

Perceived Parenting Styles and Values Development: A Longitudinal Study of Adolescents and Emerging Adults

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This study explored parenting styles and values internalization. Perceived parenting styles were measured in Grade 7 ($n = 749$) and Grade 12 ($n = 468$), and values were measured in Grade 12 ($n = 271$) and one year postschool ($n = 291$). We measured three aspects of valuing: priority (extrinsic, intrinsic importance); regulation (controlled, autonomous); and successful enactment of values (success). Mothers' authoritative parenting in Grade 7 predicted increased importance and autonomous regulation of values one year postschool. Fathers' authoritative parenting in Grade 7 predicted decreased importance of extrinsic values. Fathers' permissive parenting in Grade 7 predicted decreased importance of intrinsic values. Authoritarian parenting in Grade 12 predicted more controlled values regulation postschool, particularly for extrinsic values. Parenting in early and late adolescence predicts values internalization in emerging adulthood.

Adolescents' values and behaviors are shaped by the parental reactions they anticipate (Hardy, Carlo, & Roesch, 2010; Padilla-Walker & Carlo, 2007). Adolescents who perceive that their parents will provide appropriate reinforcement are more likely to endorse pro-social values and behave in pro-social ways (Hardy et al., 2010). Helping children and adolescents to learn, accept, and spontaneously apply values is one of the key goals of socialization (Grusec, Goodnow, & Kuczynski, 2000). Surprisingly, little is known about the parental behaviors that are most effective in facilitating transmission and internalization of values (Hardy, Padilla-Walker, & Carlo, 2008; Martinez & Fernando Garcia, 2007). The current study explored the development of values among adolescents at a key transition point: leaving high school. We examined the extent to which values internalization was predicted by parental behaviors, operationally defined as perceived parenting styles in the first and final years of high school (Baumrind, 1991; Buri, 1991).

Developing values is essential to becoming a well-adjusted adult (Arnett, 2000; Cohen & Cohen, 2001). Participants in the current study were young Australians moving on from high school to take their places in the wider world. This period, sometimes called emerging adulthood, has been characterized as a time of change and exploration, when

young people look at the future roles and possibilities available to them and make choices about their careers, relationships and worldviews (Arnett, 2000). During adolescence and emerging adulthood, the young person chooses goals, develops strategies, and evaluates outcomes, leading to the development of identity (Massey, Gebhardt, & Garnefski, 2008) and the selection of a personal hierarchy of values relevant to the individual and his or her anticipated future roles (Roberts, O'Donnell & Robins, 2004; Salmela-Aro, 2009). Thus, our participant group offers insights into the ways in which values develop and change during this transition, and the influence of parents on this aspect of development.

Parenting Styles

Developmental research has identified three parenting dimensions relevant to the development of values: structure or demandingness (Barber, 1996; Baumrind, 1968, 1991; Farkas & Grolnick, 2010); responsiveness or warmth (Baumrind, 1991; Grusec et al., 2000); and autonomy support, which is the opposite of psychological control (Barber, 1996; Baumrind, 1991, 2012; Soenens & Vansteenkiste, 2010). Structure—defined as high parental expectations, guidelines for behavior, and monitoring—allows children to learn that their actions have consequences and thus enables them to plan their behaviors in order to achieve desired outcomes

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(Farkas & Grolnick, 2010). An essential element of structure is providing predictable social consequences for disobeying rules (Farkas & Grolnick, 2010). Warm, responsive parenting fosters a desire to please the parents and identify with parental values, and a parent who responds to the child's needs also promotes secure attachment (Grusec et al., 2000). Securely attached adolescents are more likely to understand that some parental control is in their best interests and to accept parental values (Grusec et al., 2000). Autonomy support involves taking the child's perspective, and providing developmentally appropriate choices and meaningful explanations for rules or constraints (Soenens & Vansteenkiste, 2010). This encourages adolescents to consider their values before acting. By giving reasons, encouraging verbal give-and-take, and genuinely listening, the parent helps the adolescent understand when assertive behavior is acceptable and how to negotiate for his or her needs to be met (Baumrind, 1968).

Parenting styles are broad, consistent patterns of behaviors that create a climate for the parent-child relationship (Baumrind, 1968, 1991). *Authoritative* parents are warm, involved, have high expectations of their children, and are willing to provide reasons for rules and demands. They exert behavioral control when needed to ensure compliance, but are not psychologically controlling. The authoritative parenting style is high on all three parenting dimensions of responsiveness, structure, and autonomy support (Baumrind, 2012). *Authoritarian* parents emphasize their status as authority figures and require obedience without explanation or negotiation. Psychological control is a defining feature of authoritarian parenting, along with high structure and low responsiveness (Baumrind, 1991). In contrast, *permissive* parents are highly responsive and supportive of the child's autonomy but do not provide consistent structure, make few demands, and avoid confrontation (Baumrind, 1991).

Authoritative parenting leads to the best outcomes for children and adolescents on numerous measures of achievement and adjustment (Steinberg, 2001). In theory, the warm, structured, autonomy supportive approach favored by authoritative parents should promote attachment, compliance, exploration, and moral reasoning. These factors should, in turn, foster successful internalization of values. Authoritarian parenting likely diminishes internalization of values, as it reinforces concern for obedience rather than valued action. The psychologically controlling behavior of authoritarian parents will limit the adolescent's opportunities to

explore, experiment, and track consequences in the social environment and develop values that they "own" and see as personally important. Growing up in an unstructured, noncontingent environment provided by permissive parents may interfere with values development. However, permissive parents are also highly responsive and autonomy-supportive, which may mitigate any negative impacts of a lack of structure. In summary, parenting styles would be expected to influence the internalization of values in adolescence.

Internalization of Values

Valuing refers to a process of judging the capacity of an object, goal, or action to enable best-possible living, and "values" are the outcome of this process (Rohan, 2000). By establishing general parameters for what is considered important and desirable to the individual, values influence the selection of goals and actions (Feather, 1995; Schwartz, 2010). Internalization of values involves taking in external beliefs and standards and adopting these as part of one's identity (Chandler & Connell, 1987). The result of successful internalization is socially acceptable behavior which springs from internal motivation rather than overt pressure from other people (Grusec & Goodnow, 1994).

All values serve a social function: to motivate positive behavior within groups (Schwartz & Bardi, 2001). Benevolence and universalism values are sometimes labeled as "pro-social" (e.g., Hardy et al., 2010), "other-oriented" (e.g., Benish-Weisman, Levy & Knafo, 2013), or "self-transcendent" (e.g., Schwartz & Boehnke, 2004) and serve to build personal investment in a community, helping members to suppress selfishness and avoid potentially damaging sources of conflict. "Self-enhancement" values serve as a kind of safety valve, enabling sufficient expression of personal desires and ambitions to prevent excessive frustration and withdrawal of investment in the group (Schwartz & Bardi, 2001). Nevertheless, it is seen as unhealthy to place great importance on self-enhancement values such as power, wealth, and image (Deci & Ryan, 2000; Salmela-Aro, 2009; Schwartz, 2010).

Values dimensions: priority, enactment, and regulation. This study measures three dimensions of values: *priority* (what values a person finds important), *enactment* (what a person does in relation to their values), and *regulation* (why a person prioritizes and acts upon certain values). In regard to priority, self-determination theory (SDT; Deci &

Ryan, 2000) categorizes values as *extrinsic* (wealth, attractive appearance, and popularity) or *intrinsic* (personal growth, emotional intimacy, and community involvement). The list of intrinsic values overlaps with those considered "pro-social" or "self-transcendent" by other values researchers. According to SDT, priority for extrinsic values brings only superficial satisfaction, because basic psychological needs are not met (Deci & Ryan, 2000). Investing effort in extrinsic values means less time and energy is available for intrinsic values that could provide more lasting satisfaction. Extrinsic goals may reduce the quality of relationships, prompt social comparison, and place the individual in environments that are stressful, controlling, or competitive (Kasser & Ryan, 2001; Sheldon, Ryan, Deci, & Kasser, 2004). Priority for extrinsic values is associated with poor mental health and other detrimental outcomes (Kasser & Ryan, 1993, 1996; Deci & Ryan, 2000).

In regard to regulation, SDT researchers have proposed that motivations for prioritizing and enacting values fall on a continuum reflecting decreasing levels of perceived pressure (Deci & Ryan, 2000; Sheldon & Elliot, 1998; Sheldon, 2001). At the most pressured end of the continuum, external regulation, behavior is subject to direct reward or punishment. At the most autonomous end, intrinsic regulation, behaviors are performed for their own sake (Sheldon & Elliot, 1998; Sheldon, 2001). Between these extremes lie various stages of internalization, characterized by decreasing external control and perceived pressure. Introjected regulation refers to acting through feelings of guilt or desire for approval and is therefore still highly pressured by other people's expectations and standards, whereas integrated regulation refers to acting for reasons that have been accepted by the person as part of their own, coherent system of personal values (Ryan, Huta, & Deci, 2008). Integrated regulation is still (internally) controlled; however, if the reasons for prioritizing or acting upon values are freely chosen, with no sense of external control or pressure, they are seen as (relatively) autonomous (Ryan & Deci, 2006). Consequently, SDT researchers often bundle external and introjected regulation together (*controlled regulation*) and internally controlled regulation together (*autonomous regulation*; e.g., Sheldon et al., 2004; Sheldon & Kasser, 1998). Adolescents can distinguish between controlled and autonomous values regulation (Knafo & Assor, 2007). In the current study, internalization refers to change in individual values priority (operationalized as importance), enactment of values (operationalized

as success), and values regulation (operationalized as perceived pressure), particularly for intrinsic compared with extrinsic values.

Change in Values Over Time

Adolescents are exposed to a variety of social and cultural influences and are open to rapid change in response to these influences (Hart & Carlo, 2005). During major life transitions, such as the end of high school and the start of adult life, personal values and goal systems would be expected to change (Brunstein, 1993; Salmela-Aro, 2009). Arnett (2000) contends that emerging adulthood involves "movement away from self-centeredness and toward emotional intimacy and the broader community" (p. 211). This would suggest values priorities should change naturally, so that young adults place greater importance on intrinsic values and less on extrinsic values. Some support for this view comes from a study of young people in Switzerland who responded to two hypothetical moral dilemmas three times, at ages 15, 18, and 21 (Krettenauer, Colasante, Buchman, & Malti, 2014). The proportion of those who said they would act in pro-social ways—and feel good about it—increased with age (Krettenauer et al., 2014). Similarly, a longitudinal study of American college students found that they became increasingly oriented away from extrinsic and toward intrinsic values (Sheldon, 2005). Because "moral cultures" vary within and among societies (Hart & Carlo, 2005, p. 231), the findings of previous studies may not generalize to Australian adolescents. It is also unclear from previous studies what happens to high school graduates who do not attend university: Do they experience a similar movement away from extrinsic and toward intrinsic value priorities?

Values regulation is also likely to change during and immediately following the high school years. As children and adolescents become more proficient at inhibiting socially unacceptable behaviors and performing acceptable ones, their behavior becomes less subject to external sources of control (Chandler & Connell, 1987). In support of this view, high levels of controlled values regulation were seen among Israeli high school students, with lower levels among university students living with their parents, and even lower among university students living apart from parents (Knafo & Assor, 2007). Apparently, increased freedom from direct parental supervision, praise, and sanctions during emerging adulthood fosters more autonomous values regulation (Knafo & Assor, 2007). This finding

indicates that at least some of the naturally observed change in values at this developmental transition point may be due to parenting.

Parenting and Values Priorities

Parenting provides an influential context for developing values priorities (Headey, Muffels & Wagner, 2014). Parental behavior which meets the child's needs for autonomy and relatedness is expected to strengthen intrinsic values (Kasser & Ryan, 1996). Conversely, children whose needs are thwarted may defensively lose awareness of those needs and consequently give priority to goals based on extrinsic values, which are reinforced by peer pressure, popular culture, and materialistic society (Williams, Cox, Hedberg & Deci, 2000).

A number of studies have explored relationships between values priorities and parenting dimensions. Emerging adults who prioritized financial success (an extrinsic goal) over affiliation, community feeling, and self-acceptance (intrinsic goals) had mothers who were less warm and responsive (Kasser et al., 1995). A tendency to value the needs and goals of the group over the self was associated with high maternal involvement (Davis et al., 2018). Parental autonomy support was correlated positively with intrinsic value priority among high school students in Canada, China, and the United States (Lekes, Gingras, Philippe, Koestner, & Fang, 2010) and negatively with extrinsic value priority among students at one US high school (Williams et al., 2000). Israeli adolescents whose fathers scored highly on a measure of right-wing authoritarianism placed more priority on power values (extrinsic) and less on universalism (intrinsic) compared with peers (Knafo, 2003). In Spain and Brazil, adolescents with authoritarian or neglectful parents assigned the lowest importance to values (Martinez & Fernando, 2007, 2008). In another study of Spanish adolescents, parental warmth predicted high priority for benevolence values (e.g., friendship, being helpful), while parental rejection predicted high priority for power values (Aluja, del Barrio, & Garcia, 2005). Findings from these studies support the view that an authoritarian upbringing promotes extrinsic values, whereas with authoritative parents, intrinsic values may be more acceptable and congruent with contextual demands (Kasser et al., 1995).

Parenting and Values Regulation

Three studies have examined links between parenting and values regulation in adolescence or

emerging adulthood. American high school students reported on perceived parenting styles and were also asked to rate the extent to which certain reasons for pursuing pro-social values (kindness, fairness, honesty) were important to them (Hardy et al., 2008). Participants who reported high parental demandingness or structure also reported more controlled reasons for valuing, including guilt, approval-seeking, or fear of rejection. At high levels of parental involvement, autonomy support was positively related to values internalization, but at low levels of involvement, the relationship was negative (Hardy et al., 2008). Karmakar (2015) found similar relationships between perceived parenting style and values internalization among adolescents in India. Authoritative parenting style was positively associated with autonomous values regulation, whereas authoritarian parenting was linked with controlled values regulation. In Israel, adolescents with authoritative parents were more likely to report autonomous motivation for accepting their parents' values, indicating that parents who are flexible, autonomy supportive, and willing to explain their rationale are more likely to be successful in instilling values in young people (Knafo & Assor, 2007). Overall, these studies suggest that supportive, democratic parenting may promote regulation of values based on understanding and identity, rather than a concern for obedience, seeking reward, or avoiding guilt (Karmakar, 2015).

Parenting and Values Enactment

Our review of the literature identified a lack of research on parenting and values enactment. Some insights can be obtained from numerous studies showing that authoritative parenting is associated with pro-social behavior in children (e.g., Baumrind, 1991; Lamborn, Mounts, Steinberg, & Dornbusch, 1991). One study suggested that warm, responsive mother-child relationships—as reported by young adults—may promote pro-social behavioral tendencies via autonomous regulation of pro-social values (Barry, Padilla-Walker, Madsen, & Nelson, 2008). Autonomously held values are likely to be more strongly related to identity and behavior (Knafo & Assor, 2007). More recently, Shepperd et al. (2019) found that belief in a punitive God—whom they likened to an authoritarian parent—was associated with more aggressive and less helpful behavior among adolescents. Measuring pro-social behavior is not equivalent to measuring values, however (Bardi & Schwartz, 2003).

Values enactment is linked to emotion (Schwartz, 1992). Pursuing valued goals may protect adolescents from depression (Massey et al., 2008) and predict well-being (Brunstein, 1993). The link between values enactment and well-being is stronger when values are intrinsic (Sheldon & Kasser, 1998; Kasser & Ryan, 2001). Further, neither intrinsic orientation nor autonomous regulation are associated with well-being unless values are enacted successfully (Sheldon & Kasser, 1998). Therefore, the potential role of parenting in promoting enactment, particularly of intrinsic and autonomously motivated values, would seem to be worth investigating.

Limitations of Previous Studies

Most previous studies used cross-sectional designs, so it is unclear whether parenting is a true antecedent to values internalization. Children can shape their parents' behaviors (Bell, 1968; Patterson, 1971; Patterson, 2002; Patterson & Fisher, 2002); therefore, values-driven children may shape their parents to be more warm and supportive. Adolescents' own values shape the socialization values of their parents (i.e., the values parents wish to impart to their children; Benish-Weisman et al., 2013).

One longitudinal study found a relationship between "proactive" parenting and values regulation (Padilla-Walker, Fraser, & Harper, 2012). Proactive parenting captures some aspects of the authoritative style. Proactive parenting when the adolescents were around 12 years old predicted relative autonomy for values related to pro-social behavior, peers, school, and drug avoidance at age 13 (Padilla-Walker et al., 2012). "Active deference"—similar to autonomy support—predicted adolescents' values-congruent behavior at age 14. In another study, parental demandingness at age 17 predicted high emphasis on "moral" values (e.g., kindness, honesty) at age 19 among males (Pratt, Hunsberger, Pancer, & Alisat, 2003). It is difficult to interpret results from these studies in relation to parenting styles. There is a need for longitudinal data to clarify the relationship between parenting styles and values development, across all definitions of internalization described above.

Differential Effects of Maternal and Paternal Parenting Styles

Most previous studies have focused only on mothers or have averaged maternal and paternal parenting styles together. Mothers and fathers can and do

exhibit different parenting styles, even when living in the same household; on average, mothers are more likely to be more authoritative or permissive, whereas fathers are more likely to be authoritarian, according to the perceptions of their adolescents (McKinney & Renk, 2008). One study concluded that it was common for mothers and fathers to exhibit the same parenting style, and adolescent outcomes were optimized when both are authoritative (Simons & Conger, 2007). However, another found that although adolescents' perceptions of mothers' and fathers' supportive and controlling behaviors were highly correlated, they had different associations with adolescents' outcomes (Laible & Carlo, 2004). Therefore, it may be worth considering parents' contributions to values internalization separately.

Parenting involvement by mothers (but not fathers) was negatively related to adolescents' priority for materialist values; other types of values were not measured (Flouri, 2004). Fathers with an "empathetic" approach were more successful in transmitting self-transcending values to their adolescent boys, compared with fathers rated as "rigid-authoritarian" (Schönpflug, 2001). This study did not include mothers or daughters and did not use the conventional scoring for the parenting styles measure. Both studies were correlational. In the related field of cultural values, a longitudinal study found that Mexican-American adolescents' ethnic identity was predicted by ethnic socialization by their mothers, but not their fathers (Knight, Carlo, Mahrer, & Davis, 2016). However, paths from parents' materialist and personal achievement values to adolescents' corresponding values did not differ for mothers and fathers (and were not significant). There is a lack of longitudinal studies measuring both mothers' and fathers' parenting styles and a broad range of values in adolescents. It remains unclear whether mothers and fathers have differential effects on values internalization.

Research Hypotheses

Based on previous research, we define internalization of values in broad terms, encompassing changes in individual values priority, regulation, and enactment (operationalized as importance, pressure, and success, respectively). Among the participants in our study, we assume that internalization occurs to the extent that young people find values to be personally important, feel successful in living according to values, and perceive less external pressure on values.

First, we hypothesize a change in values importance, away from extrinsic and toward intrinsic content, during the transition from high school to emerging adulthood. Second, we hypothesize decreasing pressure over time. Third, the evidence on values and parenting styles leads us to hypothesize that authoritative parenting, but not authoritarian or permissive parenting, will be associated with an increase in the importance of intrinsic values (Aluja et al., 2005; Karmakar, 2015; Kasser et al., 1995). Fourth, this same evidence indicates that authoritative parenting, but not authoritarian or permissive parenting, will be associated with less pressure on values (Hardy et al., 2008; Padilla-Walker et al., 2012). Fifth, based on the limited evidence available, we hypothesize that authoritative parenting, but not authoritarian or permissive parenting, will be associated with success in enacting values.

Values research to date has not thoroughly explored the impacts of mothers' and fathers' parenting styles separately and studies have produced contrasting findings. Therefore, although we will conduct separate analyses of mothers' and fathers' parenting styles in relation to values internalization, we do not propose specific hypotheses around differential associations.

METHOD

Participants

Participants were young people attending five Catholic high schools in the Wollongong Diocese, which covers southern Sydney and the Illawarra region in New South Wales, Australia. The entire cohort—all students at one Grade level—took part in a longitudinal study of adolescent development which began in 2003. Participants in the four waves of the study were as follows: Grade 7 school survey, $n = 749$, 50.3% female, mean age 12.4 years, $SD = 0.5$; Grade 12 school survey, $n = 468$, 51.9% female, mean age 17.0 years, $SD = 0.4$; first online study, $n = 271$, 48.3% female; second online study, $n = 291$, 55.0% female. Response rates were acceptable: 337 (72%) of respondents to the Grade 12 school survey also responded to one or both of the subsequent online survey requests; 226 (86%) of respondents to the first online survey also completed the second online survey.

Catholic schools in Australia are government-subsidized and attract a diverse student population. One in five Australian children attends a Catholic school (Australian Bureau of Statistics,

2012). Participants in the Grade 12 school survey were asked about their religious faith and all 468 answered this question. Most (384, 82.1%) were Catholic, 16 (3.4%) were Protestant, one student was Muslim and one was Jewish, 37 (7.9%) selected "other" and 29 (6.2%) "no religion." The Diocese is based in Wollongong, a regional city with a population of approximately 250,000, and includes rural and mining districts, coastal towns, and outer suburbs of Sydney. Thus, participants were drawn from a wide geographic area with a variety of cultures and socio-economic backgrounds. Demographic information was collected in Grade 7. Previously published research (Heaven & Ciarrochi, 2008) compared this sample with the broader Australian population on three indicators: family composition (whether participants were living with both parents); ethnicity (specifically, whether a language other than English was spoken at home); and father's occupation (an indicator of socio-economic status). Any or all of these three indicators might be linked systematically with participants' values and their parents' behaviors. Participants were slightly less likely than the broader population to be living in a nonintact family, 22% of participants compared with the (then) national divorce rate of 29% (Heaven & Ciarrochi, 2008). They were somewhat more likely to be living in a household where a language other than English was spoken, 19.8% of participants compared with 15.8% of Australian households (Heaven & Ciarrochi, 2008). Finally, compared with the broader Australian population, participants' fathers were more likely to be professionals, 20.4% (16.5% nationally); associated professionals, 15.1% (12.7%); tradespersons, 34.3% (21%); or advanced clerical, 1.2% (0.9%), and less likely to be employed in intermediate production and transport, 11.2% (13.4%); or as managers, 4.8% (9.7%); laborers, 3.3% (10.8%); intermediate clerical, 5.5% (8.8%); or elementary clerical, 4.3% (6.1%) (Heaven & Ciarrochi, 2008). Together, these figures indicate our sample was ethnically diverse, with a lower rate of divorce and a higher average socio-economic status compared with the Australian population.

Demographic information was collected again in the second online survey. Of the 292 participants, 270 (78.9%) lived with one or both parents. Employment status categories (not mutually exclusive) were as follows: 43 (12.5%) employed full-time, 129 (37.6%) employed part-time, 39 (11.4%) looking for work, 46 (13.4%) in vocational training, and 191 (55.7%) studying at university. Participants in the second online survey were also asked to

nominate their ethnicity. This was an open question. As a result, there was a wide variety of responses. Of the 243 people who answered the ethnicity question, 203(83.5%) described themselves as "Australian," a further 20 (8.2%) described themselves as Australian plus some other identity (e.g., Italian-Australian, half Australian-half Filipino), and 20 listed another ethnic identity (e.g., Indian, Argentinian, Welsh). We did not expect or hypothesize differences based on ethnicity but to check this, we created three groups based on these classifications and ran ANOVAs to see whether there were any differences in values or perceived parenting. No significant differences were found on any of these variables between people identifying as Australian, Australian + other, or another ethnicity.

Attrition between Grade 7 and Grade 12 was largely due to students' leaving secondary education in Grades 10 and 11 to relocate to other schools, enter vocational training, or seek employment. Consequently, *ns* for the parenting measure varied between years. Those who completed the school-based questionnaire in Grade 12 were more likely than noncompleters to report authoritative parenting in Grade 7, means (standard deviations) 3.62 (0.66) and 3.51 (0.61) respectively, $t(747) = 2.33$, $p < .05$. Completers did not differ from noncompleters on Grade 7 permissive parenting: completers, 2.67 (0.60), noncompleters, 2.68, (0.61), $t(747) = -.303$, $p > .05$; or authoritarian parenting: completers, 2.96 (0.73), noncompleters, 2.95 (0.68), $t(747) = 0.10$, $p > .05$. Attrition from Grade 12 to the postschool measure was largely due to inability to contact participants who had changed email address and phone number; there were only two refusals. There were no significant differences in perceived parenting (Grade 12) reported by those who took part in the first online survey and those who did not; or between those who took part in the second online survey and those who did not. Of those who completed the first online survey, females were more likely than males to complete the second online survey, chi-square (1) = 4.62, $p = .032$. There were no significant differences on any of the extrinsic or intrinsic values variables between those who completed the second online survey and those who did not.

Procedure

This was a longitudinal study with two data collection methods and four measurement occasions (Figure 1). Parenting data were collected from surveys at five high schools in Grade 7 (mid-2003) and Grade 12 (mid-2008). Questionnaire booklets were

administered during class. Students worked independently. Values data were collected via two online surveys, the first at the end of Grade 12 (late 2008) and the second approximately 12 months later (late 2009 to early 2010). Invitations to the online surveys were sent via email and followed up via telephone, using contact information provided voluntarily by some students after the Grade 12 school survey. Questionnaires and study methods were approved by the University of Wollongong Human Research Ethics Committee. The school study was also approved by the Catholic Schools Authority.

Materials

Parenting styles. The *Parental Authority Questionnaire* (PAQ; Buri, 1991) assesses children's perceptions of their parents' discipline behaviors. It has been used extensively to measure Baumrind's (1968, 1991) typology of parenting styles. Participants assessed maternal and paternal behaviors on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores were used as continuous variables. Sample items are "There are certain rules in our family and my mother discusses with us the need for those rules" (authoritative), "My mother does not let me question her decisions" (authoritarian), and "My mother lets me get my own way" (permissive). A shortened version of the PAQ was created by randomly selecting 15 of the 30 items, five each for the authoritative, authoritarian, and permissive styles, and the language was slightly modified to suit 12-year-olds.

Values internalization. The *Survey of Guiding Principles* (SGP; Veage, Ciarrochi, & Heaven, 2011) is an extension of the *Schwartz Values Survey* (SVS; Schwartz, 1992). It measures perceived importance of values, as does the SVS. It also measures perceived pressure and success for each of 54 values. Items were created to cover the 10 SVS values types. The structure and content of the SVS has been validated in large, international studies (e.g., Schwartz & Bardi, 2001; Schwartz & Bilsky, 1987; Schwartz & Boenke, 2004). The SGP also incorporates values domains not covered by the SVS but highlighted by other researchers, such as physical health and spirituality (Braithwaite & Law, 1985) and work (Rottinghaus, Coon, Gaffey, & Zytowski, 2007; Savickas, Taber, & Spokane, 2002). Examples of items are "Having genuine, close friends" (Relationship), "Having authority, being in charge" (Power), "Being curious, discovering new things"



FIGURE 1 Flow of participants through the four parts of the longitudinal study. Variables measured and numbers of participants are provided for each measurement occasion.

(Self Direction), and “Having an enjoyable, leisurely life” (Hedonism). The SGP links in theoretically expected ways to suicidal ideation (Bahraini et al., 2013), personality (Veage et al., 2011), workplace burnout (Veage et al., 2014), and adolescent well-being (Williams, Ciarrochi, & Heaven, 2015).

Participants were asked to rate the extent to which each item was personally important to them, on a scale from 1 (*unimportant to me*) to 9 (*extremely important to me*). After rating all 54 items for importance, each item was rated for pressure, on a scale from 1 (*I feel no pressure*) to 9 (*I feel extreme pressure*). The prompt read, “Using the following scale, indicate the extent that you feel pressured to hold each of the following life principles.” Examples were given of common sources of pressure (e.g., friends, family, the media, and society in general). Participants were asked how successful they felt they had been at living according to each value (success), on a scale from 1 (*not at all successful*) to 5 (*highly successful*). Three items were excluded to avoid confounding with well-being measures used in analyses published elsewhere (Williams, Ciarrochi, & Heaven, 2015). They were: “enjoying positive mood states,” “feeling good about myself,” and “leading a stress-free life.”

The current study employed a classification approach for values contents used in many earlier studies: We categorized item content as extrinsic, intrinsic, and other. The classification system was developed by Grouzet et al. (2005) in a large, international study of the structure and inter-relationships of goal content. We assigned 17 items to the intrinsic group across four content domains. The extrinsic domains (and example items) were financial success (“Being wealthy”); image (“Being admired by many people”); power (“Having influence over people”); and conformity (“Meeting my obligations”). Alpha statistics for the extrinsic group of items ranged from 0.75 (importance, postschool) to 0.88 (pressure, Grade 12 and postschool). The intrinsic domains (and example items) were as follows: community, known in the SVS model as universalism (“Promoting justice and caring for the weak”); affiliation, known in the SVS model as benevolence and in the SGP as relationships (“Having genuine and close friends”); self-

acceptance, similar to the SVS domain of self-direction (“Striving to be a better person”); and physical health (“Eating healthy food”). Alpha statistics for the intrinsic group of items ranged from 0.86 (success, Grade 12) to 0.95 (pressure, Grade 12 and postschool). We assigned six items to the extrinsic group across four content domains. As far as possible, these content categories mirrored those in the earlier study (Grouzet et al., 2005). Twenty-eight SGP items were not used in the current study because not all values can be classified as extrinsic or intrinsic. They included domains such as security, hedonism, achievement, stimulation, and tradition and were included in analyses that have been reported elsewhere (Williams, 2015).

Analysis Plan

Data were analysed in IBM-SPSS and R statistics (R Core Team, 2019). Independent measures *t* tests were used to examine gender differences in parenting and values. Repeated-measures *t* tests were used to examine change in values over time. Relationships among parenting and values variables were tested using Pearson’s correlations as a precursor to structural equation modeling (SEM). To test our hypotheses, we used SEM to examine longitudinal paths from authoritative, authoritarian, and permissive parenting to change in intrinsic values, controlling for change in extrinsic values. Separate models were constructed for each parenting style, for value importance, pressure, and success, and for mothers and fathers separately. The advantage of using SEM with maximum-likelihood estimation for this analysis was that all model parameters could be estimated simultaneously, controlling for all others (Kline, 1998). The structural analysis specified paths from mother and father parenting in Grade 7 to the same parenting variables in Grade 12, extrinsic and intrinsic values in Grade 12, as well as direct and indirect paths to postschool values. There were also paths from Grade 12 parenting to postschool values. All variables were observed, and the models were partially recursive, with correlated disturbances among the variables measured concurrently.

RESULTS

Preliminary Analyses

Descriptive statistics for the extrinsic and intrinsic values categories are presented in Table 1. Means for intrinsic values dimensions were consistently higher than those for the corresponding extrinsic dimensions measured at the same time, Grade 12 importance $t(242) = 14.08$, pressure $t(242) = 3.96$, success $t(240) = 12.64$, postschool importance $t(289) = 18.62$, pressure $t(288) = 2.89$, success $t(287) = 14.82$; all p values less than $p = .008$, Bonferroni-adjusted alpha for six comparisons. On average, intrinsic values were rated more important by females than by males in the postschool measure only, $p < .001$, Bonferroni-adjusted $\alpha = .004$. There

were no other gender differences in values dimensions. There was a general trend across all parenting dimensions and both genders for authoritative and authoritarian parenting to decrease, and permissive parenting to increase, from Grade 12 to postschool. There were few significant gender differences in parenting, with some evidence that females were more likely than males to view their mother's parenting style as authoritative (see upper, right column, Table 1).

Concurrent measures of extrinsic and intrinsic pressure were strongly, positively correlated (Table 2), suggesting that pressure was a general dimension across values priorities. Importance was positively correlated with success, both within and across the extrinsic–intrinsic priority distinction.

TABLE 1
Descriptive Statistics for Extrinsic and Intrinsic Values and Perceived Maternal and Paternal Parenting Styles for the Full Sample and Separately by Gender

Variable	N	Full Sample Mean (SD)	Boys Mean (SD)	Girls Mean (SD)	Gender Differences t(df)
Authoritative parenting					
Mother Grade 7	749	3.61 (0.71)	3.54 (0.71)	3.68 (0.70)	-2.68 (740)*
Mother Grade 12	468	3.49 (0.76)	3.41 (0.77)	3.57 (0.74)	2.17 (463)*
Father Grade 7	749	3.52 (0.73)	3.48 (0.74)	3.56 (0.73)	1.62 (738)
Father Grade 12	468	3.33 (0.86)	3.32 (0.88)	3.34 (0.84)	0.27 (458)
Authoritarian parenting					
Mother Grade 7	749	2.93(0.74)	2.94 (0.71)	2.92 (0.78)	0.38 (739)
Mother Grade 12	468	2.73(0.76)	2.76 (0.74)	2.69 (0.78)	0.99 (463)
Father Grade 7	749	2.99 (0.82)	3.04 (0.80)	2.94 (0.83)	1.66 (738)
Father Grade 12	468	2.97 (0.85)	3.03 (0.82)	2.91 (0.87)	1.50 (458)
Permissive parenting					
Mother Grade 7	749	2.62 (0.63)	2.71 (0.60)	2.60 (0.64)	1.12 (740)
Mother Grade 12	468	2.79 (0.66)	2.85 (0.62)	2.72 (0.64)	2.46 (463)*
Father Grade 7	749	2.73 (0.73)	2.78 (0.71)	2.69 (0.76)	1.64 (737)
Father Grade 12	468	2.78 (0.77)	2.83 (0.80)	2.74 (0.74)	1.31 (458)
Intrinsic importance					
Grade 12	243	7.22 (1.07)	7.08 (1.18)	7.32 (0.96)	-1.70 (240)
Postschool	291	7.31 (0.90)	7.09 (1.00)	7.47 (0.79)	-3.50 (269)*
Intrinsic pressure					
Grade 12	243	5.11 (1.83)	4.99 (2.02)	5.22 (1.65)	-0.96 (240)
Postschool	289	4.61 (1.83)	4.59 (1.89)	4.63 (1.80)	-0.18 (267)
Intrinsic success					
Grade 12	242	3.38 (0.62)	3.33 (0.63)	3.42 (0.61)	-1.17 (239)
Postschool	289	3.40 (0.61)	3.39 (0.65)	3.40 (0.59)	-0.16 (267)
Extrinsic importance					
Grade 12	243	6.15 (1.27)	6.23 (1.36)	6.09 (1.19)	0.88 (240)
Postschool	290	6.27 (1.16)	6.21 (1.28)	6.32 (1.08)	-0.80 (288)
Extrinsic pressure					
Grade 12	243	4.84 (1.89)	4.94 (2.02)	4.78 (1.78)	0.70 (240)
Postschool	289	4.45 (2.01)	4.47 (2.10)	4.43 (1.96)	0.17 (287)
Extrinsic success					
Grade 12	241	2.95 (0.74)	2.95 (0.75)	2.95 (0.74)	0.02 (238)
Postschool	288	2.92 (0.74)	3.00 (0.76)	2.86 (0.72)	1.56 (286)

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

TABLE 2
Correlations (Pearson's *r*) Among Intrinsic and Extrinsic Values in Grade 12 and One Year Postschool

Variable	Intrinsic Values						Extrinsic Values				
	1	2	3	4	5	6	1	2	3	4	5
Intrinsic values											
1. Importance Grade12											
2. Importance postschool	.55**										
3. Success Grade12	.50**	.33**									
4. Success postschool	.29**	.50**	.49**								
5. Pressure Grade12	.08	.07	.03	-.01							
6. Pressure postschool	-.03	-.03	-.02	-.04	.37**						
Extrinsic values											
1. Importance Grade12	.45**	.26**	.27**	.24**	.20**	.07					
2. Importance postschool	.18*	.53**	.11	.25**	.12	.10	.54**				
3. Success Grade12	.21**	.07	.66**	.31**	.00	-.08	.32**	.13			
4. Success postschool	.06	.21**	.36**	.62**	.04	-.09	.11	.19**	.40**		
5. Pressure Grade12	.05	.08	-.06	-.01	.82**	.34**	.24**	.22**	-.02	.03	
6. Pressure postschool	-.04	.02	-.07	-.06	.30**	.84**	.19**	.24**	-.07	-.07	.38**

Note. **p* < .05, ***p* < .01.

Extrinsic pressure was positively associated with extrinsic importance in both years.

Change in Values Over Time

On average, the importance of intrinsic values did not increase over time (research hypothesis 1; see Table 1). As expected (research hypothesis 2), intrinsic pressure decreased significantly over time, $t(188) = 3.47$, $p = .001$; change in extrinsic pressure was marginally significant, $t(188) = 2.45$, $p = .01$, Bonferroni-adjusted $\alpha = .008$. There were no other significant changes in extrinsic or intrinsic values dimensions. Correlations among the valuing dimensions across time are shown in Table 2. The variables showed moderate stability across time, with the previous measure of the value dimension explaining about 9% to 25% of the variance in the future measure.

Main Analyses: Parenting and Values Internalization

Correlations between the three parenting styles and the three values dimensions (classified as either intrinsic or extrinsic) are shown in Table 3. Authoritative parenting by both parents was positively correlated with intrinsic valuing (see shaded columns), but the links were stronger for mothers than for fathers. There were also significant, positive correlations between authoritative parenting and extrinsic valuing. Authoritarian parenting in Grade 12 for mothers and fathers was positively

correlated with pressure for extrinsic values postschool. Permissive parenting by mothers in Grade 12 was negatively correlated with values importance in Grade 12 and postschool. Permissive parenting by fathers in Grade 7 was negatively correlated with values importance postschool.

We conducted structural equation modeling with Lavaan in R statistics (Russell, 2012) to estimate the effects of parenting styles on the development of values, using full information likelihood (FIML) to deal with missing data. We ran nine models to test links between each of the three parenting styles (authoritative, authoritarian, and permissive) and each of the three values dimensions (importance, pressure, and success). Perceived parenting by mothers and fathers was entered simultaneously into each model, thus acting as covariates for each other. All nine models are reported in Tables S1–S3. In each model, all correlated disturbances within a time period were estimated. In order to have degrees of freedom to estimate the fit of the model, we assumed that there was no significant cross-lag from Grade 12 intrinsic valuing to Grade 13 extrinsic valuing, and vice versa. The model fit was not reduced significantly when we made this assumption (i.e., all chi-squares remained nonsignificant). We also ran analyses controlling for gender and found no differences in the patterns of significant results.

First, we ran three models to test relationships between parenting styles and values importance (research hypothesis 3; see Table S1). Figure 2 illustrates the core SEM relating to this research

TABLE 3
Correlations (Pearson's *r*) Among Parenting Styles and Intrinsic/extrinsic Values Dimensions

Variable	Mothers' Parenting Styles						Fathers' Parenting Styles					
	1	2	3	4	5	6	1	2	3	4	5	6
Mothers' parenting styles												
1. Authoritative Grade7												
2. Authoritative Grade12	.32**											
3. Authoritarian Grade7	.23**	-.03										
4. Authoritarian Grade12	-.05	-.17**	.23**									
5. Permissive Grade7	-.05	.03	-.21**	-.11*								
6. Permissive Grade12	-.02	.06	-.03	-.37**	.19**							
Fathers' parenting styles												
1. Authoritative Grade7	.56**	.26**	.15**	.05	-.02	-.09						
2. Authoritative Grade12	.19**	.48**	-.01	-.00	.03	-.04	.30**					
3. Authoritarian Grade7	.17**	.02	.63**	.16**	-.12**	.02	.09*	-.07				
4. Authoritarian Grade12	-.06	.01	.19**	.41**	-.07	-.05	-.01	-.00	.39**			
5. Permissive Grade7	-.15**	-.12*	-.05	.01	.57**	.14**	-.04	.01	-.25**	-.16**		
6. Permissive Grade12	-.03	-.04	-.08	-.06	.21**	.38**	-.15**	.18**	-.21**	-.37**	.27**	
Intrinsic values												
Importance Grade12	.13	.28**	-.08	-.00	-.06	-.19**	.02	.23**	-.08	.07	-.09	.04
Importance postschool	.26**	.40**	.00	-.05	-.06	-.21**	.12	.29**	-.07	-.11	-.16*	.03
Success Grade12	.16*	.31**	-.06	-.02	-.07	-.06	.06	.18**	-.03	.07	-.12	-.05
Success postschool	.17*	.33**	-.02	-.11	-.11	-.02	.10	.28**	-.07	-.09	-.12	.06
Pressure Grade12	.16*	.31**	-.06	-.02	-.07	-.06	.06	.18**	-.03	.07	-.12	-.05
Pressure postschool	-.03	-.16*	-.02	.10	-.03	.12	-.05	-.11	-.05	.09	.06	.03
Extrinsic values												
Importance Grade12	.17*	.31**	.04	.10	-.10	-.06	.12	.21**	.03	.11	-.08	.00
Importance postschool	.18**	.30**	.10	.11	-.02	-.05	.02	.15*	.11	.07	-.08	.02
Success Grade12	.08	.34**	-.09	-.07	.01	.07	-.01	.19**	.01	.09	-.13	-.05
Success postschool	.12	.23**	-.06	-.09	-.04	-.01	.06	.23**	-.06	.03	-.10	-.06
Pressure Grade12	.05	-.01	-.07	.07	.00	.10	.07	-.03	-.05	.01	-.10	.08
Pressure postschool	.01	-.11	-.01	.21**	-.05	.05	.03	-.12	-.05	.16*	.06	-.01

Note. **p* < .05, ***p* < .01.

hypothesis. As expected, Grade 7 mothers' and fathers' authoritarian parenting predicted future parenting and values importance. All autoregressive paths were represented in the model, which fit the data extremely well, with a nonsignificant chi-square, $\chi^2(2) = 2.3$, *p* = .32, comparative fit index (CFI) = 1, root mean square error of approximation (RMSEA) = 014. Authoritative parenting by mothers in Grade 7 predicted increases in extrinsic and intrinsic value importance postschool, after controlling for Grade 12 value importance. Authoritative parenting by fathers in Grade 7 predicted decreased extrinsic importance postschool. A post hoc test revealed that the link between Grade 7 mother authoritarianism and postschool intrinsic values, *b* = .23, was significantly larger than the corresponding link for father authoritarianism, *b* = -.21. Grade 12 authoritative parenting by mothers predicted postschool intrinsic importance. Links between the other two parenting styles and values importance were nonsignificant or negative.

In the model for authoritarian parenting, $\chi^2(2) = .33$, *p* = .85, CFI = 1, RMSEA = 0, there were no significant paths from parenting to importance (Table S1). In the model for permissive parenting, $\chi^2(2) = 1.3$, *p* = .55, CFI = 1, RMSEA = 0, fathers' permissive parenting in Grade 7 predicted poorer values internalization in the form of decreased importance of intrinsic values postschool, standardized *b*father = -.14, *SE* = .09, *z* = -2.22, *p* = .027.

Next, we ran three models to test relationships between parenting styles and pressure (research hypothesis 4; see Table S2). A model predicting pressure from authoritarian parenting fit the data well, $\chi^2(2) = .19$, *p* = .9, CFI = 1, RMSEA = 0. When considered separately, authoritarian parenting by mothers and fathers in Grade 12 showed a non-significant trend to predict post-school extrinsic pressure, *b*mother = .28, *SE* = .20, *z* = 1.39, *p* = .275; *b*father = .34, *SE* = .19, *z* = 1.76, *p* = .078. Unlike the effects described above, mothers and fathers

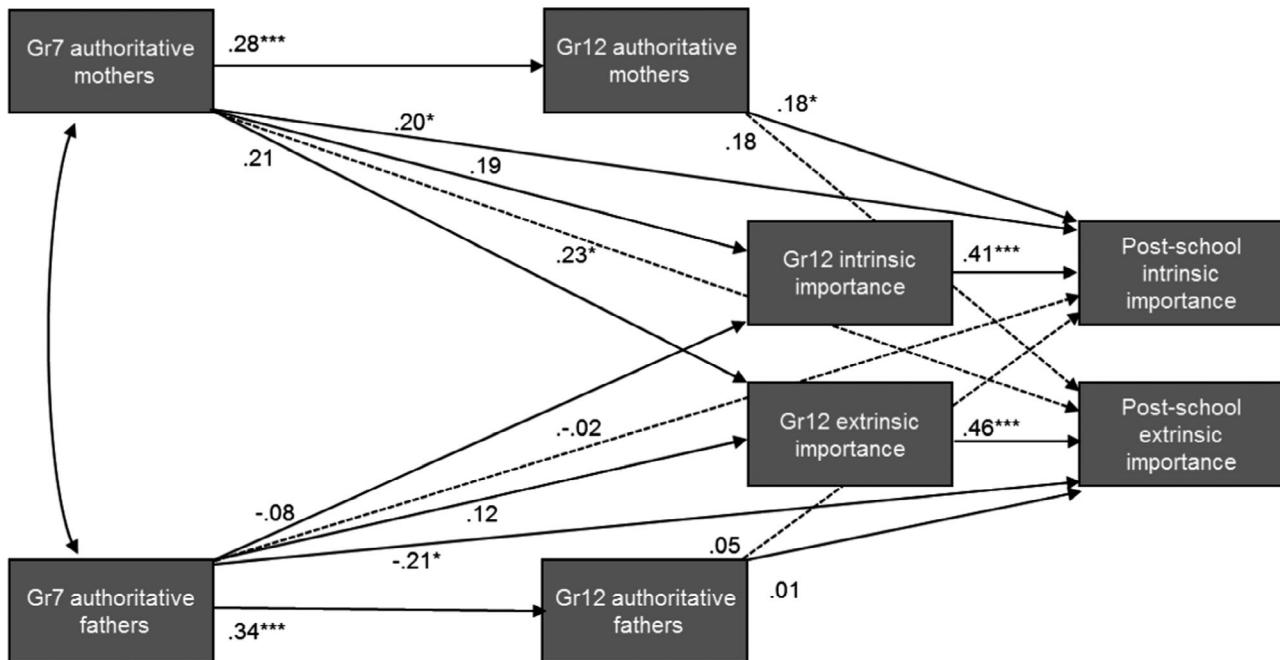


FIGURE 2 Developmental effects of authoritative parenting and value importance in Grade 12 and one year postschool. Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Unstandardized coefficients shown (see Table S1 for betas). Paths that pass beneath other model components are dotted lines. All paths were estimated (except cross-lags between values; see Method for details), but some were omitted from the figure for clarity. Covariances not shown are Grade 12 mothers' and fathers' authoritative parenting, $r = .26, p < .001$; Grade 12 intrinsic and extrinsic importance, $r = .61, p < .001$; postschool extrinsic and intrinsic importance, $r = .34, p < .001$; Grade 12 mothers' authoritative parenting and Grade 12 extrinsic importance, $r = .24, p < .001$, and intrinsic importance, $r = .21, p < .001$; Grade 12 fathers' authoritative parenting and Grade 12 extrinsic importance, $r = .19, p < .01$, and intrinsic importance, $r = .22, p < .001$.

seemed to be similar in their effects on pressure. Assuming they were indeed the same allowed us to pool the two effects together and get a more reliable estimate, without a decrease in the fit of the model, $\chi^2(3) = .23, p = .97, CFI = 1, RMSEA = 0$. The pooled effect in Grade 12 was highly reliable, $b = .31, SE = .10, z = 2.95, p = .003$, indicating that authoritarian parenting predicted greater pressure toward extrinsic values. Taking a similar approach, we pooled mothers' and fathers' authoritative parenting in Grade 12, which also resulted in good model fit, $\chi^2(3) = 1.3, p = .73, CFI = 1, RMSEA = 0$. Again, there was a highly reliable effect of Grade 12 authoritative parenting on pressure toward extrinsic values in emerging adulthood, but this type of parenting resulted in reduced pressure, $b = -.35, SE = .10, z = -3.34, p = .001$. In the model for permissive parenting, $\chi^2(2) = 3.42, p = .18, CFI = .99, RMSEA = .029$, fathers' permissive parenting in Grade 7 predicted greater pressure toward extrinsic values postschool, $b = .51, SE = .22, z = 2.30, p = .021$.

Finally, we ran three models to test relationships between parenting styles and success (research hypothesis 5; see Table S3). The model for

authoritative parenting fit the data well, $\chi^2(2) = 1.37, p = .5, CFI = 1, RMSEA = 0$. We found one significant developmental parenting effect: authoritative parenting by fathers in Grade 12 predicted increased extrinsic success postschool, $b = .13, SE = .06, z = 2.11, p = .04$. There were no significant paths from authoritarian parenting to values success. In the model for permissive parenting, $\chi^2(2) = 3.42, p = .18, CFI = .99, RMSEA = .029$, fathers' permissive parenting in Grade 7 predicted lower success for extrinsic values in Grade 12, $b = -.19, SE = .09, p = .041$.

DISCUSSION

Internalization of values by children and adolescents is an important basis for self-regulation and pro-social behavior (Gagne, 2003; Grusec & Goodnow, 1994). We hypothesized that values would become more internalized and value priorities would change during the key transition period from high school to early adulthood. We hypothesized that authoritative parenting would be associated with values internalization in late adolescence and emerging adulthood, whereas authoritarian

and permissive parenting would not. To test these hypotheses, we examined longitudinal relationships between perceived parenting styles and the internalization of values, defined in this study as changes in individual value priorities (importance), regulation (pressure), and enactment (success). As expected, values were more likely to be internalized among young people who reported the most authoritative parenting. Authoritative parenting predicted all three measures of values internalization in the expected directions. Authoritarian parenting was associated with controlled values regulation. Permissive parenting—by fathers only—also predicted values internalization.

Based on the limited evidence to date (e.g., Sheldon, 2005), we had expected to see increasing importance for intrinsic values from Grade 12 to postschool (research hypothesis 1); however, both intrinsic and extrinsic importance were stable over time. Our finding might be explained by values selection (Roberts et al., 2004). As young people discard or de-emphasize less personally relevant values and focus in on what is most important to them, average importance across all values might actually fall (Roberts et al., 2004). Alternatively, one year may have been insufficient time to see significant change. Further work is needed to determine normative patterns of change in values importance in this age-group. Participants in our study did feel less pressure, particularly on intrinsic values, in the year following high school (research hypothesis 2). This is consistent with the idea that they experienced greater freedom to choose and act upon personally important values.

Although there were no average increases in value importance, some changes were seen among young people with authoritative parents (research hypothesis 3). Increasingly authoritative parenting by mothers during high school predicted increasing value importance in emerging adulthood. Authoritative parenting by fathers in Grade 7 was associated with decreased extrinsic value importance in the postschool measure. As expected, there were no or negative associations between values priorities and the other parenting styles. Authoritarian parenting was not associated with changes in values importance. Permissive parenting by fathers in Grade 7 was associated with reduced importance of intrinsic values, which is an undesirable outcome for young people. These findings indicate that authoritative parenting contributes most effectively to the internalization of values.

Authoritative parenting by mothers in Grade 7 predicted changes in value importance in emerging

adulthood even after controlling for Grade 12 parenting. If two adolescents had equally positive, authoritative parenting experiences in Grade 12, then the adolescent who had experienced more authoritative parenting by their mother in Grade 7 would be expected to assign greater importance to values in emerging adulthood. Paths from mothers' Grade 12 authoritative parenting to postschool importance and success did not differ significantly between extrinsic and intrinsic contents. In other words, this type of parenting by mothers appears to promote internalization of both types of values. Mothers may foster greater importance of all values because they tend to spend more time with adolescents and have more open discourse with them, compared with fathers (Laible & Carlo, 2004). Alternatively, fathers may be influential on values domains such as achievement and self-determination (Laible & Carlo, 2004) which were excluded from the extrinsic-intrinsic dimensions used in this study. Given the paucity of previous research on mothers' and fathers' unique contributions to values internalization, these novel findings require replication.

We hypothesized that authoritative parenting would be associated with changes in values regulation (research hypothesis 4). This was supported, but authoritarian parenting also appears to be influential on this aspect of values internalization. A combined measure of mothers' and fathers' authoritative parenting in Grade 12 predicted reduced pressure on extrinsic values postschool, and a combined measure of mothers' and fathers' authoritarian parenting in Grade 12 predicted increased pressure on extrinsic values postschool. In previous studies, adolescents with authoritarian parents regarded values as relatively unimportant compared to adolescents with authoritative or permissive parents (Martinez & Fernando, 2007, 2007). In our sample, however, adolescents with authoritarian parents were as capable as their peers of identifying and acting upon their values. We did not find specific deficits in intrinsic values (in contrast to Aluja et al., 2005), but adolescents subject to authoritarian parenting felt pressure on extrinsic values. An earlier study also found parental structure was associated with controlled values regulation (Hardy et al., 2008). These findings reinforce the view that excessive control may undermine a child's sense of autonomy and inhibit internalization of values (Grusec & Davidov, 2010). Autonomy support may be especially salient around the transition from primary school, around age 12–13 (Laird, 2011). At this age, some resistance to

parental authority is normative and, if expressed in a mature and regulated manner, may influence parents to become more democratic (Morrissey & Gondoli, 2012). In turn, democratic, flexible parenting shapes more adaptive behaviors in adolescence (Williams, Ciarrochi & Heaven, 2012).

Permissive parenting may also have a longitudinal effect on values regulation. Fathers' (but not mothers') permissive parenting in Grade 7 was associated with greater pressure on extrinsic values postschool. This is interesting and difficult to interpret, given the mixed findings from previous studies. Most have reported either no detrimental outcomes of permissive parenting (Gonzalez, Greenwood, & WenHsu, 2001; Shumow, Vandell, & Posner, 1998) or positive links with values development (Martinez & Fernando, 2007, 2007). In some family and cultural contexts, the high warmth provided by permissive parents may offset the lack of structure (Martinez & Fernando, 2007, 2007). Warm, responsive parenting is associated with secure attachment and positive affect in children, and these factors help promote compliance and cooperation with parents (Cummings & Cummings, 2002). However, the permissive parenting style may also indicate a lack of involvement, which has been shown to have a negative relationship with values internalization (Hardy et al., 2008).

Our fifth research hypothesis, concerning parenting and values enactment, was more tentative due to the lack of previous research. We expected authoritative parenting to be associated with values enactment. However, mothers' authoritative parenting was not a significant predictor of values enactment. There were two unexpected findings: authoritative parenting by fathers (Grade 12) predicted increased enactment of extrinsic values postschool, whereas permissive parenting by fathers (Grade 7) predicted reduced enactment of extrinsic values in Grade 12. These findings are difficult to interpret and require replication. One previous study found that closeness to fathers—commonly associated with authoritative parenting—was positively related to materialism (cited in Flouri, 2004). Fathers may be more inclined than mothers to discuss subjects related to extrinsic values, such as financial issues and power relationships (Flouri, 2004). This may enhance an adolescent's self-rated success at enacting extrinsic values, regardless of whether the adolescent considers them especially important.

Our findings build on studies showing that adolescents' interpretations of their parents' behaviors

(Hardy et al., 2010) and expectations (Padilla-Walker & Carlo, 2007) shaped their own values and pro-social behaviors. They are consistent with a longitudinal study which demonstrated links between autonomy-supportive "proactive" parenting and the internalization and enactment of values and confirm that it is important to consider overarching parenting styles and broad family climate as well as more specific measures of parent behaviors (Padilla-Walker et al., 2012).

Some limitations of the current study must be acknowledged. First, our measures were all based on self-report by adolescents. While this is inevitable when asking people about their values, it would be useful to obtain parents' views on their parenting behaviors to complement children's perspectives, which many researchers regard as valuable (Helwig, 2006). Also, parents' values were not measured, so correspondence between parents' and children's value priorities (an indicator of direct transmission of values) could not be assessed. Second, our participants were all educated at Catholic schools. Although similar to the broader Australian population regarding socio-economic status and ethnicity, this sample may have had different values instilled in them by parents, teachers, and schools. Third, in our measures of parenting styles, the effects of warmth and different types of control cannot be separated and the impact of specific interactions (e.g., low warmth and behavioral control with high psychological control) on child outcomes cannot be explored. Fourth, we did not measure values prior to parenting, and therefore, we were unable to test the reverse link that adolescents' values predicted later parenting.

Our study adds to the literature by providing longitudinal data on the role of parenting styles in the internalization of values at a key point in adolescent development. A strength of this study is its broad-based sample, which included young people who were employed, seeking work, or in vocational training as well as university students. By conducting separate analyses for mothers and fathers, we have provided new insights into their different influences on values internalization. As far as we are aware, this is the first study to examine the relationship between parenting styles and values enactment. Previous studies have demonstrated more pro-social and less antisocial behavior among adolescents with authoritative parents (e.g., Baumrind, 1991; Lamborn, Mounts, Steinberg, & Dornbusch, 1991). However, using pro-social behavior as a proxy measure for values is problematic, since such behavior may not necessarily be driven by values.

Any given pro-social behavior may be principled, empathetic, or merely polite (Grusec & Davidov, 2010). Moreover, a given behavior may express multiple values and it may be unclear which value is being expressed (Bardi & Schwartz, 2003). It is therefore necessary to look beyond the form of the behavior to its function, by asking adolescents specifically what they value, whether they are acting in accordance with those values, and how autonomous they feel in their valued action. This is another contribution of the current study.

This study has implications for parenting practices, further demonstrating the advantages of the authoritative combination of high warmth or responsiveness, structure or demandingness, and autonomy support. Children of responsive parents are more securely attached and receptive to the parents' disciplinary efforts and moral teaching (Eisenberg & Valiente, 2002). Structure provides a contingent, predictable environment. Together, responsiveness and structure create a secure base from which adolescents can begin to explore their world and come into contact with real environmental contingencies, within safe limits. In addition, authoritative parents protect their adolescents' autonomy. They provide reasons for boundaries, refrain from manipulating or intruding into adolescents' private thoughts and emotions, and gradually relax behavioral control in response to increasing maturity. High school students who reported that their mothers became more authoritative over the high school years matured into young adults who placed increasing importance on intrinsic values; those whose fathers became more authoritative placed less emphasis on extrinsic values. Our findings underscore the importance of parents' behaviors in shaping their children's values, even into late adolescence and early adulthood.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

REFERENCES

Aluja, A., del Barrio, V., & Garcia, L. F. (2005). Relationships between adolescents' memory of parental rearing styles, social values and socialization behavior traits. *Personality and Individual Differences*, 39, 903–912.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55, 469–480.

Australian Bureau of Statistics (2012). Schools, Australia, 2012. Retrieved June 5, 2013, from <http://www.abs.gov.au/AUSSTATS/>

Bahraini, N. H., Devore, M. D., Monteith, L. L., Forster, J. E., Bensen, S., & Brenner, L. A. (2013). The role of value importance and success in understanding suicidal ideation among Veterans. *Journal of Contextual Behavioral Science*, 2, 31–38.

Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, 67, 3296–3319.

Bardi, A., & Schwartz, S. H. (2003). Values and behavior: Strength and structure of relations. *Personality and Social Psychology Bulletin*, 29(10), 1207–1220.

Barry, C. M., Padilla-Walker, L. M., Madsen, S. D., & Nelson, L. J. (2008). The impact of maternal relationship quality on emerging adults' prosocial tendencies: Indirect effects via regulation of prosocial values. *Journal of Youth and Adolescence*, 37, 581–591.

Baumrind, D. (1968). Effects of authoritarian parental control on child behavior. *Child Development*, 37, 887–907.

Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance use. *The Journal of Early Adolescence*, 11, 56–95.

Baumrind, D. (2012). Differentiating between confrontive and coercive kinds of parental power-assertive disciplinary practices. *Human Development*, 55, 35–51.

Bell, R. Q. (1968). A reinterpretation of the direction of effects in studies of socialization. *Psychological Review*, 75, 81–95.

Benish-Weisman, M., Levy, S., & Knafo, A. (2013). Parents differentiate between their personal values and their socialization values: The role of adolescents' values. *Journal of Research on Adolescence*, 23, 614–620.

Braithwaite, V. A., & Law, H. G. (1985). Structure of human values: Testing the adequacy of the Rokeach Value Survey. *Journal of Personality and Social Psychology*, 49, 250–263.

Brunstein, J. C. (1993). Personal goals and subjective well-being: a longitudinal study. *Journal of Personality and Social Psychology*, 65, 1061–1070.

Buri, J. R. (1991). Parental Authority Questionnaire. *Journal of Personality Assessment*, 57, 110–119.

Chandler, C. L., & Connell, J. P. (1987). Children's intrinsic, extrinsic and internalized motivation: A developmental study of children's reasons for liked and disliked behaviours. *British Journal of Developmental Psychology*, 5, 357–365.

Cohen, P., & Cohen, J. (2001). Life values and mental health in adolescence. In P. Schmuck, & K. M. Sheldon (Eds.), *Life goals and well-being: towards a positive psychology of human striving* (pp. 167–181). Seattle, WA: Hogrefe & Huber Publishers.

Cummings, E. M., & Cummings, J. S. (2002). Parenting and attachment. In M. H. Bornstein (Ed.), *Handbook of parenting* (2nd ed., Vol. 5: Practical issues in parenting, pp. 35–58). Mahwah, NJ: Erlbaum.

Davis, A. N., Carlo, G., Streit, C., Schwartz, S. J., Unger, J. B., Baezconde-Garbanati, L., & Szapocznik, J. (2018). Longitudinal associations between maternal involvement, cultural orientations, and prosocial behaviors among recent immigrant Latino adolescents. *Journal of Youth and Adolescence*, 47, 460–472.

Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268.

Eisenberg, N., & Valiente, C. (2002). Parenting and children’s prosocial and moral development. In M. H. Bornstein (Ed.), *Handbook of parenting*, 2nd edn, Vol. 5: Practical issues in parenting (pp. 111–142). Mahwah, NJ: Erlbaum.

Farkas, M. S., & Grolnick, W. S. (2010). Examining the components and concomitants of parental structure in the academic domain. *Motivation and Emotion*, 34, 266–279.

Feather, N. (1995). Values, valences, and choice: The influences of values on the perceived attractiveness and choice of alternatives. *Journal of Personality and Social Psychology*, 68, 1135–1151.

Flouri, E. (2004). Exploring the relationship between mothers’ and fathers’ parenting practices and children’s materialist values. *Journal of Economic Psychology*, 25, 743–752.

Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behaviour engagement. *Motivation and Emotion*, 27, 199–223.

Gonzalez, A., Greenwood, G., & WenHsu, J. (2001). Undergraduate students’ goal orientations and their relationship to perceived parenting styles. *College Student Journal*, 35, 182–193.

Grouzet, F. M. E., Kasser, T., Ahuvia, A., Dols, J. M. F., Kim, Y., Lau, S., ... Sheldon, K. M. (2005). The structure of goal contents across 15 cultures. *Journal of Personality and Social Psychology*, 89, 800–816.

Grusec, J. E., & Davidov, M. (2010). Integrating different perspectives on socialization theory and research: A domain-specific approach. *Child Development*, 81, 687–709.

Grusec, J. E., & Goodnow, J. J. (1994). The impact of parental discipline methods on the child’s internalization of values: A reconceptualization of current points of view. *Developmental Psychology*, 32, 4–19.

Grusec, J. E., Goodnow, J. J., & Kuczynski, L. (2000). New directions in analyses of parenting contributions to children’s acquisition of values. *Child Development*, 71, 205–211.

Hardy, S. A., Carlo, G., & Roesch, S. C. (2010). Links between adolescents’ expected parental reactions and prosocial behavioral tendencies: The mediating role of prosocial values. *Journal of Youth and Adolescence*, 39, 84–95.

Hardy, S. A., Padilla-Walker, L. M., & Carlo, G. (2008). Parenting dimensions and adolescents’ internalization of moral values. *Journal of Moral Education*, 37, 205–223.

Hart, D., & Carlo, G. (2005). Moral development in adolescence. *Journal of Research on Adolescence*, 15, 223–233.

Headey, B., Muffels, R., & Wagner, G. G. (2014). Parents transmit happiness along with associated values and behaviors to their children: A lifelong happiness dividend? *Social Indicators Research*, 116, 909–933.

Heaven, P. C. L., & Ciarrochi, J. (2008). Parental styles, conscientiousness, and academic performance in high school: a three-wave longitudinal study. *Personality and Social Psychology Bulletin*, 34, 451–461.

Helwig, C. C. (2006). The development of personal autonomy throughout cultures. *Cognitive Development*, 21, 458–473.

Karmakar, R. (2015). Does parenting style influence the internalization of moral values in children and adolescents? *Psychological Studies*, 60, 438–446.

Kasser, T., & Ryan, R. M. (1993). A dark side of the American Dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, 65, 410–422.

Kasser, T., & Ryan, R. M. (1996). Further examining the American Dream: differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, 22, 280–287.

Kasser, T., & Ryan, R. M. (2001). Be careful what you wish for: optimal functioning and the relative attainment of intrinsic and extrinsic goals. In P. Schmuck, & K. M. Sheldon (Eds.), *Life goals and well-being: towards a positive psychology of human striving* (pp. 116–131). Seattle, WA: Hogrefe & Huber Publishers.

Kasser, T., Ryan, R. M., Zax, M., & Sameroff, A. J. (1995). The relations of maternal and social environments to late adolescents’ materialistic and prosocial values. *Developmental Psychology*, 31, 907–914.

Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: The Guilford Press.

Knafo, A. (2003). Authoritarians, the next generation: values and bullying among adolescent children of authoritarian fathers. *Analyses of Social Issues and Public Policy*, 3, 199–204.

Knafo, A., & Assor, A. (2007). Motivation for agreement with parental values: Desirable when autonomous, problematic when controlled. *Motivation and Emotion*, 31, 232–245.

Knight, G. P., Carlo, G., Mahrer, N. E., & Davis, A. N. (2016). The socialization of culturally related values and prosocial tendencies among Mexican-American adolescents. *Child Development*, 87, 1758–1771.

Krettenauer, T., Colasante, T., Buchmann, M., & Malti, T. (2014). The development of moral emotions and decision-making from adolescence to early adulthood: A 6-year longitudinal study. *Journal of Youth and Adolescence*, 43, 583–596.

Laible, D. J., & Carlo, G. (2004). The differential relations of maternal and paternal support and control to

adolescent social competence, self-worth, and sympathy. *Journal of Adolescent Research*, 19, 759–782.

Laird, R. D. (2011). Correlates and antecedents of parental psychological control in early adolescence. *Parenting: Science and Practice*, 11, 72–86.

Lamborn, S. D., Mounts, N. S., Steinberg, L., & Dornbusch, S. M. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development*, 62, 1049–1065.

Lekes, N., Gingras, I., Philippe, F. L., Koestner, R., & Fang, J. (2010). Parental autonomy-support, intrinsic life goals, and well-being among adolescents in China and North America. *Journal of Youth and Adolescence*, 39, 858–869.

McKinney, C., & Renk, K. (2008). Differential parenting between mothers and fathers: Implications for late adolescents. *Journal of Family Issues*, 29, 806–827.

Martinez, I., & Fernando Garcia, J. (2007). Impact of parenting styles on adolescents' self-esteem and internalization of values in Spain. *Spanish Journal of Psychology*, 10, 338–348.

Martinez, I., & Fernando Garcia, J. (2008). Internalization of values and self esteem among Brazilian teenagers from authoritative, indulgent, authoritarian, and neglectful homes. *Family Therapy*, 35, 43–59.

Massey, E. K., Gebhardt, W. A., & Garnefski, N. (2008). Adolescent goal content and pursuit: A review of the literature from the past 16 years. *Developmental Review*, 28, 421–460.

Morrissey, R. A., & Gondoli, D. M. (2012). Change in parenting democracy during the transition to adolescence: The roles of young adolescents' noncompliance and mothers' perceived influence. *Parenting: Science and Practice*, 12, 57–73.

Padilla-Walker, L. M., & Carlo, G. (2007). Personal values as a mediator between parent and peer expectations and adolescent behaviors. *Journal of Family Psychology*, 21, 538–541.

Padilla-Walker, L. M., Fraser, A. M., & Harper, J. M. (2012). Walking the walk: The moderating role of proactive parenting on adolescents' value-congruent behaviors. *Journal of Adolescence*, 35, 1141–1152.

Patterson, G. R. (1971). *Families: Application of social learning to family life*. Champaign, IL: Research Press.

Patterson, G. R. (2002). The early development of coercive family process. In J. B. Reid, G. R. Patterson, & J. J. Snyder (Eds.), *Antisocial behavior in children and adolescents: A developmental analysis and the Oregon model for intervention* (pp. 25–44). Washington D.C.: American Psychological Association.

Patterson, G. R., & Fisher, P. A. (2002). Recent developments in our understanding of parenting: Bi-directional effects, causal models, and the search for parsimony. In M. Bornstein (Ed.), *Handbook of parenting: Practical and applied parenting* (2nd ed., Vol. IV, pp. 59–88). Mahwah, NJ: Erlbaum.

Pratt, M. W., Hunsberger, B., Pancer, S. M., & Alisat, S. (2003). A longitudinal analysis of personal values socialization: Correlates of a moral self-ideal in late adolescence. *Social Development*, 12, 563–585.

R Core Team (2019). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. <https://www.R-project.org/>

Roberts, B. W., O'Donnell, M., & Robins, R. W. (2004). Goal and personality trait development in emerging adulthood. *Journal of Personality and Social Psychology*, 87(4), 541–550.

Rohan, M. J. (2000). A rose by any other name? The values construct. *Personality and Social Psychology Review*, 4, 255–277.

Rottinghaus, P. J., Coon, K. L., Gaffey, A. R., & Zytowski, D. G. (2007). Thirty-year stability and predictive validity of vocational interests. *Journal of Career Assessment*, 15, 5–22.

Russell, Y. (2012). Lavaan: An R package for Structural Equation Modeling. *Journal of Statistical Software*, 48, 1–36.

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality*, 74, 1557–1585.

Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A Self-Determination Theory perspective on eudaimonia. *Journal of Happiness Studies*, 9, 139–170.

Salmela-Aro, K. (2009). Personal goals and well-being during critical life transitions: The four C's – channelling, choice, co-agency and compensation. *Advances in Life Course Research*, 14, 63–73.

Savickas, M. L., Taber, B. J., & Spokane, A. R. (2002). Convergent and discriminant validity of five interest inventories. *Journal of Vocational Behavior*, 61, 139–184.

Schönpflug, U. (2001). Intergenerational transmission of values: The role of transmission belts. *Journal of Cross-Cultural Psychology*, 32, 174–185.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theory and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). New York: Academic Press.

Schwartz, S. H. (2010). Basic values: How they motivate and inhibit prosocial behaviour. In M. Mikulincer, & R. Phillip (Eds.), *Prosocial motives, emotions, and behavior: The better angels of our nature* (pp. 221–241). Washington DC: American Psychological Association.

Schwartz, S. H., & Bardi, A. (2001). Value hierarchies across cultures: Taking a similarities perspective. *Journal of Cross-Cultural Psychology*, 32, 268–290.

Schwartz, S. H., & Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology*, 53, 550–562.

Schwartz, S. H., & Boehnke, K. (2004). Evaluating the structure of human values with confirmatory factor analysis. *Journal of Research in Personality*, 38, 230–255.

Sheldon, K. M. (2001). The self-concordance model of health goal striving: when personal goals correctly represent the person. In P. Schmuck, & K. M. Sheldon (Eds.), *Life goals and well-being: towards a positive psychology of human striving* (pp. 18–36). Seattle, WA: Hogrefe & Huber Publishers.

Sheldon, K. M. (2005). Positive value change during college: Normative trends and individual differences. *Journal of Research in Personality*, 39, 209–223.

Sheldon, K. M., & Elliot, A. J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality and Social Psychology Bulletin*, 24, 546–558.

Sheldon, K. M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Personality and Social Psychology Bulletin*, 24, 1319–1331.

Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, 30, 475–486.

Shepperd, J. A., Pogge, G., Lipsey, N. P., Miller, W. A., & Webster, G. D. (2019). Belief in a loving versus punitive God and behaviour. *Journal of Research on Adolescence*, 29, 390–401.

Shumow, L., Vandell, D. L., & Posner, J. K. (1998). Harsh, firm, and permissive parenting in low-income families: Relations to children's academic achievement and behavioral adjustment. *Journal of Family Issues*, 19, 483–507.

Simons, L. G., & Conger, R. D. (2007). Linking mother-father differences in parenting to a typology of family parenting styles and adolescent outcomes. *Journal of Family Issues*, 28, 212–241.

Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review*, 30, 74–99.

Steinberg, L. (2001). We know some things: Parent-adolescent relationships in retrospect and prospect. *Journal of Research on Adolescence*, 11, 1–19.

Veage, S., Ciarrochi, J., Deane, F., Andresen, R., Oades, L., & Crowe, T. (2014). Value congruence, importance and success in the workplace: Links with well-being and burnout amongst mental health practitioners. *Journal of Contextual Behavioral Science*, 3, 258–264.

Veage, S., Ciarrochi, J., & Heaven, P. C. L. (2011). Importance, pressure, and success: Dimensions of values and their links to personality. *Personality and Individual Differences*, 50, 1180–1185.

Williams, G. C., Cox, E. M., Hedberg, V. A., & Deci, E. D. (2000). Extrinsic life goals and health-risk behaviors in adolescents. *Journal of Applied Social Psychology*, 30, 1756–1771.

Williams, K. (2015). Values and valued action: relationships with perceived parenting styles and well-being at the transition from high school to early adulthood. Unpublished doctoral dissertation. University of Wollongong.

Williams, K., Ciarrochi, J., & Heaven, P. C. L. (2012). Inflexible parents, inflexible kids: A 6-year longitudinal study of parenting style and the development of psychological flexibility in adolescents. *Journal of Youth and Adolescence*, 41, 1053–1066.

Williams, K., Ciarrochi, J., & Heaven, P. C. L. (2015). Relationships between valued action and well-being across the transition from high school to early adulthood. *Journal of Positive Psychology*, 10, 127–140.

Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S1. Parenting styles and values importance: regressions.

Table S2. Parenting styles and values pressure: regressions.

Table S3. Parenting styles and values success: regressions.