level Communal goals (−.08, $p = .01$, ES $r = .13$) and decreases in octant level Communal goals (−.11, $p = .03$, ES $r = .12$) relative to girls.

Ipsative Stability/Change

Findings suggest a much wider variability in change between the first two waves compared to other intervals (see Table 4). As children age, stability in their profile begins to accumulate. On average there is high stability in individual profile patterns, although there is considerable range in stability. To provide a better sense of the distribution of coefficients, we report the percentage of negative coefficients, and the percentage of those exceeding $r_q = .70$ (i.e., retain a majority of the pattern). A sizeable minority of these correlations were negative ($r_{q12} = 18.8\%$; $r_{q23} = 16.2\%$; $r_{q13} = 21.4\%$), and only a minority exceeded $r_q = .70$ ($r_{q12} = 21.4\%$; $r_{q23} = 31.0\%$; $r_{q13} = 17.3\%$). Note that there is a gradual trend towards less stability as the distance between measurement occasions increases. Overall, stability in interpersonal goal profiles is only modest during this developmental period.

Discussion

The primary aim of this study was to provide longitudinal examinations of normative development, stability and change in an important aspect of personality, interpersonal goals, across the adolescent years. Although a number of studies examine personality development in adolescence (Allik, et al., 2004; De Fruyt et al., 2006), only a few studies consider a more fine-grained analysis. Furthermore, to our knowledge, no studies have focused on social goals or used the IPC as a framework for understanding personality development during adolescence. In this study, social goals were examined both at the broad factor-level as well as the octant-level using standard indicators of personality change and stability.

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[1]Intelligence and several temperament dimensions (i.e., effortful control, negative affect, child sensitivity to reward and child sensitivity to punishment) were also examined as level-2 moderators. Overall, the few relationships on intercept and slope that were statistically significant were small and without any discernible pattern, suggesting that these associations likely reflected chance associations. As such, there was little evidence that rates of change and stability significantly differed across levels of intelligence and temperament.

Structural Stability

As predicted, there was support for structural invariance in the IGI-CR from early to middle adolescence. That is, the covariance between social goal dimensions was consistent across three years. This pattern is supported even though highly stringent tests of structural personality continuity were employed. Findings correspond with research using similar methodologies demonstrating structural invariance in five-factor personality domains in youth across similar intervals (Allik, et al., 2004; De Fruyt, et al., 2006).

Rank-Order Stability

Rank-ordering was modest yet comparable to other studies examining social goals among adolescents (two-week interval range = .50 to .73; Ojanen et al., 2005). Our findings are also consistent with meta-analyses demonstrating stability coefficients around .43 between ages 6 and 17.9 (Roberts & DelVecchio, 2000) and .30 to .63 in youth ages 12 to 18 (McCrae, et al., 2002) across temperament and Big Five dimensions. The contextual perspective suggests that personality is likely plastic given different life experiences yielding low correlations across time (Lewis, 2001). As such, a certain degree of rank-order instability in our sample is not surprising given different life experiences that may be associated with rapid physical, social, and cognitive changes. Other studies demonstrate that the length of time between assessments has a negative effect on rank-order stability (Roberts et al., 2006) and that stability increases in a linear pattern until adulthood (Roberts & DelVecchio, 2000). Our study is consistent with these findings and suggests that rank-order stability in social goals begins to emerge in early to mid- adolescence.

Absolute Stability

As expected, youth demonstrated mean increases in broad factors of both Agentic and Communal goals. This maps on to social development models suggesting that drives for gaining status and affiliation with peers increase (Erickson, 1968; Sullivan, 1953). Also, previous research demonstrates increases in Agentic and Communal goals in early adolescence (Ojanen et al., 2005) as well as mean-level increases in Extraversion between the ages of 12 to 16 (Allik et al., 2004). Researchers posit that individuals become increasingly successful at adapting to the demands of life, as well as increasing their capacity to form healthy relationships by being more socially dominant and efficacious (Blonigen, et al., 2008). Our findings suggest that an increase in striving for status and intimacy with peers is apparent even during adolescence.

Others have noted that a more fine-grained analysis of age trends in personality may not always be necessary if specific facet traits within a particular factor show identical or nearly identical trends (Soto et al., 2011). Yet, if different lower-order facets show significantly different trends, then facet-level research is necessary to achieve a full understanding of change and stability in personality (Soto et al., 2011). Though Agency and Communal factor scores both demonstrate increases across adolescence, our findings are characterized by different trends at the lower-order octant scores. Namely, some octants demonstrated decreases across time (i.e., Submissive-Separate, Submissive, Submissive-Communal) while others demonstrated little change (i.e., Agency, Agentic-Separarate, and Agentic-Communal). More specifically, increases in Agentic goals may be due to decreases in

Submissive goals. Although youth may seem to value appearing dominant, this may be driven by a desire to appear less submissive and acquiescent around peers. This aligns with research demonstrating an increase in a second-order factor of Independence during adolescence reflecting an interest in becoming one's own person rather than going along with expectations from the peer group (Huntsinger & Jose, 2006).

Similarly, increases in broad Communal goals are due primarily to decreases in Separate goals. Although youth may seem to value goals aligned with developing solidarity with peers, this may be driven by a desire to appear less detached. This pattern is consistent with work on social cognitive development and adolescent egocentrism. Specifically, Elkind (Elkind, 1967; Elkind & Bowen, 1979) found an increased focus on developing intimacy with others during adolescence that was motivated by changes in egocentrism and self-consciousness. Specifically, egocentrism among early adolescents is characterized by the inaccurate perception that they are the object of others' attention during early adolescence. This contributes to self-consciousness and unwillingness to self-reveal thoughts and feelings. By middle adolescence, egocentrism diminishes and there is an increased focus on developing intimacy with others via self-disclosure. As such, self-consciousness and the motivation to remain detached and separate diminish as suggested by our observed declines in Separate goals.

Our findings are consistent with research demonstrating different trends across lower-order facets of adult Extraversion (e.g., Helson & Kwan, 2000; Soto et al., 2011). This suggests that mixed findings on stability and change in interpersonal aspects of personality across adolescence may be attributable in part to different trends at the facet-level and the content sampled by different measures. That is, diverse patterns are likely to emerge (e.g., an increasing trend, a decreasing trend, or no change) depending on the level of analysis (i.e., factor versus octant). In sum, there is much to be gained by a fully articulated model of interpersonal functioning provided by the IPC, allowing for the unpacking of broad dimensions of social goals.

Individual Stability

Exploring individual-level change is important for gaining a comprehensive picture of personality development, as individual differences in change may be unrelated to population trends (Blonigen, et al., 2008; Donnellan, et al., 2007). Significant individual differences in social goal trajectories were expected based on previous findings (Wright, et al., 2011; 2012). Individual heterogeneity was demonstrated across octants and broad factors of social goals both in the initial value and rate of change. This raises interesting questions regarding correlates of social goal changes, yet this is beyond the scope of the current study. Previous research suggests that a variety of social-cognitive factors (e.g., attributions, self-efficacy, outcome expectations) underlie and interact with an individual's social goals (Erdley & Asher, 1999). For example, youth who make hostile attributions may be more likely to pursue Agentic goals to appear dominant or promote goals involving separating from others to avoid future harm (Erdley & Asher, 1996). Similarly, youth may be more invested in pursuing goals they feel more confident in being able to attain (Erdley & Asher, 1999). These perceptions are likely to change across development as social tasks and interactions

with peers become more complex. Future work should examine correlates of changes in social goals.

Another potential predictor of personality change is biological sex. Overall, there was little evidence for significant differences in individual change across sex. This is consistent with previous work (Caspi & Shiner, 2008). Yet, there were significant sex differences related to initial values on broad factors and a number of octant level goals. Namely, boys were more likely to endorse Agentic goals and less likely to endorse Communal goals compared to girls. On the octant level, boys tended to be more Separate-Agentic and less Communal. These findings map on to prior findings on social goals (Ojanen, et al., 2005; Rose & Asher, 1999) and gender role development in early adolescence (Lorber, 1997; Maccoby, 1990). Traditionally boys are encouraged to be dominant, separate, and independent; while girls are socialized to be polite, interdependent, and affiliative (Cross & Madson, 1997; Maccoby, 1990). Boys also had more modest increases in factor-level Communal goals and decreases in octant-level Communal goals compared to girls. These findings suggest that girls and boys showed more similarities in social goal continuity and change compared to differences. Boys and girls seem to change in similar ways, although mean-level differences between sexes are maintained across waves. This suggests that the causes of personality stability and change across adolescence are likely to be similar across sex, which is consistent with previous work (Caspi & Shiner, 2008).

Ipsative Stability

Despite the utility of IPC models to capture individual stability and change in the individual across time, examinations may still be limited in their focus on one interpersonal trait at a time. Ipsative stability analyses expand on these findings by capturing change or stability in youths' idiographic profiles over time. As expected, although each individual's profile pattern was relatively stable, the degree of variation in stability across individuals was not. There was also greater stability in social goal profiles in middle adolescence compared to early adolescence.

Conclusions

Two broad conclusions can be gleaned by the current findings. First, the level of continuity of social goals in adolescence is higher than would be expected given the degree of psychological, physical, cognitive, and social changes that transpire during adolescence (Lewis, 2001). Moreover, the degree of ipsative stability continues to accumulate across adolescence. Second, social goal development during adolescence is not a "continuity-versus change proposition;" rather, continuity and change are both relevant and independent of each other (Caspi, Roberts, & Shiner, 2005). That is, despite the presence of structural stability, modest rank-order stability, and ipsative stability, social goals are also characterized by notable mean-level changes. From early to mid- adolescence there are significant changes in levels of Agentic and Communal social goals. These increases are driven primarily by decreases in Submissive and Separate goals. Findings are consistent with perspectives highlighting the importance of moving beyond a continuity versus change duality by assessing complementarity between stability and change as a function of developmental coherence (Hartup & Van Lieshout, 1995). The challenge is to account for

trait stability as well as change (De Fruyt, et al., 2006) and the IPC model may help address this. Some youth may also be more prone to change interpersonal goals compared to others. Though there was not strong evidence for moderators in our study, future research should examine other potential moderators. For example, research may benefit from examining environmental triggers, life events, or social-cognitive dimensions that contribute to both change and consistency in social goals. It would also be of interest to understand if the degree of change or consistency is related to more adaptive behavioral outcomes such as cultivating friendships and romantic relationships.

Limitations and Future Directions

While this study provided an important advancement to understanding continuity and change in social goals, limitations should be noted. First, findings should not be generalized to samples with demographic characteristics different from this sample. Our sample was largely White and social goals may operate differently across racial and ethnic groups. We did not have adequate group sizes to test such differences. Longitudinal studies examining ethnic minorities are still rare in the field of personality (Roberts, et al., 2006). It will be important for future research to assess continuity and change in social goals among more diverse racial/ethnic groups. Our study was also limited to three waves of data that spanned early to middle adolescence. It will be important that future studies examine interpersonal goals across longer time periods.

This study was also limited to adolescents born in the late 1990's. Findings are likely to be specific to a historical period and this may contribute to our pattern of findings. Studies with narrow birth cohorts limit the possibility of examining the effect of historical periods (Roberts, et al., 2001). It will be important to compare these findings with other studies examining other age cohorts to tease apart effects of cohort and age on social goal development. Finally, the Agentic octant had low internal consistency given conventional criteria (αs = .63 to .68). It is important to note, however, that the mean of the validity coefficients (i.e., rank-order stability) for the Agentic octant compared to the other octants did not differ significantly, suggesting that this level of internal consistency did not have a strong impact on our findings.

Despite these limitations, the present study is the first to use an IPC model to investigate continuity and change in social goals in youth. Importantly, consideration of octant scales allowed for a more nuanced characterization of changes in broad factor scores. Taken together, equivocal findings in the literature regarding adolescent personality development may be due to these subtle, yet meaningful nuances. The decision to analyze a smaller number of broad scales compared to a larger number of more targeted scales is not always straightforward and the utility of one approach versus the other likely depends on a number of factors, including the sample and the research question at hand. Although our study demonstrated significant utility in examining octants, the use of broad dimensions for other aspects of personality may be more parsimonious and sufficient to capture all of the important nuances regarding change and stability across time. Future research should also consider using IPC based measures such as the IGI-CR (Trucco, et al., 2013) reflecting childhood and adolescent social goals and the Circumplex Scales of Interpersonal Values

(CSIV; Locke, 2000) reflecting adult social goals to examine both short- and long-term stability and change of social goal orientation across a wider developmental period to move towards scientific cohesion in psychology.

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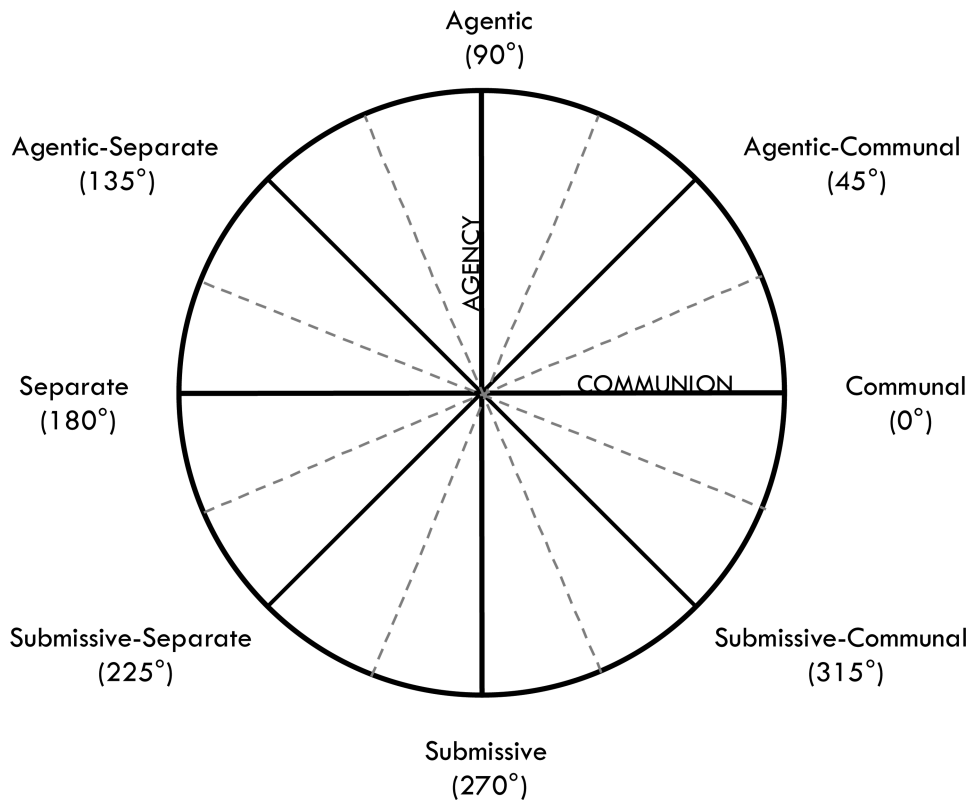
Figure 1.
The Interpersonal Circumplex.

Table 1

Descriptive Statistics for Sample Demographic Characteristics at Time 1

Adolescents	Sample ($n = 387$)
Gender	
% Female	55.0
Age	
Mean (SD)	12.10 (.59)
Range	11-13
Race	
% Caucasian	83.1
% African American	9.1
% Hispanic	2.1
% Asian	1.0
% Other	4.7
Caregivers	
Education	
% Some High School	2.9
% High School Graduate	14.2
% Technical School or Some College	24.7
% College Graduate	38.2
% Graduate or Professional School	20.0
Family Characteristics	
Median Annual Family Income	$70,000.00
Family Composition	
% Two-Parent	76.0
% Divorced/Separated	12.1
% Single-Parent/Never Married	9.8
% Other	2.1

Table 2

Descriptive Statistics and Rank-Order Stability Coefficients for the Interpersonal Scales

Scale	Means (SD)			Internal Consistency			Rank-Order Stability		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3	r_{12}	r_{23}	r_{13}
Dimensions									
Agency	0.00 (0.45)	0.06 (0.40)	0.14 (0.41)	0.83	0.82	0.84	0.38	0.46	0.35
Communion	0.00 (0.55)	0.11 (0.58)	0.15 (0.61)	0.89	0.91	0.92	0.55	0.61	0.47
Octants									
Agentic	2.09 (0.80)	2.09 (0.73)	2.06 (0.74)	0.68	0.63	0.65	0.44	0.57	0.37
Agentic-Separate	0.97 (0.66)	0.89 (0.63)	0.90 (0.64)	0.69	0.74	0.78	0.46	0.52	0.42
Separate	1.51 (0.85)	1.34 (0.82)	1.19 (0.75)	0.72	0.74	0.72	0.50	0.52	0.30
Submissive-Separate	2.23 (0.91)	2.05 (0.94)	1.82 (0.90)	0.76	0.82	0.82	0.39	0.62	0.30
Submissive	2.38 (0.80)	2.29 (0.83)	2.19 (0.80)	0.73	0.77	0.78	0.42	0.59	0.38
Submissive-Communal	2.74 (0.76)	2.70 (0.79)	2.62 (0.76)	0.80	0.80	0.83	0.45	0.56	0.44
Communal	2.68 (0.77)	2.70 (0.81)	2.65 (0.83)	0.77	0.84	0.84	0.49	0.66	0.48
Agentic-Communal	2.35 (0.76)	2.37 (0.76)	2.34 (0.79)	0.70	0.75	0.77	0.46	0.60	0.45

Note. Standard deviations presented in parentheses. All correlations significant at $p < .01$.

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Table 3

Unconditional Growth Models for the Interpersonal Scales

	Fixed Effects						Random Effects								
	Elevation (Intercept)		Rate of Change (Slope)				Intercept		Slope						
Scale	Coeff.	p	ES r	Coeff.	p	ES r	Coeff.	p	Coeff.	p	Covariance	p	Residual	p	−2LL
IPC Dimensions															
Agency	**−0.072**	**0.02**	**0.12**	**0.067**	**0.00**	**0.28**	0.127	0.00	0.011	0.00	−0.025	0.02	0.097	0.00	1081.70
Communion	**−0.070**	**0.05**	**0.10**	**0.076**	**0.00**	**0.26**	0.177	0.00	0.014	0.00	−0.013	0.44	0.137	0.00	1639.20
IPC Octants															
Agentic	**0.015**	**0.00**	**0.16**	−0.013	0.61	0.03	0.756	0.00	0.067	0.00	−0.152	0.00	0.427	0.00	2867.58
Agentic-Separate	0.023	0.73	0.02	−0.046	0.08	0.09	0.621	0.00	0.047	0.00	−0.092	0.07	0.470	0.00	2929.22
Separate	**0.194**	**0.01**	**0.14**	**−0.187**	**0.00**	**0.34**	0.852	0.00	0.076	0.00	−0.187	0.00	0.416	0.00	2853.66
Submissive-Separate	**0.213**	**0.00**	**0.16**	**−0.212**	**0.00**	**0.37**	0.668	0.00	0.076	0.00	−0.129	0.01	0.484	0.00	3000.56
Submissive	0.110	0.11	0.08	**−0.110**	**0.00**	**0.21**	0.651	0.00	0.045	0.02	−0.091	0.09	0.496	0.00	2983.76
Submissive-Communal	0.093	0.16	0.07	**−0.078**	**0.00**	**0.16**	0.467	0.00	0.009	0.03	−0.002	0.96	0.521	0.00	2983.52
Communal	0.026	0.69	0.02	−0.013	0.60	0.03	0.539	0.00	0.036	0.00	−0.022	0.63	0.458	0.00	2974.98
Agentic-Communal	0.000	1.00	0.00	0.000	0.94	0.00	0.642	0.00	0.052	0.00	−0.084	0.08	0.457	0.00	2957.52

Note. −2LL = log likelihood. Values represent final estimates of fixed effects with robust standard errors. ES = effect size. For all models −2LL statistics are based on 6 estimated parameters. Significant fixed effects values (*p* < .05) bolded.

Table 4

Descriptive Statistics for Ipsative Parameters

	Minimum	Maximum	Range	Mean	Median	SD
Ipsative Statistics						
D^2_{12}	0.37	88.77	88.40	8.91	5.83	9.46
D^2_{23}	0.33	53.78	53.45	6.76	4.96	6.60
D^2_{13}	0.00	57.66	57.66	9.51	6.18	9.25
r_{q12}	−0.92	0.97	1.88	0.35	0.43	0.41
r_{q23}	−0.77	0.98	1.76	0.43	0.52	0.39
r_{q13}	−0.80	0.98	1.79	0.32	0.42	0.41

Note. D^2 = Cronbach's D^2 statistic; r_q = q-correlation

Numeral subscripts after D and Q statistics indicate the two related time points.