

A Longitudinal Examination of Breadth and Intensity of Youth Activity Involvement and Successful Development

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Connections between youth activity involvement and indicators of successful development were examined in a longitudinal high school sample. Drawing on theories of expertise skill development (e.g., J. Côté, 1999); the selection, optimization, and compensation framework (P. B. Baltes, 1997); and theories of positive youth development (e.g., R. M. Lerner, J. B. Almerigi, C. Theokas, & J. Lerner, 2005), reciprocal associations between breadth and intensity of activity involvement and developmental success were explored. Time 1 breadth (but not intensity) and increases in breadth predicted higher levels of successful development at Time 2 (20 months later). Time 1 developmental success and improvements predicted greater Time 2 breadth and intensity. Implications for research and theory related to connections between youth activity involvement and successful development are discussed.

Keywords: youth activity involvement, successful development, longitudinal research

A growing body of research suggests that youth activity involvement represents an important context for healthy adolescent development. For example, researchers have reported links between youth involvement and individual, family, peer, and community factors that promote healthy development, including psychological well-being, social development, academic orientation, and reduced risk behavior involvement (e.g., Hansen, Larson, & Dworkin, 2003; Mahoney, Eccles, & Larson, 2004; Yates & Youniss, 1996). Studies examining specific dimensions of youth involvement, however, have been relatively rare. Recently, Rose-Krasnor, Busseri, Willoughby, and Chalmers (2006) provided evidence for a conceptual and empirical distinction between two dimensions of involvement: breadth and intensity. In the present study, we extend our previous work through a longitudinal analysis of the reciprocal, dynamic relations between breadth and intensity of youth involvement and successful adolescent development.

Youth Activity Involvement and Healthy Adolescent Development

Growth-related experiences and conditions that foster healthy intrapersonal and interpersonal development can occur in the con-

text of youth activity involvement (e.g., Eccles, Barber, Stone, & Hunt, 2003; Eccles & Gootman, 2002; Hansen et al., 2003; Mahoney, Larson, Eccles, & Lord, 2005). For example, youth involvement has been linked with reduced problem behavior in areas such as substance use (e.g., Anderson-Butcher, Newsome, & Ferreri, 2003; Youniss, McLellan, Su, & Yates, 1999), as well as more positive psychological functioning, including higher self-esteem and a sense of self-directedness and empowerment (e.g., Barber, Eccles, & Stone, 2001; Larson, 2000; Mahoney, Schweder, & Stattin, 2002; McMahon, Singh, Garner, & Benhorn, 2004; Richman & Shaffer, 2000). Youth involvement also has been related to academic orientation, measured by school retention, school achievement, and higher academic goals (e.g., Cooper, Valentine, Nye, & Lindsay, 1999; Eccles & Barber, 1999; Fletcher, Nickerson, & Wright, 2003; Mahoney, 2000; Mahoney, Cairns, & Farmer, 2003). Furthermore, connections have been reported with social development, including healthy interpersonal connections, peer support, positive relations with extrafamilial adults, social integration, and community ties (Fletcher & Shaw, 2000; Hansen et al., 2003; Hart & Fegley, 1996; Johnson, Beebe, Mortimer, & Snyder, 1998; Mahoney et al., 2003; Youniss et al., 1999; Youniss, Yates, & Su, 1997).

Not all types of activities, however, are likely to share the same potential for promoting healthy development. Rather, the relation between youth involvement and healthy development may vary as a function of the type of activity examined. In general, research on adolescent involvement has highlighted the developmental significance of specific types of activities, including structured or organized, community-based, and extracurricular activities (e.g., Bartko & Eccles, 2003; Cooper et al., 1999; Eccles & Gootman, 2002; Eccles et al., 2003; Hansen et al., 2003; Mahoney, Larson, et al., 2005). However, the implications of activity involvement also may differ depending on the type of structured activity (e.g., Barber et al., 2001; Cooper et al., 1999; Eccles & Barber, 1999; Gerber, 1996; Hansen et al., 2003; Marsh & Kleitman, 2002). For example, Barber and her colleagues (Barber et al., 2001; Eccles &

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Barber, 1999) found that involvement in prosocial activities predicted subsequent higher self-esteem, whereas sports participation was associated with less social isolation. Gerber (1996) reported that school-based extracurricular activities had stronger associations with academic achievement than nonschool activities.

In addition, involvement in many different types of activities may not have the same developmental implications as being intensely involved in one or two activities (e.g., Fletcher & Shaw, 2000). Breadth of involvement may provide opportunities for exploring a broad range of skills, interests, and values, as well as gaining exposure to a variety of people and experiences. With this range of knowledge, youth may better be able to achieve developmental tasks than if their participation experiences had been narrow or constrained (Shanahan & Flaherty, 2001). Across multiple activities, the individual may experience a fuller range of growth-related opportunities (Hansen et al., 2003; Mahoney, Larson, et al., 2005), such that youth encountering difficulty or frustration in one activity may be able to compensate or replace the problematic activity with another (Iso-Ahola, 1980).

In contrast, intense and/or frequent participation may facilitate the development of skill mastery and knowledge. The development of such expertise can require extensive practice, effort, and investment (e.g., Côté, 1999) that may come at the expense of breadth of experience. Furthermore, as we discuss below, optimizing performance and accomplishments within a given activity domain may require commitment and sustained involvement during adolescence (e.g., Lerner, Freund, De Stefanis, & Habermas, 2001; Zaff, Moore, Papillo, & Williams, 2003). Thus, the positive outcomes expected to accrue from structured activity involvement (e.g., skill development, positive experiences, identification with school) may be more likely with higher intensity, which brings repeated exposure, access, and integration (Cooper et al., 1999; Mahoney, Larson, et al., 2005; Marsh, 1992; McNeal, 1995; Youniss et al., 1997, 1999; Youniss, McLellan, & Mazer, 2001).

Links to Developmental Theory

The distinction between breadth and intensity of involvement is consistent with several theoretical formulations of adolescent development. Developmental progression from breadth to intensity is a key component of Côté's (1999) model of talent development in sport. He proposed stages of participation in which experimentation in a wide range of activities leads to a gradual focusing on just one or two activities, coinciding with an increased commitment to excel through practice and competition. In this model, mastery and expertise in sports result from concentrating on a single path with the intention of optimizing performance through intense involvement. Nonetheless, Côté also found that diversity of involvement may contribute to the development of expert skill within a specific sport (Baker, Côté, & Abernethy, 2003), suggesting that both intensity and breadth have unique contributions to development.

More generally, Baltes (1997) and colleagues (Baltes, Lindenberger, & Staudinger, 1999) proposed a life span developmental framework based on growth, maintenance, and management of loss. In this model, development across the life span was conceptualized as an "ontological selection from a pool of more or less constrained potentialities and the subsequent selective optimization of the entered pathways" (Baltes et al., 1999, p. 1045). The coordination of three key processes are emphasized: selection of

goals; optimization, that is, making the most of these goals; and compensation or responding to changes in circumstances or resources that limit the means to achieve these goals. Developmental progress is defined as positive changes in adaptive capacity for a set of desired outcomes. Furthermore, "successful development" is conceptualized as the joint maximization of desired outcomes and minimization of undesired outcomes (Baltes, 1997, p. 367).

Given limited human capacity and constraints on time and resources, a developing individual is expected to sample from a range of opportunities, select a path, and optimize development in the chosen direction by acquiring relevant skills and focusing attention and efforts (Baltes, 1997; Baltes et al., 1999). Selection, optimization, and compensation (or SOC) processes are expected to become increasingly salient from childhood to adulthood. Lerner and colleagues (Lerner et al., 2001) also have discussed the application of SOC to adolescent development. They describe selection as a process of directing resources and limiting the number of goals that can be pursued simultaneously. Instead of attention and investment diffused among many domains, optimization is most likely when resources are focused on a limited number of domains. However, an overly restrictive range of activities may have negative developmental implications, because youth need to draw on a broad set of skills and experiences to deal successfully with challenges and unexpected changes. Thus, Lerner et al. (2001) proposed a curvilinear (inverted U-shaped) function in which both too many and too few goals may be disadvantageous for successful development. During adolescence, therefore, a moderate exploration of goals and values, as well as a diversity of interests, is expected to be most adaptive. These latter speculations are consistent with proposals from other researchers who also have suggested that there may be limits to, or a threshold for, the optimal number of activities and/or amount of time that youth spend in structured activities (e.g., Cooper et al., 1999; Marsh, 1992; Marsh & Kleitman, 2002).

Thus, formulations of SOC described by Baltes et al. (1999) and Lerner et al. (2001) have implications for the study of youth activity involvement. Despite the theoretical relevance of both breadth and intensity of involvement, however, little direct empirical attention has been given to the joint examination of these dimensions. Instead, the three most common strategies for measuring involvement have included treating involvement as a dichotomous variable (i.e., involved vs. not), counting the number of activities in which youth are involved, or assessing only involvement frequency. As noted by Rose-Krasnor et al. (2006), dichotomous measures provide no information on how often youth participate or the diversity of their other activities. Counts of the number of activities address the issue of diversity but ignore involvement intensity. Focusing on frequency of involvement provides information on intensity but does not reflect breadth of involvement.

Notable exceptions include a study by Powell, Peet, and Peet (2002), in which the frequency of participation in out-of-school activities (intensity) was related to school grades in a sample of Grade 1 children, and breadth of involvement (number of out-of-school activities) was not related to school grades. Furthermore, Loy, Dattilo, and Kleiber (2003) examined the relation between recovery from spinal cord injury and multiple dimensions of adult leisure activity involvement, including diversity (number of activities engaged in) and frequency (number of times per year). Di-

versity of involvement had stronger associations with subjective well-being and self-perceived health than did involvement frequency.

Rose-Krasnor et al. (2006) presented results based on a survey of over 7,000 high school students. Associations were examined between youth activity involvement and several indicators of healthy adolescent development, including risk behavior involvement, psychological well-being, academic orientation, and interpersonal functioning. Across eight activity categories, most youth reported involvement in two or three activities and the most typical involvement intensity was "once a week." Breadth and intensity were positively intercorrelated, but they shared less than one quarter of their variance—indicating an empirical distinction between these two dimensions. Both breadth and intensity of involvement were positively associated with the positive developmental indicators. When examined simultaneously in multiple regression analyses, however, unique associations between breadth of involvement and the developmental indicators were more consistent and larger in magnitude than those involving intensity.

In each of these three studies (Loy et al., 2003; Powell et al., 2002; Rose-Krasnor et al., 2006), measures of breadth and intensity were correlated positively. Individuals participating in a greater diversity of activities also tended to be involved more frequently in those activities. Associations were moderate in each case, however, suggesting that breadth and intensity dimensions were not redundant. Consequently, although some youth may report a combination of high breadth–high intensity or low breadth–low intensity, additional patterns of participation are likely. Studies have identified a variety of patterns or profiles of youth activity involvement through use of cluster analysis (e.g., Bartko & Eccles, 2003; Mahoney, Lord, & Carryl, 2005; Morris & Kalil, 2005; Shanahan & Flaherty, 2001). For example, Bartko and Eccles (2003) found six clusters of involvement "styles" based on frequency of adolescents' involvement in 11 categories of activities. Each of the clusters comprised different combinations of relatively greater or lesser breadth and intensity of involvement. Differences in psychosocial factors (e.g., problem behaviors, depression) were found among identified clusters, indicating that each distinct combination of breadth and intensity dimensions might have different developmental implications. This leads to the more general observation that breadth and intensity of involvement each may have unique developmental significance and interact in meaningful ways.

Thus, several lines of emerging evidence support further examination of the connection between breadth and intensity of activity involvement and successful development. Given the limited amount of relevant research, however, it is unclear whether there is a developmentally optimal combination of breadth and intensity and whether optimal involvement profiles follow a particular sequence, as suggested by some developmental theory (e.g., Baltes et al., 1999; Cote, 1999; Lerner et al., 2001).

Bidirectional Effects

Connections between breadth and intensity dimensions of youth involvement and indicators of successful development are usually interpreted as evidence for an effect of youth involvement on developmental success, wherein greater involvement promoted successful development. Such an interpretation is consistent with

the research and theories that we have reviewed above, in which activity involvement is considered to be a positive influence on healthy adolescent development (e.g., Hansen et al., 2003; Eccles & Gootman, 2002; Mahoney et al., 2004; Mahoney, Larson, et al., 2005). However, such results also can be interpreted as evidence for an effect of developmental success on youth involvement, wherein successful development leads to greater involvement. Lerner and colleagues (e.g., Lerner, Almerigi, Theokas, & Lerner, 2005; Theokas et al., 2005) have proposed that prosocial youth involvement represents an important product of positive youth development (PYD). In this framework, "contribution" to self, community, and society emerges as a result of thriving in five key domains: competence, connection, character, confidence, and caring. Others also have conceptualized youth involvement as an important development outcome (e.g., Markstrom, Li, Blackshire, & Wilfong, 2005). For example, Youniss and colleagues have proposed that youth involvement in community-based activities represents an indicator of positive identity development and civic engagement (Youniss et al., 1997, 1999, 2001).

Thus, in addition to the view of youth involvement as a positive influence on successful development, activity involvement also can be conceptualized as a valuable outcome. Longitudinal designs provide an opportunity to assess potential bidirectionality from involvement to future successful development and vice versa. As Lerner and colleagues have emphasized, it is precisely these dynamics, based on changes within and between developmental contexts and systems, which are most fundamental to the study of adolescent development (Lerner & Castellino, 2002; Lerner et al., 2001).

The Present Study

The present study extended our previous work reported in Rose-Krasnor et al. (2006) by providing a longitudinal assessment of the bidirectional relations between breadth and intensity of youth activity involvement and successful adolescent development. We recognized the adolescent years as a time when young people often are exposed to an increasing variety of activities, achieve greater autonomy, and have greater personal resources. They also focus on their identity development and skill formation, in preparation for assuming adult roles. This makes the adolescent years a particularly valuable context to examine the developmental roles of involvement breadth and intensity.

The first goal of the current study was to assess whether breadth and intensity of involvement, along with changes in breadth and intensity over time, were predictive of future positive developmental success during the high school years. Concordant with extant research and theorizing, we expected that breadth and intensity measured at Time 1 would account for unique variance in the prediction of each aspect of successful development assessed at Time 2, independent of baseline developmental success. On the basis of our previous results, we also expected breadth of involvement at Time 1 to be a more consistent predictor of Time 2 developmental success than intensity when both dimensions were examined simultaneously.

As discussed above, some developmental theory implies a transitioning from greater exploration in early adolescence to a narrowing of focus and increasing investment in a more limited set of possibilities as youth mature (e.g., Côté, 1999). To the extent that

these dynamics apply in the context of youth activity involvement during the high school years, we expected that increases in intensity and decreases in breadth over time would be associated with successful development at Time 2, independent of baseline developmental success and baseline levels of breadth and intensity. Developmental theory based on the SOC framework (e.g., Baltes, 1997; Baltes et al., 1999; Lerner et al., 2001), however, is more equivocal in terms of the role of changes in breadth and intensity in relation to successful development. Furthermore, because Lerner et al. (2001) and others (e.g., Cooper et al., 1999; Marsh & Kleitman, 2002) have proposed a curvilinear relation between breadth of involvement and adaptive functioning, we assessed curvilinear trends for breadth and intensity and the interaction between breadth and intensity.

Our second main goal was to examine longitudinal predictors of youth involvement during the high school years. We explored Time 1 successful development as a predictor of Time 2 breadth and intensity, controlling for baseline involvement. Consistent with previous proposals concerning PYD, we expected that breadth and intensity of involvement at Time 2 would be relatively more common among youth reporting more positive indications of successful development at Time 1. To explore dynamic predictive relations, change in successful development also was included as a predictor of Time 2 involvement.

To summarize our hypotheses, Time 1 breadth and intensity were expected to predict positively Time 2 successful development, independent of baseline developmental success. Of the two involvement dimensions, we expected Time 1 breadth of involvement to be a more consistent predictor than intensity. Furthermore, we expected that increases in intensity and decreases in breadth over time would be uniquely associated with successful development at Time 2, allowing for possible curvilinear and interaction effects. Finally, successful development at Time 1 and improvements in developmental success over time were expected to predict breadth and intensity of involvement at Time 2, independent of baseline involvement.

Method

Procedure

As part of a longitudinal study of youth lifestyle choices, a 23-page self-report questionnaire was administered to 7,430 students from 25 high schools in their classrooms by trained research staff at Time 1 (see Rose-Krasnor et al., 2006). The survey was read to students with literacy difficulties. Students were informed that their responses were confidential. Twenty months later,¹ a subset of these students were invited to participate in the second phase of the project (Time 2), in which a similar survey was readministered under conditions similar to Time 1. A total of 2 hr was allotted for survey administration at each school at both assessment points.

Participants

A total of 25 high schools from a school district in southern Ontario, Canada were involved in the survey. The regional municipality had a total population of 410,000, with a median age of 40 years (Statistics Canada, 2001). The majority were born in Canada (81%) and spoke English only (81%); 6% identified as visible minorities. The most common religious affiliations were Protestant (43%) and Catholic (36%). The median household income was \$47,000 Canadian (approximately U.S.\$42,000).

Students from three high schools participated in both the Time 1 and Time 2 collection.² In light of the 20-month separation between the two administrations, only students in Grades 9 and 10 at Time 1 were expected to still be in school at Time 2. Of the 602 students in these grades at Time 1 in the three eligible schools, 401 (67%) also completed the survey at Time 2. The longitudinal participants had an average age at Time 1 of 14.86 years ($SD = 0.91$) and at Time 2 of 16.87 years ($SD = 0.81$); 56% were female, and mean levels of parental education at Time 1 fell between "some college, university or apprenticeship program" and "completed a college/apprenticeship or technical diploma."

Compared with the 401 students who completed the Time 2 survey, the 201 eligible students from the same schools who did not were slightly younger at Time 1 ($M_s = 14.86$ years vs. 14.58 years; $p < .001$) and more likely to be male (44% vs. 52% male; $p = .06$) but did not differ significantly in parental education. In terms of the four Time 1 developmental indexes (described below), the longitudinal participants were less involved in risk behavior and reported more positive well-being, stronger academic orientation, and stronger interpersonal functioning (all $p_s < .05$) than the nonlongitudinal adolescents. The magnitudes of these group differences, however, were small ($\eta^2_s \leq .03$).

The longitudinal participants also were compared with all participants from the 25 schools in the original Time 1 sample who did not have the opportunity to participate at Time 2. The longitudinal participants were younger ($M = 14.9$ years old vs. 15.8 years old; $p < .001$) and more likely to be female (57% vs. 50% female; $p = .01$) but did not differ in terms of parental education ($p > .20$). In terms of the developmental indicators, longitudinal participants reported lower levels of risk behavior involvement, stronger academic orientation, and more positive interpersonal functioning ($p_s < .01$); the group difference in well-being was nonsignificant ($p = .15$). In each case, however, the magnitude of the group differences was small ($\eta^2_s \leq .02$). Furthermore, schools participating in the longitudinal part of the study did not differ from the nonparticipating schools in terms of students' perceived opportunities for activity involvement ($p = .12$) or the aggregate level of activity involvement at Time 1 ($p = .20$).

Measures

Details on each study measure are provided in Table 1, including alphas, means, and standard deviations at both survey times. Two changes were made to the study survey between assessment points. Measures of sexual activity (three items) and student-teacher relations (12 items) that were included at Time 1 and reported by Rose-Krasnor et al. (2006) were not included in the Time 2 survey. To maintain consistency in construct measurement across time, therefore, the composite risk behavior and academic orientation indexes described below were computed at Time 1 without the sexual activity and student-teacher relations measures (respectively). All other measures were assessed using the same survey questions at Time 1 and Time 2.

¹ The most appropriate length of time between repeated assessments of youth activity involvement is unknown. Given the attendant costs, our goal was to conduct the survey in the schools every other year. The timing of implementation within the school year, however, was made by the school board. Although a 20-month separation was believed to be sufficient to allow within-individual changes, we had no reason to expect that this timing was ideal. Optimal timing may vary by age of the respondents and/or the nature of the activities.

² A change in the composition of one of the school boards participating in the first round of surveys occurred between Time 1 and Time 2. The new board made a decision not to approve any research projects in their school district for that year, and schools from this board were not given an opportunity to participate in the second survey administration. Consequently, of the 25 high schools surveyed at Time 1, only 3 schools could be surveyed again at Time 2.

Table 1
Description of Study Measures

Variable	No. of items	Anchors	Time 1			Time 2		
			α	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>
Demographics								
Age	1	10–18+ years old		14.86	0.91		16.87	0.81
Sex	1	1 (male) or 2 (female)		1.56	0.50			
Parental education	2	1 (did not finish high school) to 6 (professional/graduate degree)		3.31	1.11			
Youth involvement								
Breadth	Up to 7	0 to 7 activities		2.87	1.75		2.61	1.84
Intensity	Up to 7	0 (<i>never</i>) to 4 (<i>every day</i>)		1.98	0.91		1.70	1.02
Change in breadth		See text					–0.26	1.91
Change in intensity		See text					–0.28	1.13
Youth activities								
Sports (in school)	1	0 (<i>never</i>) to 4 (<i>every day</i>)		1.30	1.41		1.05	1.39
Sports (out of school)	1	0 (<i>never</i>) to 4 (<i>every day</i>)		1.54	1.45		1.19	1.36
Clubs (in school)	1	0 (<i>never</i>) to 4 (<i>every day</i>)		0.70	1.13		0.80	1.21
Clubs (out of school)	1	0 (<i>never</i>) to 4 (<i>every day</i>)		0.90	1.20		0.82	1.11
Theatre arts	1	0 (<i>never</i>) to 4 (<i>every day</i>)		0.36	0.83		0.27	0.74
Musical instrument	1	0 (<i>never</i>) to 4 (<i>every day</i>)		0.64	1.25		0.65	1.18
Volunteering	1	0 (<i>never</i>) to 4 (<i>every day</i>)		0.78	0.91		0.67	0.93
Risk behavior								
Alcohol (frequency)	1	1 (<i>never</i>) to 8 (<i>every day</i>)		2.21	1.21		2.72	1.26
Alcohol (amount per episode)	1	1 (<1 drink) to 6 (>10 drinks)		2.56	1.37		3.52	1.39
Smoking (per day)	1	1 (<i>none</i>) to 8 (<i>more than a pack</i>)		1.31	0.90		1.47	1.08
Marijuana use (past year)	1	1 (<i>never</i>) to 6 (<i>every day</i>)		1.85	1.40		2.41	1.60
Hard drug use (past year)	6	1 (<i>never</i>) to 6 (<i>every day</i>)	.89	1.12	0.44	.93	1.20	0.57
Delinquency (past year)	7	1 (<i>never</i>) to 4 (>5 times)	.67	1.23	0.35	.68	1.31	0.39
Aggression (past year)	8	1 (<i>never</i>) to 5 (<i>every day</i>)	.85	1.50	0.57	.85	1.59	0.65
Well-being								
Depression (past 2 weeks)	20	1 (<i>most of the time</i>) to 5 (<i>none of the time</i>)	.93	1.99	0.62	.91	1.99	0.57
Social anxiety	14	1 (<i>almost always</i>) to 4 (<i>almost never</i>)	.94	1.75	0.57	.91	1.69	0.52
Self-esteem	10	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89	3.77	0.67	.87	3.82	0.63
Optimism	4	1 (<i>almost never</i>) to 4 (<i>almost always</i>)	.67	2.97	0.54	.65	2.94	0.47
Daily hassles	25	1 (<i>often bothers me</i>) to 3 (<i>never bothers me</i>)	.89	1.79	0.33	.86	1.73	0.32
Academic orientation								
Grades	1	1 (below 50%) to 6 (A+)		4.35	0.93		4.28	0.88
Planning	1	1 (<i>almost never</i>) to 4 (<i>almost always</i>)		2.07	0.77		2.08	0.70
Aspirations	1	1 (not finish high school) to 6 (professional training)		4.50	1.47		4.55	1.20
Bored at school	1	1 (<i>all the time</i>) to 4 (<i>never/almost never</i>)		2.19	0.83		2.19	0.75
Importance of education	1	1 (<i>not at all important</i>) to 5 (<i>very important</i>)		4.52	0.68		4.26	0.89
Skipping class (typical month)	1	1 (6 or more times) to 5 (<i>never</i>)		4.55	0.79		3.92	1.14
Interpersonal functioning								
Attachment—mom	17	1 (<i>almost never</i>) to 4 (<i>almost always</i>)	.75	3.11	0.55	.71	3.07	0.52
Attachment—dad	17	1 (<i>almost never</i>) to 4 (<i>almost always</i>)	.91	2.95	0.60	.89	2.87	0.55
Friendship quality	18	1 (<i>almost never</i>) to 4 (<i>almost always</i>)	.82	3.23	0.46	.77	3.30	0.45
Best friendships	18	1 (<i>almost never</i>) to 4 (<i>almost always</i>)	.87	3.23	0.46	.86	3.27	0.45
Victimization (past year)	8	1 (<i>almost always</i>) to 4 (<i>almost never</i>)	.82	1.58	0.61	.89	1.47	0.58
Support network size	16	0 to 17 supports		2.84	1.57		2.87	1.53

Note. *N* = 401.

As detailed below, within each developmental domain (risk behavior involvement, psychological functioning, academic orientation, interpersonal functioning), multiple measures of related constructs were combined to form composite indexes, rather than focusing on individual study measures. The composite indexes reflected overall functioning within each domain. This approach is consistent with other work on PYD that has used multiple measures to assess numerous facets across several developmental domains (see Lerner, Lerner, et al., 2005; Theokas et al., 2005).

Demographics. Age, sex, and parental education (one item per parent, averaged for those with two parents) were assessed.

Youth involvement. Seven domains of activity involvement were assessed using the question, “How often in the last month have you done the

following?” Activity categories included “played school sports,” “played organized sports outside of school,” “gone to school clubs,” “gone to clubs outside of school,” “done theatre arts outside of school,” “practiced a musical instrument,” and “done volunteer work.” A breadth of involvement score was computed as the number of activities for which respondents indicated at least some degree of involvement. An average involvement intensity score was computed as the average frequency of involvement based only on activities in which respondents indicated at least some degree of involvement. Respondents not involved in any of the seven activities (i.e., breadth scores of 0) were assigned intensity scores of 0.

Change scores for both breadth and intensity were computed by subtracting each participant’s Time 2 breadth or intensity score from his or her

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corresponding Time 1 score; higher positive scores indicated greater increases in breadth and intensity, respectively, whereas more negative scores indicated greater decreases. For breadth, change scores ranged across individuals from a decrease in seven activities to an increase in six activities. Intensity change scores varied across individuals from an average decrease of 4 scale points to an increase of 4 scale points.

Risk behaviors. Items assessed alcohol, smoking, marijuana, and hard drugs; refer to Table 1 for time frames for each behavior. In addition, delinquency was assessed in terms of minor (sneaking out at night, joy-riding, shoplifting, wrecking other's property) and major (joining a gang, carrying a gun as a weapon, carrying a knife as a weapon) delinquent acts. Aggressive behaviors were assessed by direct (e.g., pushed and shoved someone) and indirect (e.g., spread rumors and untrue stories) acts. A composite index was formed by standardizing and averaging the risk behavior scores ($\alpha = .80$ at Times 1 and 2), such that higher scores indicated greater overall risk behavior involvement. It is important to note that the results presented below (based on this equal-weighting approach) were consistent when composite risk behavior scores were derived using alternative weighing strategies in which, for example, hard drug use and major delinquency were given greater weights in the composite relative to the other risk behaviors.

Well-being. Variables assessed included depression (the Center for Epidemiological Studies–Depression Scale; Radloff, 1977), social anxiety (Ginsburg, LaGreca, & Silverman, 1998), self-esteem (Rosenberg, 1965), optimism (e.g., "I expect the best"), and daily hassles (e.g., finances, friends and peers, schoolwork, self-image). A composite index was formed by standardizing and averaging the individual well-being measures ($\alpha = .75$ and $.76$ at Times 1 and 2, respectively), such that higher scores indicated greater overall well-being.

Academic orientation. Measures included typical school grades, educational aspirations, frequency of planning ahead, frequency of being bored at school, how important it was to the respondents that they do well in school, and frequency of skipping classes. A composite index was formed by standardizing and averaging the six scores ($\alpha = .62$ and $.71$ at Times 1 and 2, respectively), such that higher scores indicated stronger academic orientation.

Interpersonal functioning. Six areas of interpersonal functioning were assessed: paternal and maternal attachment (Armsden & Greenberg, 1987), relationships with best friends (Gauze, Bukowski, Aquan-Asse, & Sippola, 1996), friendship attachment (Armsden & Greenberg, 1987), victimization by peers (Marini, Spear, & Bombay, 1999), and support network size (the sum of categories of people to whom respondents indicated they would go for help, such as family members, peers, or professionals). A composite index was formed by standardizing and averaging the six scores ($\alpha = .68$ and $.71$ at Times 1 and 2, respectively), such that higher scores indicated stronger interpersonal functioning.

Successful development. Consistent with the conceptualization of successful development as the maximization of desired outcomes and the minimization of undesired outcomes (e.g., Baltes et al., 1999), the four developmental indexes outlined above were combined at each time point (in addition to being examined as individual indexes). The risk behavior index was reverse-scored, standardized, and then averaged with the standardized scores on the well-being, academic orientation, and interpersonal functioning composite indexes at Time 1 and at Time 2 ($\alpha = .71$ and $.68$, respectively). Higher scores indicated more successful development.

Furthermore, to assess change in successful development over time, change scores were computed for each of the 24 study measures used in forming the four composite developmental indexes. These individual change scores were standardized and combined (after reverse-scoring the risk behavior change scores) to form a composite successful development change score ($\alpha = .74$ across 24 change measures); higher positive scores indicated greater increases in successful development over time, whereas more negative scores indicated greater decreases.

Treatment of Missing Data

Some students did not finish the entire study questionnaire. The amount of missing data was directly related to survey length, that is, missing values were greatest toward the end of the survey. Furthermore, the amount of missing data per participant was largely unrelated to scores on the study variables (see Rose-Krasnor et al., 2006). Scale scores were computed for participants who responded to at least 50% of the items within a multi-item scale. For students who did not give a sufficient number of responses within a scale or who did not respond to a particular survey section, scale scores were imputed using the EM algorithm in SPSS (see Schafer & Graham, 2002). In total, 20% of the data used in the present study was missing because of either nonresponse or an insufficient number of responses.³

Plan of Analysis

Cross-sectional associations between involvement dimensions and developmental indexes were assessed at Times 1 and 2 using bivariate correlations. Hierarchical multiple regression analyses were then used to assess longitudinal relations between involvement and developmental success. All continuous measures were standardized prior to analysis (gender was coded as -1 for males and 1 for females). For the prediction of Time 2 developmental success, five regression models were estimated. In each model, a Time 2 developmental index was regressed onto the corresponding Time 1 developmental index in Step 1. As some research has suggested that involvement may be related to demographic characteristics (e.g., Barber et al., 2001; Eccles, 2005), sex, age, and parental education also were included in Step 1 as covariates. In Step 2, Time 1 breadth and intensity scores were added. In Step 3, change in breadth and change in intensity scores were added. In Step 4, three nonlinear effects were added: Time 1 breadth², Time 1 intensity², and Time 1 Breadth \times Intensity.

For the prediction of Time 2 involvement, two regression models were estimated. In both models, a Time 2 involvement dimension (breadth or intensity) was regressed onto the three demographic covariates (sex, age, parental education) and both Time 1 breadth and intensity scores in Step 1. The Time 1 successful development index was added in Step 2. In Step 3, change in successful development was added. The composite successful development index was used as the Time 1 predictor instead of the four individual developmental indexes to limit the number of models and predictive effects tested. Furthermore, use of the composite successful development index maximized the reliability of the corresponding change score, which (as detailed above) was based on changes across 24 individual measures.

³ The typical respondent completed 95% of the items within a given scale. Missing data were primarily a result of nonresponse to all of the items within the scale, rather than selective responding to particular items within the scale. In a sensitivity analysis performed as part of the initial data preparation, we found a very small degree of bias in the means, variances, and covariances, regardless of whether we used 50% of items within a given multi-item scale, 75% of items, or 100% of items as the criterion for deciding when to impute missing data. Although most respondents responded to the overwhelming majority of required survey items, only 24% of students ($n = 95$) responded to every possible item. Reanalysis based only on this group of participants produced patterns of results that were consistent with those reported in Tables 2 and 3, along with the expected reduction in statistical power that resulted in larger standard errors and p values for many of the predictive effects. We also reran the analyses using the full sample and treating the number of imputed data points per participant as a covariate in the regression models. Results were unchanged.

Results

Cross-Sectional Associations With Involvement Dimensions

At Time 1, breadth and intensity of involvement were moderately intercorrelated ($r = .33, p < .05$), but the degree of shared variance (11%) indicated a substantial amount of independence between dimensions. Greater breadth was significantly associated with more positive well-being, stronger academic orientation, and successful development ($r_s = .14, .20, \text{ and } .17$, respectively; $p_s < .05$). Greater intensity was associated with more positive Time 1 well-being, stronger academic orientation, and successful development ($r_s = .16, .14, \text{ and } .14$, respectively; $p_s < .05$). In contrast, neither breadth nor intensity were significantly correlated with risk behavior involvement and interpersonal functioning.

The degree of shared variance between breadth and intensity increased at Time 2 ($r = .53, p < .05; r^2 = .28$), but dimensions remained largely independent from one another. This correlation between Time 2 breadth and intensity measures was significantly stronger than the corresponding correlation at Time 1 ($p < .001$). At Time 2, greater breadth was associated with less risk behavior involvement, more positive well-being, stronger academic functioning, and successful development ($r_s = -.15, .16, .21, \text{ and } .20$, respectively; $p_s < .05$). Similarly, greater intensity was associated with less risk behavior, more positive well-being, stronger academic functioning, and successful development ($r_s = -.16, .13, .18, \text{ and } .17$, respectively; $p_s < .05$). In contrast, neither breadth nor intensity were significantly associated with interpersonal functioning.

Predicting Time 2 Developmental Success

The first goal of the study was to assess breadth and intensity of involvement as predictors of future developmental success. Results are shown in Table 2 and are summarized below by development index. As indicated in Table 2, each of the regression models we report in the following sections was statistically significant at each step. As noted below, however, in several cases the change in R^2 values between steps was not.

Time 2 successful development. The final model explained 52.0% of the variance in Time 2 successful development. The addition of Time 1 breadth and intensity as predictors in Step 2 did not significantly improve the model ($p = .98$ for change in model R^2). In Step 3, the addition of the two change scores resulted in a significant improvement in the predictive model ($p = .001$ for change in model R^2). Stronger Time 2 successful development was predicted by greater increases in breadth, controlling for baseline orientation and demographics. In Step 4, the addition of the three nonlinear effects added a nonsignificant amount of explained variance to the model ($p = .09$ for change in R^2), but the two curvilinear terms were individually significant. The relation between greater Time 1 breadth and greater Time 2 successful development was strongest among those reporting lower levels of Time 1 breadth ($b = .28$) compared with those reporting higher levels of breadth ($b = .12$). Furthermore, the relation between greater Time 1 intensity and less positive Time 2 successful

development was smaller among those reporting higher levels of Time 1 intensity ($b = .02$) compared with those reporting low levels of intensity ($b = -.18$). In addition, there were significant predictive effects of greater Time 1 breadth and greater increases in breadth on Time 2 successful development.

Time 2 risk behavior. The final model explained 44.3% of the variance in Time 2 risk behavior. The addition of Time 1 breadth and intensity as predictors in Step 2 did not significantly improve the model ($p = .41$ for change in model R^2). In Step 3, the addition of the two change scores did significantly improve the model ($p < .001$ for change in model R^2). Less Time 2 risk behavior involvement was predicted by greater increases in breadth, controlling for baseline risk behavior and demographics. The addition of the three nonlinear effects in Step 4 did not add a significant amount of explained variance to the model ($p = .17$ for change in R^2). Greater Time 1 breadth and greater increases in breadth both were predictive of less Time 2 risk behavior involvement in Step 4. In addition, greater intensity at Time 1 was associated with greater risk behavior involvement at Time 2.

Time 2 well-being. The final model explained 31.3% of the variance in Time 2 well-being. The addition of Time 1 breadth and intensity as predictors in Step 2 did not significantly improve the model ($p = .14$ for change in model R^2), although the unique effect of Time 1 intensity was individually significant such that greater Time 1 intensity predicted greater well-being at Time 2. The addition of the two change scores in Step 3 did not significantly improve the model ($p = .12$ for change in model R^2). In Step 4, the addition of the three nonlinear effects was nonsignificant ($p = .15$ for change in R^2), but one of the nonlinear terms was individually significant. Time 1 intensity showed a curvilinear relation with Time 2 well-being, wherein the relation between Time 1 intensity and Time 2 well-being was strongest among those reporting higher levels (e.g., 1 standard deviation above the mean) of Time 1 intensity ($b = .12$) compared with those reporting lower levels (e.g., 1 standard deviation below the mean) of intensity ($b = -.10$).

Time 2 academic orientation. The final model explained 53.4% of the variance in Time 2 academic orientation. The addition of Time 1 breadth and intensity as predictors in Step 2 did not significantly improve the model ($p = .67$ for change in model R^2). In Step 3, the addition of the two change scores did significantly improve the model ($p = .01$ for change in model R^2). Change in breadth was a significant unique predictor, such that greater increases in breadth were predictive of stronger Time 2 academic orientation, controlling for baseline orientation and demographics. In Step 4, the addition of the three nonlinear effects did not add a significant amount of explained variance to the model ($p = .20$ for change in R^2). However, there was a significant interaction between Time 1 breadth and intensity, wherein the relation between Time 1 breadth and Time 2 academic orientation was strongest among those reporting high levels (e.g., 1 standard deviation above the mean) of Time 1 intensity ($b = .19$) compared with those reporting low levels (e.g., 1 standard deviation below the mean) of intensity ($b = .01$). In addition, there was a significant effect of change in breadth on Time 2 academic orientation.

Time 2 interpersonal functioning. The final model explained 43.5% of the variance in Time 2 interpersonal functioning. The addition of Time 1 breadth and intensity as predictors in Step 2 did

Table 2
Results From the Longitudinal Prediction of Time 2 Developmental Indexes

Predictor	Step 1	Step 2	Step 3	Step 4
Time 2 successful development				
Time 1 age	.08*	.08*	.09*	.08*
Time 1 sex	.14*	.14*	.15*	.16*
Time 1 parental education	.00	.00	-.01	-.01
Time 1 developmental index	.65*	.66*	.65*	.65*
Time 1 breadth		.00	.09	.20*
Time 1 intensity		.01	-.02	-.08
Change in breadth			.16*	.17*
Change in intensity			.00	-.01
Time 1 breadth ²				-.08*
Time 1 intensity ²				.10*
Time 1 Breadth × Intensity				-.05
Model R^2 (%)	49.3*	49.3*	51.2*	52.0*
ΔR^2 (%)		0.6	2.3*	1.0
Time 2 risk behavior				
Time 1 age	-.02	-.02	-.04	-.04
Time 1 sex	-.14*	-.13*	-.14*	-.13*
Time 1 parental education	-.03	-.03	-.02	.00
Time 1 developmental index	.59*	.60*	.60*	.59
Time 1 breadth		.00	-.10	-.15*
Time 1 intensity		.05	.05	.13*
Change in breadth			-.19*	-.19*
Change in intensity			-.06	-.05
Time 1 breadth ²				.06
Time 1 intensity ²				-.03
Time 1 Breadth × Intensity				.07
Model R^2 (%)	39.9*	40.1*	43.6*	44.3*
ΔR^2 (%)		0.2	3.5*	0.7
Time 2 well-being				
Time 1 age	.02	.02	.03	.02
Time 1 sex	-.08	-.07	-.07	-.06
Time 1 parental education	-.09*	-.09*	-.10*	-.10*
Time 1 developmental index	.53*	.52*	.51*	.51*
Time 1 breadth		-.03	.03	.13
Time 1 intensity		-.09*	.08	.01
Change in breadth			.10	.10
Change in intensity			.01	.01
Time 1 breadth ²				-.04
Time 1 intensity ²				.11*
Time 1 Breadth × Intensity				-.09
Model R^2 (%)	28.9*	29.6*	30.4*	31.3*
ΔR^2 (%)		0.7	0.8	0.9
Time 2 academic orientation				
Time 1 age	.08*	.09*	.10*	.10*
Time 1 sex	.27*	.27*	.28*	.28*
Time 1 parental education	.13*	.12*	.11*	.12*
Time 1 developmental index	.56*	.54*	.54*	.54*
Time 1 breadth		.03	.08	.10
Time 1 intensity		.01	.02	.07
Change in breadth			.11*	.10*
Change in intensity			.04	.03
Time 1 breadth ²				-.04
Time 1 intensity ²				.00
Time 1 Breadth × Intensity				.09*
Model R^2 (%)	51.6*	51.7*	52.9*	53.4*
ΔR^2 (%)		0.1	1.2*	0.5

Table 2 (continued)

Predictor	Step 1	Step 2	Step 3	Step 4
Time 2 interpersonal functioning				
Time 1 age	.09*	.10*	.10*	.09*
Time 1 sex	.11*	.10*	.10*	.11*
Time 1 parental education	-.02	-.03	-.03	-.03
Time 1 developmental index	.60*	.60*	.60*	.60*
Time 1 breadth		.04	.10	.21*
Time 1 intensity		-.04	-.08	-.14*
Change in breadth			.09	.09
Change in intensity			-.04	-.05
Time 1 breadth ²				-.09*
Time 1 intensity ²				.10*
Time 1 Breadth × Intensity				-.04
Model R ² (%)	42.0*	42.2*	42.7*	43.5*
ΔR ² (%)		0.2	0.5	0.8

Note. N = 401.
* p < .05.

not significantly improve the model ($p = .50$ for change in model R^2). In Step 3, the addition of the two change scores did not result in a significant improvement in the predictive model ($p = .24$ for change in model R^2). In Step 4, the addition of the three nonlinear effects did not add a significant amount of explained variance to the model ($p = .12$ for change in R^2). However, the two curvilinear terms were individually significant. The relation between greater Time 1 breadth and greater Time 2 interpersonal functioning was strongest among those reporting lower levels of Time 1 breadth ($b = .30$) compared with those reporting higher levels of breadth ($b = .12$). Furthermore, the relation between greater Time 1 intensity and less positive Time 2 interpersonal functioning was smaller among those reporting higher levels of Time 1 intensity ($b = -.04$) compared with those reporting lower levels of intensity ($b = -.24$). In addition, at Step 4 there were significant predictive effects of greater Time 1 breadth and less Time 1 intensity.

Predicting Future Breadth and Intensity

The second main goal of the study was to assess developmental success as a predictor of future involvement. Results are

shown in Table 3 and are summarized below by involvement dimension.

Time 2 breadth. The final model explained 27.5% of the variance in Time 2 breadth. The addition of Time 1 successful development as a predictor in Step 2 did not provide a significant improvement ($p = .28$ for change in model R^2). In Step 3, the addition of the successful development change score significantly improved the predictive model ($p < .001$ for change in model R^2). At this step, greater Time 1 successful development and greater increases in successful development both were predictive of greater Time 2 breadth, controlling for baseline involvement and demographics.

Time 2 intensity. The final model explained 18.9% of the variance in Time 2 intensity. The addition of Time 1 successful development as a predictor in Step 2 resulted in a significant improvement ($p = .01$ for change in model R^2), as did the addition of the successful development change score in Step 3 ($p = .03$ for change in model R^2). Greater Time 1 successful development predicted greater Time 2 intensity, as did greater increases in successful development.

Table 3
Results From the Longitudinal Prediction of Time 2 Breadth and Intensity

Predictor	Time 2 breadth			Time 2 intensity		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Time 1 age	-.08	-.08	-.10*	-.16*	-.16*	-.17*
Time 1 sex	-.05	-.06	-.11*	-.01	-.04	-.06
Time 1 parental education	.08	.07	.07	.09	.07	.07
Time 1 breadth	.35*	.35*	.34*	.17*	.16*	.16*
Time 1 intensity	.19*	.18*	.19*	.25*	.23*	.24*
Time 1 successful development		.05	.14*		.13*	.17*
Change in successful development			.21*			.11*
Model R ² (%)	23.7*	23.9*	27.5*	16.5*	17.9*	18.9*
ΔR ² (%)		0.2	3.6*		1.4*	1.0*

Note. N = 401.
* p < .05.

Discussion

The Effect of Youth Involvement on Successful Development

Consistent with the emphasis that has been placed on youth activity involvement as a context promotive of healthy adolescent development (e.g., Eccles et al., 2003; Eccles & Gootman, 2002; Hansen et al., 2003; Mahoney, Larson, et al., 2005), our results contribute to the extant body of evidence by showing that youth involvement predicts future developmental success, independent of baseline developmental success. The differentiation of involvement breadth and intensity proved valuable. Youth who were involved in more activities at Time 1 reported less risk behavior involvement at Time 2, more positive interpersonal functioning, and higher scores on a composite measure of Time 2 successful development. Thus, the positive predictive effects of involvement were confined to breadth when breadth and intensity were examined jointly.

Valuable information concerning dynamic relations between youth involvement and developmental success was provided by the inclusion of change scores as predictors in the longitudinal models. Increases in breadth of involvement over time were positively predictive of future developmental success in several domains, whereas changes in intensity over time did not have unique predictive effects. Thus, results based both on the main effects and the change scores converge to implicate breadth as a critical aspect of youth activity involvement.

The unique effect of Time 1 intensity was nonsignificant for the well-being and academic domains. However, for risk behavior involvement and interpersonal functioning, greater intensity at Time 1 predicted less positive results at Time 2. One interpretation is that greater intensity may have attendant costs in terms of prosocial bonds with parents, friends, and peers. Another possibility is that some youth who are troubled or unhappy with their lives may attempt to compensate through frequent activity involvement. We consider both of these interpretations as speculative, however, and caution that further research is needed prior to generalizing this result.

We also note that the bivariate correlation between breadth and intensity increased significantly from Time 1 to Time 2. This may be an artifact of lower overall levels of participation in activities at Time 2. For example, if all activity participants were involved in their chosen activities at only the lowest frequency of involvement, then the breadth score would correlate perfectly with intensity. Furthermore, as the number of nonparticipants increases, distributions in the breadth and intensity measures become relatively more skewed as a result of a greater number of zeros occurring in both distributions for the same individuals, which inflates the covariance between these measures. Alternatively, it may be that during the senior years of high school, students who are involved in more activities are particularly likely to participate more frequently in those activities, compared with students involved in fewer activities. That is, there may be a convergence over time between breadth and intensity of activity involvement over the high school years, reflective, perhaps, of a substantive developmental progression. Because we did not predict this pattern, however, we consider each of these interpretations as speculative, pending further investigation.

These results are consistent with findings based on the baseline sample reported by Rose-Krasnor et al. (2006). That report was based on a cross-sectional analysis of the sample, however, and thus no evidence of prospective effects was provided. Similarly, other studies examining breadth and intensity of involvement as separate predictors of positive developmental indicators (e.g., Loy et al., 2003; Powell et al., 2002) or studies examining profiles of activity involvement using cluster analysis (e.g., Bartko & Eccles, 2003; Mahoney, Lord, & Carryl, 2005; Morris & Kalil, 2005) also have been based on cross-sectional designs. In contrast, a longitudinal study by Shanahan and Flaherty (2001) found considerable stability in breadth of involvement over the high school years, particularly among students starting high school with a relatively diverse pattern of time use. Furthermore, Jacobs, Vernon, and Eccles (2005) found that both the number of activities and the concentration of activity within a domain during childhood predicted values and self-perceived competence in that domain during adolescence, independent of initial values and competence. To our knowledge, however, the present findings provide the first longitudinal evidence that breadth of involvement, independent of intensity, may play a unique positive role in promoting healthy adolescent development.

Findings also are consonant with the developmental processes of SOC described by Baltes and colleagues (e.g., Baltes, 1997; Baltes et al., 1999). Success in each type of activity may result in positive developmental advances that are then generalized. Compensatory effects also may occur when one activity does not offer all of the factors that may promote PYD, such as supportive relationships, opportunities for belonging, and sense of safety (see Eccles & Gootman, 2002; Mahoney et al., 2004). What is absent in one context may be provided in another, such that across the entire range of activities, the individual experiences a rich set of activity-related growth opportunities. Thus, breadth of involvement may maximize the potential for intrapersonal growth and interpersonal advantages to be found in activity involvement. The accumulation of such experiences, opportunities, and bonds also may provide a critical store of intrapersonal and interpersonal capital on which youth can draw in times of challenge and struggle (e.g., Lerner et al., 2001).

Lerner et al. (2001) proposed that moderate breadth may be optimal at this stage in development, compared with either low or high participation breadth. However, we found little evidence of prospective curvilinear effects of breadth or intensity that resembled an inverted U-shaped function. We did find a curvilinear effect of breadth: The strongest relation between breadth at Time 1 and interpersonal functioning at Time 2 was found among those reporting relatively low levels of breadth at Time 1, compared with those reporting high levels of breadth. Results based on the composite successful development index were similar. In part, our limited evidence for curvilinear effects of breadth may reflect the relatively small number of activity categories assessed in the study survey. Detection of nonlinear effects of breadth of involvement may be more likely when a larger number of activities (e.g., political or environmental groups, religious events and organizations, cultural or ethnic groups) are assessed. Prospective curvilinear effects also might be more probable when breadth of involvement is examined within a particular activity category, such as the number of different sports teams with which one is involved (see Jacobs et al., 2005).

Evidence of curvilinear effects of intensity also was found for two domains: psychological and interpersonal functioning. However, intensity had a negative relation to developmental success at low levels and a positive (or near-zero) relation at higher levels of intensity. Results based on the composite successful development index were similar. Because we did not predict these trends, however, such interpretations should be considered speculative until replicated in other longitudinal samples.

On the basis of previous proposals concerning the role of concentrated investment in developing expertise (e.g., Côté, 1999), we had predicted that decreases in breadth and increases in intensity would positively predict developmental outcomes over time. Results did not support these expectations. Furthermore, the non-significant (and negative) effects of intensity of involvement are inconsistent with extant conceptual models. Several developmental theories converge on the prediction that increases in intensity over time are required to facilitate elite skill development (e.g., Côté, 1999) and successful development more generally (e.g., Baltes, 1997; Baltes et al., 1999; Lerner et al., 2001).

Detection of specialization processes and expert skill development, however, may require a more focused and longer term examination within a more narrowly defined activity, such as a particular sport (e.g., Côté, 1999). We assessed intensity of involvement across multiple categories of activities rather than in relation to particular activities within each category (e.g., involvement in hockey vs. sports teams). This precluded a more microlevel analyses that may have revealed the effects of intense involvement across distinct but related activities. In future work, researchers could explore this possibility by assessing intensity in a more fine-grained manner, for example, in terms of the number of hours of involvement in a given activity per week, and by conducting intensity analyses within rather than across activities. In addition, the general selection and optimization processes that would lead to decreases in breadth of involvement over time may be more relevant over longer time periods than assessed in this study and particularly apparent during the transition from adolescence to adulthood (Baltes, 1997; Baltes et al., 1999). Thus, the 20-month separation between survey periods in our study and the relatively young age of the adolescent sample may not have provided the temporal scope needed to detect more general, within-person effects of selection. Future research is needed to determine the appropriate intervals between repeated assessments of youth involvement to best capture the selection and optimization processes during adolescence.

There was some evidence that intensity of involvement played a role in promoting successful development when considered in conjunction with breadth. Our results suggest a synergistic effect between breadth and intensity such that the highest levels of academic engagement at Time 2 were found among those reporting high levels of both breadth and intensity at Time 1. Thus, as a reflection of the fully engaged nature of these youth, perhaps, intense activity involvement among those also reporting diverse involvement may promote strong academic engagement.

The Effect of Successful Development on Youth Involvement

Finding that successful development was positively associated longitudinally with both greater breadth and intensity is consistent

with conceptualizations of youth involvement as a development outcome. In the “six Cs” framework for positive youth development, for example, growth in competence, connection, character, confidence, and caring is expected to foster positive levels of contribution, which includes prosocial involvement. This involvement, in turn, leads to thriving during adolescence (e.g., Lerner, Lerner, et al., 2005; Theokas et al., 2005). Relatedly, Youniss and colleagues suggested that youth involvement is an important indicator of positive identity development and civic engagement (e.g., Youniss et al., 1997, 1999, 2001). Our results are consonant with these proposals and suggest that breadth and intensity of involvement may be, in part, a product of successful adolescent development.

In addition to having implications for positive developmental theories, finding reciprocal effects of youth involvement also has direct implications for how research results are interpreted. As others have noted (e.g., Darling, 2005; Eccles, 2005), studies of involvement may suffer from a selection bias in which youth with less positive development characteristics are less likely to be involved and, therefore, are less likely to be represented in studies of the benefits of involvement.

Why does relatively poor development predict future reduced activity participation? It may be that the characteristics of many activities do not provide a good match to the needs of youth who are at greatest risk for compromised development (e.g., Eccles et al., 2003; Roth & Brooks-Gunn, 2003). Addressing these issues may require special training of activity leaders as well as adaptation of some activities to better suit the needs and challenges of diverse youth.

Without intentionally recruiting such underrepresented youth, naturalistic studies of youth activity involvement run the risk of excluding the very groups of youth who are of great interest to, and priority for, many practitioners and policymakers (Roth & Brooks-Gunn, 2003). Priority should be given to exploring bidirectionality between successful development and youth involvement. Furthermore, generalization of extant research findings concerning youth involvement is cautioned, particularly where researchers, advocates, or policymakers are interested in the promotive effects of youth involvement for at-risk adolescents.

Limitations

Because the longitudinal sample did report significantly (albeit of small magnitude) less risk behavior involvement, stronger academic orientation, and more positive interpersonal functioning compared with the rest of the baseline sample, results obtained in the present study may not apply to the students characterized by less positive development success at baseline and results may not generalize to all of the schools that participated in the Time 1 assessment. Generalizability to other geographic areas or populations with a different socioeconomic mix or different availability of activities also is cautioned. Similarly, results reported here apply only to the activity categories assessed in the study questionnaire.

Furthermore, the developmental implications of activity involvement may differ depending on the particular type of structured activity. Future research may benefit from consideration of

breadth and intensity of involvement in combination with examination of the unique impact of individual activities (e.g., Cooper et al., 1999; Marsh & Kleitman, 2002; see also Rose-Krasnor et al., 2006). Also, the strategy of using composite indexes in each of the developmental domains examined may have obscured predictive relations involving breadth and intensity that are specific to individual variables. For example, breadth and intensity of involvement may have stronger relations with positive components of adjustment (e.g., self-esteem) than its negative aspects (e.g., symptoms of depression).

More consistent evidence of curvilinear predictive effects for breadth of involvement may have been found had a greater number of youth activities been assessed. Relatedly, the number of activities within a given activity category (e.g., number of different community groups or school sports teams) and, in addition, diversity across different types of activity categories (see Fletcher et al., 2003; Jacobs et al., 2005) may be important considerations for future investigations. Breadth of involvement also might have been assessed using multidimensional scaling techniques based on activity characteristics, such as degree of sociability or cognitive challenge. An alternative strategy that merits further exploration is the use of cluster- or profile-based analysis of multiple activities (e.g., Bartko & Eccles, 2003; Mahoney, Lord, & Carryl, 2005; Morris & Kalil, 2005; Shanahan & Flaherty, 2001).

Future studies also could extend the present work by applying alternative measures of involvement intensity, such as the total amount of time invested in an activity within a given period (e.g., past month), rather than using an average frequency of involvement score. Similarly, information concerning the nature of the activity (e.g., competitive vs. not), youths' roles and experiences in the activities, and the activity contexts (e.g., degree of structure, group size) was unavailable. Inclusion of such information in future studies would provide for a more nuanced assessment of the key features and characteristics of youth activity involvement. Relatedly, information from other sources (e.g., school records, parents) concerning the breadth and intensity of activity involvement would provide an opportunity to assess the validity of the youths' self-reported involvement profiles.

Several of the longitudinal predictive effects were modest in magnitude. Modest predictive effects also have been reported by other researchers examining related issues in longitudinal studies of youth activity (e.g., Darling, 2005; Eccles & Barber, 1999; Gerber, 1996; Marsh, 1992; Marsh & Kleitman, 2002). Nonetheless, replication of the patterns of predictive effects reported here based on involvement and changes in involvement over time is critical. Furthermore, although the internal consistency for the change in successful development index was strong, similar estimates for the change in breadth and intensity scores could not be derived given the nature of the scores. To address this limitation, future studies could incorporate multiple assessment periods, thereby enabling the application of latent change models through structural equation modeling techniques (e.g., Ferrer & McArdle, 2003). Finally, an imputation procedure was used to deal with the missing data required for the study analyses. Although our preliminary analyses revealed little resulting bias, use of the imputation procedure may have introduced an unknown degree of bias into the results.

Summary

The present study advances understanding of the connections between youth activity involvement and adolescent development. Together with our previous results (Rose-Krasnor et al., 2006), these longitudinal findings illustrate the value of adopting a conceptualization and measurement strategy for youth activity involvement in which separate dimensions of involvement, such as breadth and intensity, are examined simultaneously. Breadth and increases in breadth of involvement over time predicted positive developmental success in several developmental domains. Of equal importance, developmental success and positive increases in developmental success over time predicted greater breadth and intensity of involvement. Thus, the role of involvement may be twofold: serving both as a promotive factor for positive development and as a product of successful development. Our results also highlight the dynamic nature of the relations between developmental systems and underscore the fact that both predictive and outcome roles for youth activity involvement deserve attention as researchers explore connections between youth activity involvement and successful adolescent development.

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