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Michael W. Pratt [a], Joan E. Norris [a], Susan Alisat [a] & Elise Bisson [a]

[a] Wilfrid Laurier University, Canada

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Earth mothers (and fathers): examining generativity and environmental concerns in adolescents and their parents

Michael W. Pratt*, Joan E. Norris, Susan Alisat and Elise Bisson
Wilfrid Laurier University, Canada

Erikson's construct of generative concern for future generations seems a plausible structure for supporting environmental behavior and socialization in the family. The present study of 44 Canadian middle-class families with a focal child aged 14–16 years, examined variations in generative concern among parents and their children and tested how such variations were related to differences in environmental values and behaviors in the family, as measured by a number of standard and novel scales and self-reports. Results showed that adolescent generative concern on the Loyola Generativity Scale predicted positively adolescent environmental and prosocial behaviors and was, in turn, predicted by an authoritative parenting style and maternal generative concern. Furthermore, an emphasis on environmental-socialization values and practices by parents was associated positively with higher parent-generativity scores, and parents' environmental actions and values, in turn, predicted adolescent behaviors. This study provides preliminary support for the role of generative concern in supporting environmental socialization in the family context.

Introduction

Environmental challenges, such as global warming, pollution and habitat destruction, continue to increase in today's world (e.g., Flannery, 2009). These issues have grave implications for the sustainability of the earth as a human habitat. Present generations must serve as stewards of our earth in order to leave a legacy for those to come, but continuing evidence of political and personal failures to act vigorously on these problems is not encouraging. It is critical that psychologists study how we can engage and sustain serious changes to address these environmental issues before it is too late (Gifford, 2008).

*Corresponding author. Psychology Department, Wilfrid Laurier University, Waterloo, Ontario, Canada, N2L 3C5. Email: mpratt@wlu.ca

Generativity as a personality construct

Erikson (1963) described generativity as a focal personality strength that comes to the fore during the long period of midlife, the seventh of his eight-stage sequence in lifespan ego development. During this period, the adult becomes concerned with caring for next generations as a way of leaving a legacy of the self into the future. Parenting was surely one major prototype for the expression of this concern in Erikson's model, though generativity can be expressed in other ways, such as teaching or mentoring, as well. Erikson argued that a moral and prosocial concern among adults for fostering youth provides a way of linking the generations together and passing on key values and behaviours that are the bedrock of any viable society and, indeed, of care for nature itself. 'As to the institutions which safeguard and reinforce generativity, one can only say that all institutions codify the ethics of generative succession (across the generations)…Even where philosophical and spiritual tradition suggests the renunciation of the right to procreate or produce, such an early turn to "ultimate concerns," wherever instituted in monastic traditions, strives to settle at the same time the matter of its relationship to the Care for the creatures of this world and the Charity which is felt to transcend it' (Erikson, 1963, pp. 267–268).

Recent efforts by McAdams have provided a more detailed account of this complex motive, belief and action system (McAdams & de St. Aubin, 1992). This framework stresses a multi-component model of generativity and develops a number of measurement tools for assessing its expression. Most widely-used of these is a measure of conscious generative concern, the 20-item Loyola Generativity Scale (LGS), which assesses individual variation in the strength of this focus.

Of particular interest in recent research has been the expression of generative concern in the family socialization context (e.g., Pratt et al., 2001). This article reports on a study of adolescents and their parents, focusing on the socialization and development of environmental activities and concerns among these families. Alarmingly, some recent work suggests that environmental engagement in youth may actually have weakened across cohorts over the past 30 years (Wray-Lake et al., 2010). In the present paper, we address patterns of generativity among youth and their parents, socialization practices, levels of environmental engagement and the interrelations among these factors in the family. We first discuss research on generativity and its expression in the family and its relation to general socialization practices, we then consider research on environmental engagement and the family patterns that may foster it.

Generativity across adolescence and adulthood

McAdams et al. (1993) asked young, midlife and older adults to complete questionnaires that assessed several indices of generativity, including generative concern. Multivariate analyses showed that there was an overall quadratic age/cohort effect, with younger adults scoring lower on generativity overall than both midlife

and older adults, whereas midlife and older adults did not differ. Analyses on the generative-concern measure alone showed no age trends across adulthood, however. McAdams (2001) subsequently suggested that generativity is not just a phenomenon of midlife, but that there may be some aspects of generativity that are more prototypic during that age period than others. Stewart and van de Water (1998) went further, arguing that generativity should be understood as unfolding across the lifespan, with earlier manifestations of generativity in the area of concern and desire, and greater emphasis on generative capacity and accomplishment in midlife and later adulthood.

Lawford et al. (2005) and Frensch et al. (2007) subsequently explored evidence for generativity in late-adolescence. Both studies found that generative concern (Lawford) and generative themes in life narratives (Frensch) were predictive of community engagement in youth, just as they have been found to be among midlife adults (e.g., Hart et al., 2001). A recent cross-cultural study by Busch and Hofer (in press) suggested similar findings with mid-adolescent samples from Germany and Cameroons. Overall, then, there is evidence that early generativity, especially conscious concern, is a meaningful individual-difference construct among adolescents, showing patterns parallel to its associations in midlife, if not always comparably strong levels of effects on different types of generativity measures. The present study explores generative concern among somewhat younger adolescents (age 14–16).

Generativity and socialization in the family

Several studies have examined the relations between generativity in parents and the socialization practices used in the family. Peterson et al. (1997) showed that generative parents were likely to be perceived by their young adult children as more authoritative in parenting style. Such a style has been shown by Baumrind (1991) and others (Steinberg, 2001; Barber et al., 2005) to be highly effective in the socialization of children and adolescents. Pratt et al. (2001) also reported similar findings on authoritative parenting and generativity, though effects were primarily present for mothers in this study and less clear for fathers of adolescents. Van Heil et al. (2006) reported similar effects for mothers in a study of Dutch adolescents. Authoritative parenting also has been consistently associated with more prosocial behavior patterns (e.g., greater community involvement, Lawford et al., 2005; Pancer et al., 2007).

Peterson et al. (1997) also found that the concurrent correlation between parent and late-adolescent (age 19–20) generative-concern scores was positive and significant. Peterson (2006) reported in a follow-up on this same sample that higher generativity in parents continued to predict significantly higher generative concern in these young-adult offspring several years later as well. These results suggest that it might be interesting to study these parent–child relations with somewhat younger adolescent children. We examine this question separately for mothers and fathers below.

Generativity and environmentalism

Our central focus in this study was on the relations between generativity and environmental socialization processes within the family. There has been only limited research on generativity as a correlate of environmental concern, though at least some studies with adults on environmental engagement have suggested that generativity is one important motivation for such concern (Horwitz, 1996; Unwin & Kilbourne, 2011) and concern for future generations is often cited as a motive in the moral and ethical literature on the environmental crisis (Moore & Nelson, 2010). Matsuba et al. (2012) reported that several different measures of generativity were higher in a sample of environmental activists versus non-activists, including both emerging adults (17–27) and those in midlife (28–59). However, we have been unable to find work that addresses the associations between parent generativity and patterns of environmental socialization with their own children. Nonetheless, the evidence above would suggest that those who are more generative might be more likely to be engaged in environmental causes and to demonstrate and encourage environmental concern among others, including their own children.

Parent socialization as a predictor of adolescent involvement

The present study also examines the relations between parent-socialization patterns and adolescent engagement in pro-environmental activities. While there has been little research on this topic to date, a number of studies have examined the relations between parent involvement and socialization and prosocial and volunteering activities in their children (e.g., Lawford et al., 2005; Pancer et al., 2007). These studies have indicated that positive, authoritative parenting in the family (as reported by adolescents) has been associated with greater involvement in prosocial activities in older adolescents and emerging adults. Pancer and Pratt (1999) argued that parents might have effects on adolescent prosocial engagement through several pathways, including modeling and involving youth in various prosocial activities, as well as positively encouraging and reinforcing such activities in children directly. In the present study, we considered both of these pathways in investigating parents' fostering of environmental engagement in their offspring.

Finally, there is some uncertainty about possible sex differences among parents in levels of these constructs, including generativity, with some studies showing women scoring higher than men and others indicating no differences (e.g., Pratt et al., in press). Little is known about sex differences in environmental socialization in the family, although it is well established that adolescents perceive mothers to be more engaged and more authoritative in parenting than fathers (e.g., Larson & Richards, 1994; Paulsen & Sputa, 1996). Consequently, we explore gender differences in these measures between mothers and fathers in this research.

Purpose and hypotheses

Figure 1 depicts the general research model of the study. It should be noted that it is not this study's aim to test the overall model as outlined in Figure 1, but simply

to explore some of its various links. Four general hypotheses were derived from this model.

(1) Generative concern will be related positively to environmentalism for both middle-adolescents as well as parents. In addition, generativity will be positively associated with prosocial engagement among adolescents, supporting the validity of individual differences in scores on the Loyola Generativity Scale among youth (Lawford et al., 2005).
(2) Adolescent generative concern will be uniquely predicted by authoritative parenting in the family, as well as by parents' levels of generativity, replicating past findings with somewhat older youth samples (Peterson et al., 1997; Lawford et al., 2005).
(3) Environmental socialization practices and values of parents will be positively associated with parents' generativity levels, as well as with adults' personal environmental practices and with adolescent reports of family parenting style.
(4) Parents' personal environmental activities, an authoritative parenting style and family emphasis on environmental socialization should all be positive predictors of adolescents' level of environmental engagement.

In addition, we explored the question of gender differences in average levels of various parenting practices and of parental generative concern.

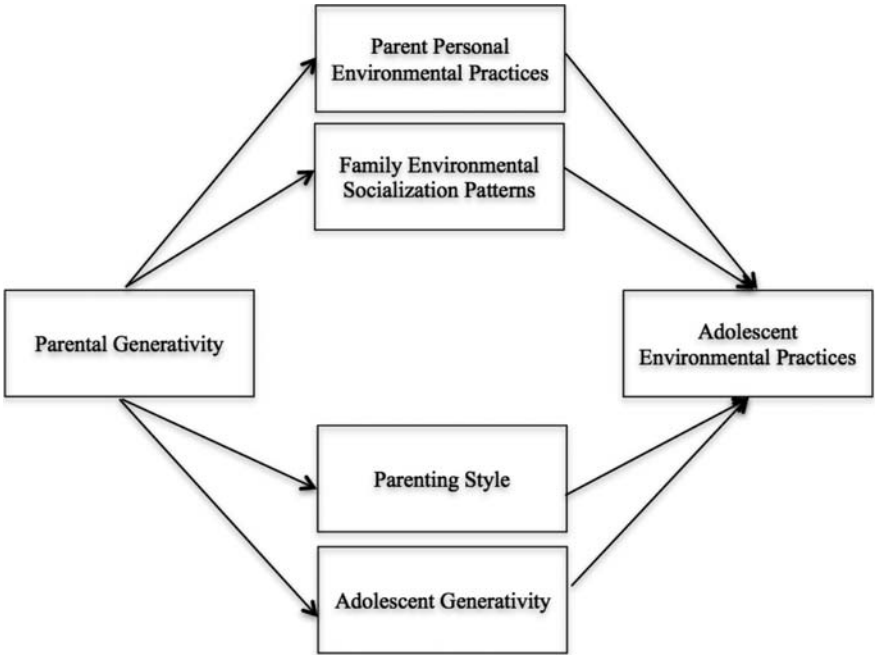

Figure 1. Overall conceptual model for present study

Methods

Participants

The participants of this study represented a family sample (n = 46) collected in central Ontario, Canada. These families were mostly White and middle-class. Parents' average level of education was a college degree (4 on our 6-point scale, see below). Families with a 14–16-year-old child (M age = 14.86) were recruited through an ad in a local newspaper for a study of family values, of which the environmental section was one part. Unfortunately, only 44 of the families had an adolescent and at least one parent participant, including 34 fathers and 42 mothers in total, and this set of 44 families thus constituted the study sample.

Procedure

The parents and adolescents who agreed to participate were sent questionnaires through the mail. These questionnaires followed a standard order as listed below. Each family member was asked to complete these questionnaires independently and to return the questionnaires to our research lab by mailing them using prepaid separate envelopes. Adolescents received a movie gift card and parents received a coffee gift card for their participation.

Measures

Table 1 shows the means, standard deviations, and Cronbach alphas (where appropriate) for the variables used in this study.

Demographic measures. Adolescents reported age, gender and grade and parents reported on highest completed education level on a 1 (less than high school)–6 (post-graduate) scale.

Adolescent perceptions of family parenting. This measure was taken from Barber et al. (2005) and involved three separate scales, each completed separately for mother and father.

Parental support. Adolescents completed a 10-item support scale from the revised Child Report of Parent Behavior Inventory (Schaefer, 1965). Participants were asked to rate, on a three-point scale (1 = not like him/her; 3 = a lot like him/her) how well acceptance and supportive parenting items reflected mothers' and fathers' behaviors. A sample item is, 'Is easy to talk to'.

Psychological control. Adolescents completed an eight-item scale adapted from both the Psychological Control Scale-Youth Self-Report (Barber, 1996) and the Child Report of Parent Behavior Inventory (Barber et al., 2005). Participants responded on the same three-point Likert scale (1 = not like him/her; 3 = a lot like him/her) on the extent to which items reflect mothers' and fathers' attempts at psychological control. A sample item is, 'Often interrupts me'.

Table 1. Means, standard deviations and Cronbach alphas for all variables

Variable	*N*	*M*	*SD*	Alpha
Adolescent rating of parenting style				
Mother	41	28.71	6.61	.85
Father	40	22.81	8.29	.90
Generative concern				
Adolescents	43	133.87	16.81	.82
Mother	42	140.67	16.02	.74
Father	34	128.05	21.19	.85
Youth involvement inventory				
Adolescents	44	39.31	15.55	.89
Environmental involvement inventory				
Adolescents	44	11.10	3.93	.73
Mother	42	14.45	3.67	.63
Father	34	14	3.33	.65
Parent environmental teaching emphasis				
Mother	42	4.95	1.01	–
Father	33	4.70	1.05	–
Parent environmental socialization practices count				
Mother	29	3.83	1.56	–
Father	23	2.87	1.66	–

Behavioral control/monitoring. Adolescents also completed a five-item parental-monitoring scale (Barber et al., 2005). Participants responded on a three-point Likert scale (1 = doesn't know; 3 = knows a lot) to items reflecting how much their mothers and fathers 'really know' about them. A sample item is, 'Where you go at night'. Following Barber et al. (2005), a measure of authoritative parenting was created for mothers and fathers separately by adding the parental support scores and behavioral control monitoring scores and then subtracting psychological control scores for each parent.

Youth Involvement Inventory (YII). Adolescents completed a 29-item version of the YII (Pancer et al., 2007). On a four-point scale, from 1 (never) to 4 (a lot), adolescents indicated how often in the past year they had engaged in various community, political and helping behaviors. A sample item is, 'visited people who were sick'.

Environmental involvement inventory. We assessed participants' current environmental activities using a checklist of environmental behaviors developed for this study. On a four-point scale, from 1 (never) to 4 (a lot), mothers, fathers and adolescents indicated how often in the past year they had engaged in each of six 'green' behaviors, such as 'started buying a product because you think it protects the

environment (e.g., soap)' and 'contributed time or money to an environmental or wildlife conservation group.'

Parent environmental-teaching emphasis rating. Mothers and fathers were each asked to provide one rating, from 0 ('not important') to 6 ('very important') for how important they thought it was to teach their child about environmental issues.

Parent environmental-socialization practices count. In an open-ended question, mothers and fathers were asked to list the things they do to teach their child about the environment. These comments were scored simply for the number of distinct activities and items listed by each parent (e.g., composting, limiting energy use).

Loyola Generativity Scale (LGS). Level of generative concern of mothers, fathers and adolescents was assessed using the LGS (McAdams & de St. Aubin, 1992). This is a 20-item, four-point Likert scale (0 = the statement never applies to you; 3 = the statement applies to you very often). A sample item is, 'I feel as though I have made a difference to many people'.

Results

Preliminary analyses

Our various environmental and parenting measures were normally distributed. Conceptually, family-level analyses of socialization measures (combining mother and father scores in the same family) seemed appropriate and are commonly used in such developmental studies (e.g., of parenting style [Steinberg, 2001]). Empirically, the correlations between mothers and fathers in the same family in this study were generally positive and significant (ps < .05): authoritative parenting, $r(38)$ = .63, parents' own levels of environmental actions, $r(32)$ =.36, environmental teaching emphasis ratings, $r(29)$ = .53, and parent environmental socialization practices, $r(19)$ = .59. Only for the LGS was there no relation between parents, $r(32)$ = -.13, n.s. Given these patterns, we created family-socialization indexes by averaging scores across parents in analyses below, except for those involving the LGS, which were analyzed separately for mothers and fathers.

To increase power in the analyses of these family indices, we used mean substitution for fathers' (n = 10) and mothers' (n = 2) missing data in constructing the family indexes of these measures (except the LGS, as noted). Given evidence (see below) that there were significant differences in the scores of mothers and fathers on several family measures, we wanted to utilize both parents' scores in computing our family indices. Thus, each index in the 12 families with one non-responding parent averaged the actual scores for the responding parent (usually a mother) and the mean score across the sample for the non-responding parent (usually a father). Tests of adolescent and parent demographic measures (adolescent gender and age, parent completed education level), as well as all the study measures in Table 1,

showed no significant difference by *t*-test at the .05 level between the 32 families with complete data from both parents and the 12 families with missing data from one parent.

We next examined the zero-order correlations of various demographic and social factors (child age, grade, gender, parent completed education level) with adolescent and parent measures of interest in the study. None of these were significant at the .05 level. Therefore, we do not control for any demographic variables in analyses below. For all analyses with directional hypotheses, we report one-tailed probabilities for tests.

Hypothesis 1: relations between the LGS, environmental activities and personal adjustment

Individuals' scores on the LGS were positively related to their level of engagement on the environmental inventory activities for adolescents, $r(42) = .30$, for mothers, $r(40) = .21$, and for fathers, $r(32) = .25$, although only the correlation for the adolescents was significant in our small sample ($p < .05$). In addition, adolescents' involvement in general prosocial activities, as reported on the Youth Involvement Inventory, was substantially positively related to their level of generativity, $r(42) = .49$, $p < .001$, as predicted, replicating the results of Lawford et al. (2005) with a sample of older youth, as well as findings with adults (e.g., Hart et al., 2001).

Hypothesis 2: predicting adolescent generative concern from family factors

Both a family authoritative parenting style, $r(42) = .45$, $p < .01$, and mothers' generativity scores, $r(40) = .26$, $p < .05$ (one-tailed), were positively related to adolescent generative concern scores, as predicted. Fathers' generativity scores were not, however, $r(32) = .11$, n.s. Table 2 shows the results of a simultaneous regression analysis predicting adolescent generativity scores from authoritative family parenting as reported by adolescents and mothers' and fathers' generativity scores. Consistent with Lawford et al. (2005), we found that reports of authoritative parenting significantly predicted more positive levels of adolescent generative concern. Mothers' level of generative concern also showed a positive effect ($p < .05$, one-tailed)

Table 2. Simultaneous regression predicting adolescent Loyola Generativity Scale (LGS) scores from parenting style and parent generativity

Predictor	Standardized Beta	*t*-test	*p*-level, one-tailed
Authoritative parenting style	.39	2.47	$p < .05$
Mother LGS score	.28	1.76	$p < .05$
Father LGS Score	.19	1.19	n.s.

Notes: $n = 32$; R-Square = .22; $F(3,30) = 4.02$; $p < .05$.

in this analysis, over and above the effects of parenting style, as shown in Table 2. Fathers' level of generativity did not contribute significantly, however.

Hypothesis 3: relations of parents' values and socialization practices to parent generativity

Table 3 shows the zero-order correlations of parent generativity with levels of authoritative parenting, self-ratings of the importance of teaching about the environment and self-reports of parent socialization activities to encourage environmental concern in their children. Mothers' generativity was positively correlated with more authoritative parenting, though fathers' generativity was not. As predicted in Hypothesis 3, parental generativity was positively correlated with environmental-teaching emphasis and listed socialization activities, for both fathers and mothers. These effects were significant for environmental-teaching importance ratings for both mothers and fathers (ps < .05, one-tailed) and fathers', but not mothers', number of reported family environmental-socialization activities (p < .05, one-tailed). As Table 4 indicates, the various environmental measures for both parents and children were all significantly positively intercorrelated (r's ranged from .30 to .54), as expected, except for parent environmental-socialization count with adolescent activities. This suggests fairly robust differences between families in level of environmental engagement overall in this sample.

Hypothesis 4: predicting adolescent reports of environmental actions from family variables

Table 5 shows the results of a simultaneous regression analysis predicting adolescent reports of environmental activities from family parenting variables. Given the previous findings, we decided to use parent emphasis on environmental teaching to examine the unique contribution of an environmental socialization variable to prediction of adolescent environmental engagement. As indicated, parents' own involvement in environmental activities was the strongest positive predictor of adolescents' reports of their environmental actions (p < .01). This likely reflects both parental modeling, as well as actual parental engagement with the adolescent in

Table 3. Correlations between parent generativity scores and socialization and environmental variables

Variable	Mother generativity	Father generativity
Mother authoritative style	.39*	-.12
Father authoritative style	-.02	-.08
Mother environmental-teaching emphasis	.30*	.01
Father environmental-teaching emphasis	.14	.29*
Mother environmental-socialization activities count	.16	.03
Father environmental-socialization activities count	-.12	.36*

Note: * p < .05.

Table 4. Correlations between parenting and parent and adolescent environmental variables

Variable	Parent authoritative	Parent environmental action	Parent environmental teaching emphasis	Parent environment socialization count	Adolescent environment action
Parent authoritative	1.00	-.01	-.26	-.24	.18
Parent environmental action		1.00	.47*	.35*	.53*
Parent environment teaching emphasis			1.00	.33*	.39*
Parent environment socialization count				1.00	.09
Adolescent environmental action					1.00

Notes: $n = 44$, except for parent environmental socialization count, $n = 31$; * $p < .05$.

Table 5. Simultaneous regression predicting adolescent environmental activity from family parenting and socialization factors

Predictor variable	Standardized Beta	*t*-test	*p*-value, one-tailed
Parent own environmental action levels	.41	2.83	$p < .01$
Parent authoritative style	.25	1.92	$p < .05$
Parent environmental teaching rating	.26	1.77	$p < .05$

Notes: $n = 44$; *R*-Square = .37; $F(3,40) = 7.71$; $p < .001$.

some of these specific environmental activities. Both a more authoritative family parenting style ($p < .05$, one-tailed) and a greater emphasis on the importance of teaching about the environment in the family ($p < .05$, one-tailed) were also significant predictors of adolescent environmental activities, even with level of parent environmental activities controlled, consistent with Hypothesis 4.

Gender differences in parenting measures

Sex differences in average level of scores for fathers and mothers were explored across the parenting and environmental socialization variables. Three of these five measures showed significant sex differences, as shown in Table 6. Mothers were higher than fathers on self-reported generativity on the LGS, on the number of environmental family socialization activities listed and on adolescent reports of authoritative parenting (all p's $< .05$). However, there were no parent-gender differences on level of personal environmental-action scores, nor on ratings of the importance of environmental value teaching in the family.

Table 6. Differences between parenting and environmental scores for mothers and fathers

Measure	Mother mean (SD)	Father mean (SD)	*t*-test
Loyola Generativity Scale	139.87 (16.29)	128.05 (21.19)	$t(33) = 2.43^*$
Authoritative parenting	28.47 (6.80)	22.91 (8.24)	$t(37) = 5.17^*$
Parent personal environmental actions	14.23 (3.62)	14.00 (3.33)	$t(33) = 0.34$
Parent environmental teaching emphasis	4.83 (1.06)	4.70 (1.05)	$t(32) = 1.01$
Parent environmental socialization action count	3.52 (1.29)	2.71 (1.59)	$t(20) = 2.80^*$

Note: * $p < .05$.

Discussion

The purpose of the present study was to examine the role of family generativity in relation to the socialization of environmental concern in mid-adolescence. Qualitative research with adults has suggested that a generative concern about the environment for future generations is an important theme for adults who are actively engaged in environmental causes (Horwitz, 1996). However, to date, this generativity–environmentalism relation appears not to have been examined at the family level, as was done here.

Our first hypothesis predicted that generative concern on the LGS of McAdams and de St. Aubin (1992) should be positively related to environmental actions as reported on a brief scale devised for this study, for both parents and adolescents. In fact, the correlations for this hypothesis were positive for both parents and children, but only significant in the case of the adolescents. These findings are consistent with the general ideas of Horwitz (1996) and others. However, all of these correlations were in the .20–.30 range, suggesting that generativity might be best thought of as only one of many factors that serve to foster engagement with the environment in this generally non-activist sample of families. This is, of course, hardly surprising, as people may have many other types of concerns (e.g., care for other species, aesthetics) that affect their environmental engagement. Nevertheless, the positive correlation for adolescents between environmental engagement and generative concern, coupled with a stronger positive relation for the LGS with a more robust and widely used measure of prosocial behavior——the YII——is consistent with previous findings for older youth (Lawford et al., 2005). These associations are evidence that generative concern may be a meaningful variable among adolescents as young as 15 or 16 years and suggest that at least some aspects of generativity may arise earlier in the lifecycle than is often posited based on Erikson's framework. Generative concern thus may be an early-developing aspect of generativity (e.g., Stewart & van deWater (1998).

Hypothesis 2 posited that adolescents' higher scores on the LGS should reflect both stronger levels of family authoritative parenting, as reported by the adolescents, and higher scores on the LGS on the part of parents, as previously reported for older adolescents by Peterson et al. (1997). Our findings were consistent with

this hypothesis with regard to parenting style, with higher levels of adolescent generativity associated with reports of more authoritative parenting, as well as with higher scores on generativity for mothers, but not for fathers, in these families. A regression analysis indicated that authoritative parenting and maternal generativity scores made unique contributions to the prediction of adolescent generativity. This pattern of findings is consistent with the family results of Peterson et al. (1997), based on a somewhat older sample of children (ages 19–20).

Our third hypothesis was the key one, linking generative concern in parents and environmental values and actions within the family. There was fairly consistent evidence that both mothers and fathers who scored higher on generativity were more likely to emphasize the importance of teaching about the environment and also to report more extensive environmental-socialization activities in the family (significant only for fathers, however). Interestingly, the relations between generativity and level of personal environmental actions of the parents, as noted in Hypothesis 1, were not significant in this sample, so that these relations with family socializations values and practices are all the more noteworthy. These results suggest that generative parents were particularly likely to express their environmental concerns in an emphasis on the family and child-rearing patterns, which seems quite consistent with emphasis on caring for future generations as part of a generative personality. Why these effects were not significant for the number of mothers' environmental-socialization practices is less clear, though the direction of correlation was as predicted. Certainly, further replication is needed in investigating these generativity-family environmental-socialization links.

These findings are consistent with the idea that adolescent environmentalism might be fostered by parental environmentalism, as any basic socialization model would predict. Hypothesis 4 sought to consider two possible pathways in such potential transmission, one focusing on child modeling of the parents' environmental engagement and one more focused on specific family qualities that might encourage greater adolescent commitment to environmentalism (Pancer & Pratt, 1999). The results of a regression analysis suggested that both of these pathways might be involved. Parents' report of personal engagement in environmental activities, such as recycling or contributing to environmental causes, was a significant positive predictor of adolescent environmental involvement, as were adolescents' reports of a more authoritative parenting style and parents' ratings of more commitment to teaching environmental concerns in the family. Despite the fact (as shown in Table 4) that parents' own engagement in environmental activities was moderately positively correlated with their tendency to emphasize the teaching of environmental values within the family, these two factors still made unique contributions to adolescent environmental engagement in this regression analysis.

Finally, we addressed the topic of gender differences in parenting within these families. Generally, we found that mothers were significantly more likely to be perceived as authoritative in style compared with fathers and were also higher on generative concern on the LGS and on their reports of specific environmental socialization activities in the family. The environmental results were based on

self-report lists by the parents of activities in which they engage with their children, so it could be that fathers were simply less likely to recall such activities than were mothers. Indeed, fathers did not differ from mothers in their own levels of reported personal environmental activities, nor in their rated emphasis on the importance of environmental value teaching in the family. It would be interesting to assess adolescents' perceptions of parent teaching of environmental values and concerns, which we did not do here. Nevertheless, our data do support the commonly reported difference between adolescents' views of mothers' parenting engagement as somewhat higher than that of fathers (Larson & Richards, 1994), but also suggest that gender differences may be less salient in the environmental domain.

Limitations

The present study had several limitations. First, all of the data included were based on self-report (except for parenting style, which was based on adolescents' reports about parents). Social desirability may be an issue for several of the variables in the present study that deserve attention. Sample size was small, though not unusually so for a family design such as this. Nevertheless, the number of families included limited the power available to test our hypotheses and may have limited the detection of significant paths in our model. Furthermore, fathers failed to participate in 10 of the 44 families, further limiting power regarding tests of hypotheses in several instances. While the focus of the research was generally on hypotheses regarding parent-socialization practices and child actions, the design of the study was not longitudinal, so that no inferences about possible directional ordering from parent practices to child 'outcomes' could be addressed. The participants were mostly middle-class and well-educated so that generalizability to other populations is uncertain. Also, while results were broadly consistent with hypotheses, effect sizes were modest. One-tailed tests were used in this study, as indicated above, partly on account of the small sample size and our directional hypotheses based on previous work.

Another limitation in this data set concerned the issue of missing data. Given our small sample, and the unique application we chose here that produced these specific missing data problems——wanting to create family level indices combining mothers' and fathers' data for some of the socialization variables——we believe that our approach of mean substitution (mostly for the fathers in constructing these indices) was appropriate. Generally, this is a conservative technique, and so we chose it over more powerful multiple imputation approaches, given the apparent "non-missing at random" nature of the data lost from fathers in retaining these families for analysis. Again, further data collections with larger samples would be beneficial in testing these hypotheses more fully.

Conclusion

Clearly, then, the study should be seen as an exploratory attempt to address the topic of generativity in the family and its relation to environmental concerns. This

is the first research to our knowledge investigating these issues within the context of the family. Consistent with previous work on slightly older adolescents (Lawford et al., 2005; Frensch et al., 2007), the study revealed that levels of generative concern were predictably related to environmental and prosocial behaviors in mid-adolescence in a manner parallel to the relations of these same variables in more mature samples (Matsuba et al., 2012). Furthermore, parental generative concern on the LGS predicted parents' stronger values and activities to teach children about environmental issues and concerns. Consideration for the fate of future generations has been reported to be one key motivating factor in environmental engagement among adult samples (Horwitz, 1996; Matsuba et al., 2012) and the present study demonstrated that generative concern was systematically related to such an environmental-socialization focus by parents in the family as well. Enhancing such generative concern in the family may be one way in which we can enlist the efforts of future leaders in this crucial cause.

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