CHARACTERISTICS OF "CHRONIC INTEREST" AMONG ADOLESCENTS

by

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Abstract

This study was designed to examine whether adolescent chronic interest can be viewed as a stable personal characteristic. Data from 191 adolescents in eighth grade were collected using the Experience Sampling Method (ESM). Results revealed significant variations in average interest levels among adolescents' daily activities, indicating a need to take into account adolescents' participation in different activities when assessing chronic interest. Several operationalizations of chronic interest were employed and compared; most indicated that respondents' classifications into one of the three interest groups (interested, uninterested, and other) were somewhat stable across fall and spring. However, variability in individuals' group memberships across the two time points was also noticeable. Chronic interest was found to be associated with some psychological outcome variables, but not demographic or behavioral ones. Interested adolescents outscored their uninterested peers on self-determination and concentration, but not social relatedness. They did not differ by gender, ethnicity, or socioeconomic status. No significant difference regarding usage of after-school time was found.

Introduction

Although having been a major subject of investigation in educational psychology, human interest, particularly at the level of personal characteristic, has rarely entered the realm of adolescent psychology. A review of major developmental theories indicates that positively and continuously engaging the self with certain aspects of the world is essential to one's well-being, and that interest plays a central role in fostering and sustaining engagement. Past research suggests that abiding or chronic interest is closely related to various indices of positive development, and implies that individual differences exist with regard to the tendency to manifest interest or lack of interest in everyday life. Existing methods, however, fail to control for situational factors when assessing individuals' levels of chronic interest; therefore, whether chronic interest can be construed as a situational or personal variable remains unclear. With more refined approaches, this study sought to identify adolescents who stably manifest high interest in life versus those who frequently feel uninterested across two time periods. The two groups of adolescents were then contrasted on a number of background and outcome variables.

Engagement as Key to Well-Being

From a life-span perspective, adolescence is a crucial developmental period in which certain values and competencies ought to be acquired in order to prepare the individual for successful adulthood. Over the past few decades, various theorists have postulated that one goal of human development is to establish positive relationships with the world. Scholars from different disciplines (e.g., philosophy, psychology, religion) agree that to truly enjoy life and feel life is meaningful, one needs to connect oneself with certain spheres of the world, such as hobbies, careers, persons, or institutions. For instance, Frankl (1963) asserted that it is through

creating, doing, or experiencing something that the meaning of life is discovered, and that being human "profoundly means being engaged and entangled in a situation" (1988, p. 51). Psychologists such as Erikson (1950) and Maslow (1965) emphasized the important role that relationships play in one's well-being. More specifically, Erikson's theory indicates that contributing one's knowledge and wisdom to later generations is crucial to bringing about a sense of integrity in life, and to Maslow, true happiness usually comes from the pursuit and actualization of one's interests and values. Therefore, establishing positive relations with the world (be it people or objects) helps an individual to go *beyond oneself* (Magen, 1998), and the essence of optimal human development is that through this kind of transcendence one gradually increases one's psychological complexity—a set of wisdom and competencies that allow equilibrium (i.e., a good fit) to be attained between the self and the environment (Csikszentmihalyi & Rathunde, 1998).

Building on theories like these, scholars in recent years have started to emphasize that *engagement* is a competency that ought to be developed in adolescence because of its crucial relationship with well-being in adulthood (Bar-Tur, Levy-Shiff, & Burns, 1998; Nakamura, 2001; Nakamura & Csikszentmihalyi, 2003; Reitzes, 2003). For instance, Nakamura (2001) conceptualizes vital engagement as "an absorbing and meaningful relationship to the world" (p. 5) whereby adulthood can be regarded as fulfilling and enjoyable. She notes that young people should be encouraged to develop sustained, positive interactions with certain aspects of the world. By establishing this relationship, a person's attention and energy are channeled in a particular direction, which facilitates achievements and garners a sense of meaning and joyfulness.

Echoing this notion, scholars endorsing the recent movement of positive adolescent

development, which views adolescents as resources, also stress the importance for adolescents of learning to become engaged individuals. With a systematic perspective, Lerner and colleagues (Lerner, Brentano, Dowling, & Anderson, 2002) assert that positive adolescent development should be aimed at achieving positive interactions with the contexts in which one lives. According to these researchers, every youth has the potential to develop competencies and to contribute oneself to the civic society. Other scholars (Benson, Scales, & Mannes, 2003; Damon & Gregory, 2003; Eccles, Templeton, Barber, & Stone, 2003; Scales & Leffert, 1999) also propose that youth should be encouraged to be involved in community building, and that personality strengths such as social responsibility, moral values, and commitment to learning, are pertinent assets that should be cultivated during adolescence.

Engagement can be played out with many different activities, people, and institutions in adolescence, and empirical studies indicate that this sustained, positive relationship with the world is closely related to various indices of well-being. For instance, Magen (1998) asked youth about the kinds of experiences that make them happy. She found that joy can be derived not only from activities that are thought to be purely fun and pleasurable (like making new friends), but also from engaging in altruistic behavior that extends one's concerns to others. Others have examined relations between participation in extracurricular activities and adolescent outcomes, finding that learning and performing talent-related activities such as music and sports is associated with various adjustment indicators such as mood (Gore, Farrell, & Gordon, 2001), self-esteem (Barkto & Eccles, 2003), and academic performance (Barkto & Eccles, 2003; Jordan, 1999; Zaff, Moore, Papillo, & Williams, 2003). Moreover, civic engagement during adolescence facilitates the development of identity, autonomy, and responsibility (Youniss, McLellan, Su, &

Yates, 1999; Youniss & Yates, 1997). Therefore, abundant research has provided support for the notion that adolescents' engagement with the world is closely related to overall adjustment and well-being.

Both individual and situational factors may contribute to the development of engagement. Although empirical support is scarce, common sense makes it plausible that factors such as cognitive ability, emotional maturity, or available resources affect whether an individual is willing to, or is able to, continuously direct one's attention toward certain activities.

Utilizing the Experience Sampling Method (ESM; Csikszentmihalyi & Larson, 1984)[1], which views a person's momentary psychological or behavioral patterns as providing rich information for understanding development, this study focused more on individual factors than on situational ones. More specifically, this study investigated whether it is possible to identify individual differences in the likelihood of becoming engaged persons, by the long-term interest adolescents manifest toward their everyday life. Prior to describing the construct of *chronic interest*, the following sections outline (a) a mechanism through which engagement is thought to be fostered and formed, namely, commitment to learning, and (b) the concept of interest and its relationship with continuous learning.

Commitment and Interest

Engagement implies commitment. Life-long engagement with the world almost inevitably involves a continuous process of learning. In fact, the importance of this individual-level variable is clearly addressed by Lerner and colleagues (2002): "A youth who is thriving is

[1] This research method requires participants to wear a pager that is programmed to signal several times a day; individuals then record information such as their activity, companions, and emotional states in a booklet. Analysis of these data has proven successful in capturing and understanding different aspects of adolescent development.

engaged in person-context regulatory processes that eventuate in healthy and productive adult personhood" (p. 25). Noting that rapid social-ecological changes have brought about new challenges to adolescents, Mortimer & Larson (2002) advocate that young people should be taught to enjoy learning and to "continually relearn" (p. 16) in order to meet these challenges.

Positive experience with the person-environment interaction is one of the main reasons that a person continuously seeks to grow. Csikszentmihalyi and Rathunde (1998) point out that for development to be intrinsic, ongoing, and complex, a person must enjoy as many aspects of life as possible. Nakamura (2001) further notes that enjoyable absorption, as well as a sense of significance, is the foundation of vital engagement. The commonality of these notions is that *flow*—an individual's experience characterized by intense concentration and a sense of enjoyment (Csikszentmihalyi, 1975, 1990; Nakamura & Csikszentmihalyi, 2002)—plays a crucial role in the development of engagement. The flow theory helps explain why some activities are viewed as truly rewarding when no tangible incentives are associated with them. People are usually intrinsically motivated to pursue or engage in some activity because of the highly concentrated and "loss-of-self" feeling associated with that activity. According to the flow model, it is due to flow that individuals such as artists, scientists, or athletes are compelled to commit themselves to the continuous pursuit of their work or hobby. In other words, a continuous pursuit of flow-related experience, or put succinctly, chronically experienced flow, is one of the major contributors to engagement.

The Concept of Interest

The concept of *interest* is closely related to flow. Colloquially, interest refers to something that a person finds to be intriguing or attractive, with which he or she has the

inclination to interact. Attention on human interest dates back to the end of the 19th century. William James first pointed out the function of interest as a tool of directing and organizing an individual's attention and experience:

> Millions of items of the outward order are present to my senses which never properly enter into my experiences. Why? Because they have no interest for me. My experience is what I agree to attend to. Only those items which I notice shape my mind—without selective interest, experience is an utter chaos. Interest alone gives accent and emphasis, light and share, background and foreground—intelligible perspective, in a word. (James, as cited in Hunter and Csikszentmihalyi, 2003)

A more elaborated delineation of interest was later provided by John Dewey (1913), who characterized interest as active, objective, and personal in that it encourages the individual to actively initiate concerns over, or interactions with, a certain object. Furthermore, interest serves to link the person with some object because an underlying sense of value is usually assumed for such a relationship. Therefore, according to Dewey (1913), an individual may become completely "engaged, engrossed, or entirely taken up with some activity" (p. 17). As the following excerpt indicates, interest was also posited to form one's identity:

> [T]rue interests are signs that some material, object, mode of skill (or whatever) is appreciated on the basis of what it actually does in carrying to fulfillment some mode of action with which a person has identified himself. Genuine interest, in short, simply means that a person has identified himself with, or has found himself in, a certain course of action. (Dewey, 1913, p. 43)

According to these two philosophers, interest serves the function of regulating a person's

attention and energy. As Hunter (2002) has summarized, "The selective power of interest, gives form and flavor to what senses bring into awareness" (p. 11). If continuously pursued or cultivated, interests exert great impact on various aspects of human development such as cognition, motivation, personality, and so forth.

The study of interest and other affective variables (i.e., motivation, psychological needs, and volition), however, did not become a major area of psychological study until approximately two decades ago (Boekaerts & Boscolo, 2002). Recent theories posit that interest is a multifaceted construct and can be analyzed from different perspectives (Krapp, 1999; Krapp, Hidi, & Renninger, 1992). For instance, some researchers view interest as a type of positive emotion (Egloff, Schmukle, Burns, Kohlmann, & Hock, 2003; Fredrickson, 2000; Izard, 1977; Watson, 2002). Interest, according to Izard (1977), is "the feeling of being caught up, fascinated or curious" (p. 100). Other researchers view interest as a cognitive variable (Nauta, Kahn, Angell, & Cantarelli, 2002; Renninger, 1992). For example, echoing Dewey's (1913) viewpoint, Rathunde & Csikszentmihalyi (1993) regard interest as involving a sense of worthiness the individual attaches to the recipient of interest. Simply put, interest can be viewed as an affective state or a value-laden variable.

The multifaceted nature of interest allows it to be studied at both the *situational* level and the *individual* level (see Boekaerts & Boscolo, 2002, for a discussion). Research on situational interest primarily concerns the characteristics of an object or an environment that are most likely to elicit interest (Hidi & Anderson, 1992; Hidi & Berndorff, 1998, Schraw & Lehman, 2001). This line of research views interest as "dependent on favorable environmental conditions" (Boekaerts & Boscolo, 2002, p. 378), and tends to focus on the inherent "interestingness" or

other characteristics of environments, such as specific instructional methods that may enhance interest. Generally speaking, researchers in this camp investigate the nature of text or task, such as topics or themes that may influence comprehension learning and writing of individuals (Hidi & Berndorff, 1998; see Schraw & Lehman, 2001, for a review).

The other level of analysis, individual interest, refers to "interest built on stored knowledge about and value for a class of objects or ideas which leads to a desire to be involved in activities related to that topic" (Boekaerts & Boscolo, 2002, p. 378) Research on individual interest can be carried out by focusing on either (a) actualized psychological state or (b) personal characteristics (Hunter, 1999; Krapp, Hidi, & Renninger, 1992). The state approach focuses on the transient experience of being "caught up" or "engaged" while interacting with certain objects, and is usually adopted by researchers interested in studying development and achievement from an experiential perspective. The individual's mood or subjective appraisal in response to an activity is usually the unit of analysis.

The personal characteristics approach to research on interest focuses on "a person's stable, long-term orientation towards a class of objects, activities, or areas of knowledge" (Hunter, 1999, p. 15). Multiple factors such as personality, values, and previous experience may be related to this individual tendency, but the associations have not been well-investigated. The existing research utilizing the personal characteristics approach has focused on (a) objects of interest and (b) personality or psychological inclinations to experience interest. The first category concerns hobbies or academic subjects (e.g., math and science) that a person considers an interest of his/hers, and eventually becomes part of his/her self-concept; the second category concerns personality dimensions such as extroversion (North, 1949) or openness to experience (McCrae &

Costa, 1997). Existing research on objects of interest outnumbers that on personality, in part because most interest researchers come from the field of educational psychology, and partly because the conceptual distinction or overlap between interest and personality dimensions are difficult to pinpoint.

Despite the different lenses through which interest is viewed, researchers generally agree that interest is closely related to various developmental outcomes, and should be cultivated or fostered. Regardless of the level of analysis, interest is positively related to achievement and psychosocial well-being. For instance, interest not only enhances learning-related processes (Krapp, 2000; Peel, 1962; Renninger & Hidi, 2002; Rottinghaus, Lindley, Green, & Borgen, 2002; Schiefle, Krapp, & Winteler, 1992), but also becomes a foundation of one's self-concept (Hannover, 1998). Interest also helps individuals overcome negative life experiences (Tugade & Fredrickson, 2004).

In summary, interest is a complex construct and can be explored from different perspectives. It can be viewed as an affective or cognitive variable that is rooted in a sense of curiosity as well as the recognized worth of an object or activity; it usually impels self-motivated behavior that is positively reinforced by pleasurable affective states such as excitement and enjoyment. Because of its relational and dynamic nature, various aspects, including individual and situational ones, are often explored in research on interest.

One particular aspect of individual interest, namely, adolescents' disposition to experience interest or engagement in their everyday endeavors, is the primary concern of this study. Although research in this area is rare, abundant empirical research exists describing

boredom—a psychological state that is usually characterized as lack of interest[2]. The literature indicates that individuals vary in terms of tendency to feel bored (i.e., bored-proneness), and that this personal variable is usually associated with negative psychosocial outcomes (Farmer & Sundberg, 1986). The following section details research regarding some rather consistent interest- or boredom-related states adolescents may manifest in their daily life and how these personal characteristics may be predictive of one's well-being.

Chronic Interest and Boredom

Based on the arguments presented in previous sections, interest can be viewed as a facilitator for engagement to occur. From an experiential perspective, if a person frequently or chronically experiences interest, he or she is likely to become engaged in some spheres of the world and therefore is more likely to savor life and feel happy. In contrast, if a person's daily life is characterized as "boring," or if the individual subjectively feels "bored" all the time, his or her overall quality of life likely suffers. It appears that, in essence, having prolonged or widespread interest, a phenomenon that is termed *chronic interest*, is the key.

The importance of chronic interest, or, being continuously interested, is evidenced in only a few empirical studies. Noting that chronic interest may be beneficial for development, Rathunde & Csikszentmihalyi (1993) were the first to conduct a longitudinal study to investigate the relationship between the chronic interest of talented high school students and the

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[2] Boredom may actually have multiple meanings and can emerge with different reasons (Caldwell, Darling, Payne, & Dowdy, 1999; Conard, 1999). Although whether interest and boredom constitute two ends of a spectrum is still open to question, most lay people, as well as theorists, view "a lack of interest" to be a central element of boredom (e.g., Fisher, 1993), and that the two terms are opposite to each other. However, to avoid confusion, this approach is only adopted for the sake of literature review. The rest of this research refers to individuals with low levels of interest as being "uninterested" and not "bored."

development of talent (e.g., music, art, science). In addition to a single, affect-related interest variable (i.e., spontaneous interest, according to the authors), another variable, goal-directed interest (i.e., felt significance of activity to one's future goal), was added to assess individual interest longitudinally. The findings generally support that having, and being able to hold greater levels of interest, is beneficial for the development of talent. More specifically, the researchers found that it was *undivided interest* (high scores on both spontaneous interest and felt significance) that was most predictive of engagement and mastery of ability in certain talent areas.

More recently, Hunter & Csikszentmihalyi (2003) construed chronic interest in a simpler manner, and focus more on the affective aspect of interest (i.e., excitement and enjoyment) rather than the value-laden one (i.e., importance) that was employed in Rathunde & Csikszentmihalyi's (1993) study. Having identified two groups of adolescents who differed significantly in terms of levels of chronic interest, the researchers investigated differences between the groups in various outcome variables. It was found that the interested group outscored their bored[3] counterparts on measures of optimism, self-esteem, and internal locus of control. Hunter & Csikszentmihalyi concluded that chronic interest may be viewed as an index of psychological health, and that interested adolescents may possess a higher capacity for managing themselves at a time when knowledge has become critically influential in terms of the welfare of both the individual and the society.

In addition to these studies, research on boredom, particularly boredom proneness,

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[3] There was no measurement of boredom in this study, but because the researchers assume that interest and boredom constitute one spectrum, youths continuously showing low levels of interest were labeled as "bored" adolescents.

provides evidence for the notion that having little interest in one's life may bring about adversity. Boredom has consistently been found to be closely associated with psychosocial problems such as depression and avoidance of work, as well as low levels of academic/emotional autonomy and overall life satisfaction (Harris, 2000; Jarvis & Seifert, 2002; Patterson & Pegg, 1999; Watt & Vodanovich, 1999).

Adolescence is a developmental period which is conventionally viewed as bearing a high prevalence of boredom. Research in the last two decades has also indicated that a remarkable proportion of adolescents report being bored frequently (Csikszentmihalyi & Larson, 1984; Shaw Caldwell, & Kleiber, 1996), and that this "boredom syndrome" has resulted in adolescent recklessness or various kinds of delinquent behaviors (Kegler, Cleaver, & Kingsley, 2000; Newberry & Duncan, 2001). If we hope to encourage engaged behavior in adolescence, and/or to prepare young people for a more meaningful and enjoyable life, researching and teaching "interest-proneness" seems to be key.

Research on chronically interested individuals is still in its infancy stage. The insufficiency lies not only in the quantity of empirical studies, but also in the inconsistent methodology and terminology used in this field. For instance, in addition to labels such as "undivided interest" or "interested adolescents," the term "abiding interest" has also appeared in the literature to describe a "process or state of interest that sustains the person-object relationship" (Rathunde, 1998, p. 370). A seemingly related but slightly different concept, "autotelic personality" (Adlai-Gail, 1994; Hektner, 1997), has also been proposed to study individuals' tendencies to experience enjoyable, interest- or growth-driven optimal experience with the world. Despite these different viewpoints, the significance of individuals' interest-

oriented experience patterns has never been overlooked: Sustained interest-related experience connects an individual to the world in a positive way, and brings more challenges, enjoyment, and reflections in one's everyday encounters, resulting in greater potential for life-long learning and development.

Limitations of Existing Research

An unresolved issue in the study of interest is whether the construct of chronic interest truly constitutes an individual level, disposition-like variable. Although it seems, according to researchers such as Hunter & Csikszentmihalyi (2003), that adolescents can be categorized based on their interest patterns, and that interested youth tend to fare better psychologically than bored ones, a question remains unanswered: Whose responsibility is this?

Research has consistently shown that adolescents' level of interest, or engagement, tends to vary by types of activities. In other words, activities differ in nature with regard to the amount of attention, efforts, or affective arousal they call forth. According to Csikszentimihalyi (1975), optimal experience, or flow, is most likely to occur when the situation provides an appropriate amount of challenge that matches the skill of the individual. Empirical studies have provided support for this notion. For example, Shernoff, Csikszentmihalyi, Schneider, & Shernoff (2003) found that students were more engaged when doing group work than when they were listening to lectures, watching videos, or taking exams. Delle Fave & Bassi (2000) reported that adolescents' daily experiences do vary in quality, and activities have different effects in terms of bringing about developmental benefits. For instance, watching television is associated with apathetic or goal-less affective and attentional states, and structured leisure such as sports or arts is where adolescents are most likely to experience flow.

Without taking into account the nature of activities (i.e., the inherent interestingness) that adolescents are doing, research can easily fall into the trap of failing to differentiate between "individual interest" and "situational interest." It is possible that an adolescent's relatively high level of chronic interest is a result of his or her frequent participation in activities that are by nature more fun and interesting than other activities in which another youngster often engages. In other words, an "interested" adolescent may simply be one who spends a larger portion of time doing "interesting" activities. By the same token, a person may appear "chronically bored" simply because—for uncertain reasons—he or she is frequently involved in "no-fun" activities such as doing homework or chores. Factors such as luck or available resources, therefore, may confound the research findings regarding who should be held responsible for "being interested."

The interested-bored construct in Hunter & Csikszentmihalyi's (2003) study was derived by summing and averaging each respondent's standard scores on items measuring whether activities were "interesting" and the affective states of "enjoyment" and "excitement." Without isolating the individual-level, characteristic-like variable from the possible effects associated with activity contexts, it may be risky to conclude that adolescents who chronically experience interest in everyday life are psychologically healthier and, perhaps, possess good self-management skills. This problem was avoided in Rathunde & Csikszentmihalyi's study (1993) of undivided interest. In their design, individuals' interest variables were compared to group means for each talent-related activity, and a percentage score was calculated to represent each person's undivided interest. Although this study utilized a more sophisticated method in approaching chronic interest by controlling for the possible activity-related confounding variable, its narrow sample (talented high school students) and restricted range of activities (talent-related

activities) prevent the research results from being generalized to the larger adolescent population.

Chronic Interest and Other Variables

The association between chronic interest and time use patterns has not been widely discussed, although the use of time has been documented as a rich source of substantial information regarding adolescent development (Csikszentmihalyi & Larson, 1984). Individuals' ability to effectively manage their time, characterized by a larger proportion of time spent in constructive activities, has been used to successfully differentiate between normal and delinquent (Farnworth, 2000) as well as gifted and non-gifted adolescents (Konstantopoulos, Modi, & Hedges, 2001). To illustrate, Farnworth (2000) found that compared to normal adolescents, young offenders spent a greater amount of time engaging in activities such as TV watching that do not require much concentration or effort. Empirical studies provide only limited support for the speculation that interested adolescents tend to be more involved in active, productive, and socially oriented activities. For example, Hunter (2002) reported that interested adolescents spend more time in activities that are hobby-related than their uninterested counterparts, and there is also a greater involvement with cultural activities among the former than among the latter. With a slightly different focus, Hetkner (1997) found that propensity to experience flow is positively correlated with involvement in productive activities.

If a sense of autonomy is positively correlated with the tendency to experience flow (Hetkner, 1997), and if interested adolescents are more likely than their bored peers to perceive themselves as agents behind their behaviors (Hunter & Csikszentmihalyi, 2003), is it possible that interest is linked to better self-regulatory abilities through which individuals are better able to invest their time by engaging in socially or developmentally appropriate activities? In other

words, is chronic interest associated with more effective use of time, characterized by a greater involvement in constructive activities and less idling or unproductive behaviors?

In addition, early adolescents have been found to be social beings, and their time use pattern is characterized by a strong need and preference to spend time with others, as opposed to being alone (Larson & Csikszentmihalyi, 1980; Larson, Csikszentmihalyi, & Graef, 1982; Larson & Kleiber, 1993). An interesting question to ask, therefore, is whether our interested sample, when compared with their uninterested peers, is more likely to engage in activities that feature interactions with other people?

Overview of the Study

This study was designed to offset the aforementioned limitations associated with existing research. Two major questions were asked: (a) Can we successfully identify interested and uninterested adolescents and demonstrate that chronic interest may be viewed as a personal disposition? and (b) Are there background or behavioral differences between the interested and uninterested groups? To answer the first question, several operationalizations of chronic interest, including the one developed by Hunter and Csikszentmihalyi (2003), were employed and compared. The longitudinal design of this study allowed examination of the stability of chronic interest by comparing individuals' placement in different interest groups across two testing periods. To answer the second question, scores on a number of demographic and outcome variables (self-determination, concentration, social relatedness), as well as time use patterns, were compared between interested and uninterested adolescents.

In sum, this study had three main purposes:

1. To test whether adolescents' level of interest varies by the kind of activities in which

they are engaged. In other words, the goal is to identify situational interest (inherent interestingness)[4] associated with each activity.

2. To identify interested and uninterested adolescents by employing a variety of classification schemes, and to test the stability of chronic interest across fall and spring.
3. To explore whether interested and uninterested adolescents differ on a number of demographic, psychological, and behavioral variables.

[4] A narrower definition of "situational interest," as opposed to what is often documented in the literature, is adopted here. That is, this study will rely solely on respondents' subjective appraisals of mood and the nature of the activity (i.e., interestingness) to assess situational interest. This approach is different from the conventional methods, such as text-based analyses, that are often employed by interest researchers.

Method

Participants

The data set for this study was obtained to investigate the effectiveness of after-school programs as part of a larger research project. One hundred ninety-one adolescents (all in eighth grade), as well as their parents and teachers living in three Midwestern communities in the United States, participated in the larger project. However, for this specific study, only data from the adolescents were drawn for analyses. The three sites are ethnically diverse and are different in levels of urbanization. The sample included approximately equal numbers of females and males; approximately 60% of the participants were of minority ethnicity. Demographic characteristics of the participants are presented in Table 1.

Procedures

Using the Experience Sampling Method (ESM), two waves (fall & spring) of data were collected within a 1-year period. During the fall, students wore electronic watches that were programmed to signal five times a day during out-of-school time (i.e., between the time school ended and 8:30 p.m. on weekdays and between 10:00 a.m. and 8:30 p.m. on weekends) for 7 consecutive days (35 total signals). Each time they were signaled, participants completed a set of questions in an ESM logbook (see Appendix A) regarding where they were, what they were doing, who they were with, what they thought about their activities, and how they were feeling when signaled. The location (where they were) and activity (what they were doing) items were open-ended. Respondents used a checklist to indicate who they were with, then answered two sets of 4-point Likert-scaled questions. The first set of questions obtained the participants' evaluation of the activity they reported and the personal effort and motivation level associated

Table 1

Demographic Characteristics of Participants (N = 191)

Characteristic	*n*	%
Gender		
Male	99	48.2
Female	92	51.8
Ethnicity		
African American	61	31.9
Asian	6	3.1
Caucasian	72	37.7
Latino	30	15.7
Mixed/Multiple	17	8.9
Single-parent household		
No	115	60.2
Yes	56	29.3
Mother's education		
Some high school or less	33	17.3
High school equivalency or graduate	44	23.0
Some college or vocational school	46	24.1
College graduate or advanced degree	48	25.1
Household income		
Less than $20,000	45	23.6
$20,000-$39,999	46	24.1
$40,000-$59,999	36	18.8
$60,000 or more	37	19.4

with the activity. Sample items include: "Was this activity interesting?" and "Were you using your skills?" The second scale was designed to assess participants' affective states when signaled, including lonely, happy, excited, and so forth.

Approximately 6 months after the fall data were collected, the same sample was asked to complete the same task (wear watches and record experiences for 7 consecutive days) again in the spring. Therefore, across Time 1 and Time 2, each participant ideally provided 70 entries of experience sampling data. Due to attrition, only 176 adolescents (92% of the original sample) provided data for the spring semester.

Measures

Activity categories. Using a detailed coding scheme, participants' responses regarding location and activity were coded by trained coders. The intercoder reliabilities for location and activity were .95 and .89, respectively. Based on a content analysis, all reported "main activities" were collapsed into 14 activity categories: homework, chores/work, arts/academic enrichment, community engagement, sports/physical activities, leisure reading/writing, socializing with peers, socializing with non-peers, watching TV, games, snacks/meals, maintenance, shopping, and other activity. These categories were created along the dimensions of "work" and "play" (Csikszentmihalyi, 2000), and grouped by their rough degrees of structure and constructiveness. Appendix B shows sample activity composites.

Interest. Interest was measured by averaging the ratings on three items from the ESM logbook. The first two questions, "Was this activity interesting?" and "Did you enjoy what you were doing?" concerned the participant's thoughts about his or her activity. The third item, "excitement," was one dimension of the participant's momentary affective state. The interest

score represents the mean rating of these three items and had a possible range of 1-4, with higher scores indicating greater degrees of interest when engaging in a specific activity. Respondents' activity-specific individual interest scores were calculated by averaging the within-person, beep-level interest scores associated with that activity in each wave of data collection. A grand mean of interest scores across all beeps for each activity was calculated to assess situational interest. The Cronbach's coefficient alpha of the interest score was .72, indicating satisfactory reliability.

Self-determination. Degree of self-determination, or the perception that one has control over his or her actions, was assessed by a single item in the ESM logbook: "How much choice did you have about this activity?" Possible scores range from 1-4. Each participant's average self-determination score was derived by calculating the within-person, beep-level self-determination scores across all activity contexts. A higher score indicates a higher degree of sense of autonomy.

Concentration. Concentration was assessed by averaging scores on two items in the ESM logbook: "How hard were you concentrating?" and "Were you using your skills?" Both have a possible score range of 1-4. Each participant's average concentration score was derived by calculating the within-person, beep-level concentration scores across all activity contexts. A higher mean score indicates a higher degree of concentration. This scale has satisfactory internal consistency (Cronbach's alpha = .85).

Social relatedness. The social relatedness score was calculated in two steps. First, responses to the question "Who was doing this activity with you?" were dichotomized according to whether respondents checked "no one" (coded 0) or any other response (coded 1) to indicate whether the beep occurred when the individual was alone or doing activities with other people.

The average degree of social relatedness was then derived by calculating the mean score across all beeps. Scores range from 0 to 1; a higher value indicates a higher tendency to engage in activities that involve other people.

Results

Characteristics of Activity Categories

Adolescents in this study reported engaging in a variety of activities during their out-of-school time. As shown in Table 2, out of the possible 14 different categories, most participants reported doing between 8 and 10 different types of activities during each wave of data collection. Less than 10% of the participants reported engaging in fewer than six different activities within a single testing period.

To gain a general understanding of how adolescents spend their out-of-school hours, frequencies and percentages of ESM entries by activity categories were calculated. As Table 3 shows, TV or movie watching constitutes the activity category in which adolescents spend most of their after-school time (16-18%). Adolescents also spent a notably large amount of time (12-13%) socializing with people (including both peers and non-peers). These categories were followed by games, maintenance, sports, and enrichment activities; adolescents spent about 8% or 10% of their time engaged in each of these activities.

Individual differences in activity participation were extensive. Table 4 presents the range of single-wave, within-person counts of ESM entries associated with each activity category. As mentioned previously, during each wave of data collection the maximum possible number of ESM records provided by each participant was 35. Within a single wave of data collection, the number of ESM entries provided by each respondent ranged from 17 to 35. On average, each participant had 33 ESM records within the 7-day testing period. As shown in Table 4, the adolescents varied widely on how they spent their time. This variation is particularly noticeable for discretionary activities such as TV watching (*SD*s = 3.67 and 4.32 for Waves 1 and 2,

Table 2

Sample Sizes by Number of Activity Categories Reported

	Wave 1		Wave 2	
Number of activity categories	*n*	%	*n*	%
2	1	.52	0	.00
3	0	.00	1	.57
4	2	1.05	2	1.14
5	2	1.05	7	3.98
6	4	2.09	12	6.82
7	16	8.38	24	13.64
8	46	24.08	37	21.02
9	48	25.13	35	19.89
10	49	25.65	35	19.89
11	16	8.38	16	9.09
12	6	3.14	7	3.98
13	1	.52	0	.00
Total	191	100.0	176	100.0

Note. Percentage was calculated by dividing the number of signals associated with an activity category by the respondent's total number of ESM records within fall or spring.

Table 3

Number of Times Each Activity Category Mentioned

Activity category	Wave 1		Wave 2	
	Frequency	%	Frequency	%
1. Homework	392	6.2	309	5.3
2. Chores/work	490	7.7	370	6.4
3. Academic/arts enrichment	567	9.0	382	6.6
4. Community engagement	118	1.9	94	1.6
5. Sports/physical activities	461	7.3	518	8.9
6. Leisure reading/writing	104	1.6	98	1.7
7. Socializing with peers	355	5.6	349	6.0
8. Socializing with non-peers	430	6.8	421	7.2
9. Watching TV	1022	16.2	1055	18.1
10. Games	584	9.2	582	10.0
11. Snacks/meals	500	7.9	467	8.0
12. Maintenance	594	9.4	511	8.8
13. Shopping	172	2.7	161	2.8
14. Other	537	8.5	500	8.6
Total	6326	100.0	5817	100.0

Note. % column shows the percentage among the total collected (across respondents) signals.

Wave 1 $N = 191$, Wave 2 $N = 176$.

Table 4

Within-Respondent Frequency of Each Activity Category

	Wave 1				Wave 2			
	Maximum				Maximum			
Activity category	Range	%	*M*	*SD*	Range	%	*M*	*SD*
1. Homework	0-17	49	2.05	2.51	0-15	43	1.76	2.36
2. Chores/work	0-14	43	2.56	2.51	0-13	37	2.10	2.19
3. Academic/arts enrichment	0-12	34	2.97	2.52	0-16	46	2.17	2.63
4. Community engagement	0-12	35	.62	1.32	0-7	20	.53	1.02
5. Sports/physical activities	0-16	46	2.41	3.29	0-18	51	2.94	3.64
6. Leisure reading/writing	0-9	26	.54	1.06	0-9	26	.56	1.02
7. Socializing with peers	0-10	30	1.86	2.13	0-14	54	1.98	2.58
8. Socializing with non-peers	0-9	26	2.25	2.05	0-12	34	2.39	2.34
9. Watching TV	0-22	63	5.35	3.67	0-28	80	5.99	4.32
10. Games	0-26	74	3.06	3.58	0-23	66	3.30	4.05
11. Snacks/meals	0-9	26	2.62	1.93	0-9	26	2.65	2.18
12. Maintenance	0-11	36	3.10	2.26	0-12	34	2.90	2.28
13. Shopping	0-7	20	.90	1.20	0-6	17	.91	1.29
14. Other	0-11	50	2.81	2.21	0-11	40	2.84	2.54

Note. Percent was calculated by dividing the number of signals associated with an activity category by the respondent's total number of ESM records within fall or spring. Wave 1 $N = 191$, Wave 2 $N = 176$.

respectively), game playing (SDs = 3.58 and 4.05 for Waves 1 and 2, respectively), and sports (SDs = 3.29 and 3.64 for Waves 1 and 2, respectively).

Examining Situational Interest

Consistent with the literature and common sense, sports and games are activities in which adolescents manifest highest levels of interest (see Table 5). Arts or academic enrichment activities, leisure reading or writing, and socializing with peers also appear interesting to adolescents. Not too surprisingly, doing chores or homework received the lowest interest scores.

To examine whether the 14 average ratings of interest differ significantly, a Hierarchical Linear Modeling (HLM; Bryk & Raudenbush, 1992) analysis was conducted. A major advantage of applying the HLM procedure was that it allowed for control of individual differences in frequencies of participation for each activity category by generating a set of estimated interest scores corresponding to all 14 activity categories for each participant. This procedure, therefore, enhanced the reliability of the situational interest scores associated with each activity category. In the present data set, each adolescent provided approximately 70 ESM entries, and therefore, the data set could be viewed as containing two levels of information, namely, beep level and student level. The following model was fit:

$$Y=B_1*(Actg1)+B_2*(Actg2)+B_3*(Actg3)+B_4*(Actg4)+B_5*(Actg5)+B_6*(Actg6)+B_7*(Actg7)+B_8*(Actg8)+B_9*(Actg9)+B_{10}*(Actg10)+B_{11}*(Actg11)+B_{12}*(Actg12)+B_{13}*(Actg13)+B_{14}*(Actg14)$$

where Y represents an individuals' estimated interest score, and the variables Actg1~Actg14 are dummy variables indicating whether or not an activity was reported within a respondent's beep-level record. Coefficients B_1~B_{14} represent the corresponding estimated interest score for the

Table 5

Average Interest Score by Activity Category

Activity category	Wave 1		Wave 2	
	M	*SD*	*M*	*SD*
1. Homework	2.00	.78	1.99	.78
2. Chores/work	2.03	.90	1.98	.90
3. Academic/arts enrichment	2.74	.87	2.64	.85
4. Community engagement	2.94	.83	2.53	.86
5. Sports/physical activities	3.00	.80	2.72	.88
6. Leisure reading/writing	2.66	.78	2.57	.77
7. Socializing with peers	2.68	.86	2.48	.82
8. Socializing with non-peers	2.55	.85	2.47	.84
9. Watching TV	2.58	.80	2.42	.84
10. Games	2.98	.78	2.84	.83
11. Snacks/meals	2.33	.78	2.23	.78
12. Maintenance	2.13	.87	2.09	.87
13. Shopping	2.50	.88	2.37	.83
14. Other	2.29	.91	2.21	.91

Note. Wave 1 $N = 191$, Wave 2 $N = 176$.

individual while engaging in the activities. For B_1~B_{14}, the following level-2 model was fit:

$$B_i = G_{i0} + U_i, (i = 1 \sim 14)$$

where G_{i0} indicates the grand mean of interest scores corresponding to one of the activity categories.

The coefficients output of B_1~B_{14} and their corresponding standard errors are presented in Table 6. To examine statistical differences between the interest ratings, a second model was fit with equality constraint imposed on the G_{i0} coefficients, and the results were compared to the first model, where there was no constraint. A Chi-square test indicates significant differences between these mean estimated interest scores χ^2 $(13, N = 191) = 669.91$, $p < .001$, permitting a conclusion that adolescents' average interest scores do vary across activity categories. Moreover, as shown in Table 7, all but three results of the variance component tests reached significance, indicating that there is substantial between-person variability in individuals' interest scores for most of the activity categories.

Identification of Chronic Interest

Four different ways of operationalizing chronic interest were considered in this study. Each method involved assignment of respondents to one of three categories within waves of data analyses: consistently high interest, consistently low interest, or average. Then, assignments were compared across waves to determine whether respondents displayed chronic interest, chronic uninterest, or one of several different patterns that were combined into an "other" category. As a means of comparing the results of this study most directly to previous research, the first scheme, HC, was a slightly modified version of procedures used by Hunter & Csikszentmihalyi (2003). As in that study, high-interest adolescents were defined as those whose average interest score,

Table 6

HLM Results of Average Interest Scores and Standard Errors by Activity Category

Activity category	Gamma coefficient	*SE*
1. Homework	2.03	.05
2. Chores/work	1.99	.05
3. Academic/arts enrichment	2.66	.05
4. Community engagement	2.68	.08
5. Sports/physical activities	2.85	.05
6. Leisure reading/writing	2.48	.06
7. Socializing with peers	2.63	.05
8. Socializing with non-peers	2.52	.05
9. Watching TV	2.54	.04
10. Games	2.83	.04
11. Snacks/meals	2.32	.04
12. Maintenance	2.10	.04
13. Shopping	2.48	.06
14. Other	2.21	.05

Table 7

Results of the Variance Component Tests for the Present HLM Model

Random effect	*SD*	Variance component	*df*	χ^2	*p*
Actg1 slope, U_1	.54	.29	7	24.66	.00
Actg2 slope, U_2	.56	.32	7	24.71	.00
Actg3 slope, U_3	.48	.22	7	19.81	.01
Actg4 slope, U_4	.53	.28	7	10.68	.15
Actg5 slope, U_5	.52	.27	7	32.44	.00
Actg6 slope, U_6	.65	.42	7	34.53	.00
Actg7 slope, U_7	.54	.29	7	38.21	.00
Actg8 slope, U_8	.52	.27	7	23.50	.00
Actg9 slope, U_9	.53	.28	7	36.23	.00
Actg10 slope, U_{10}	.51	.26	7	26.28	.00
Actg11 slope, U_{11}	.54	.29	7	32.74	.00
Actg12 slope, U_{12}	.49	.24	7	3.87	>.5
Actg13 slope, U_{13}	.59	.35	7	29.74	.00
Actg14 slope, U_{14}	.57	.33	7	18.50	.01
Level-1, R	.65	.43			

across all watch signals, fell within the top quartile of the distribution of interest scores; the low-interest group included those whose average score was in the bottom quartile. The remaining respondents were designated as "average" in interest. It should be noted that because Hunter and Csikszentmihalyi had only one wave of data collection, they did not assess the stability of chronic interest. In the present study, to take advantage of the longitudinal research design, Hunter and Csikszentmihalyi's classification procedure was performed separately for the fall and spring data sets. Only respondents who fell into the high-interest group at both data collection periods were designated as interested adolescents, and only those who were classified as low-interest across both Time 1 and Time 2 were considered to be uninterested adolescents.

A Chi-square analysis comparing interest category assignments across the two waves of data collection was significant, $\chi^2(4, N = 176) = 73.12, p < .01$, indicating consistency beyond chance levels in category assignment from fall to spring. Furthermore, the Kappa coefficient was .41, suggesting a moderate level of agreement between the two classifications. Of the 44 respondents classified as high in interest in fall, 29 remained in this category in spring; most of the rest were classified as average in spring. Two thirds of those classified as average in fall remained in this category in spring, and just over half (23 of 43) of respondents placed in the low interest category in fall remained in that category in spring (see Table 8).

The other three classification schemes, *Absolute*, *Relative*, and *HLM*, considered interest scores within activity categories more carefully. The *Absolute* approach was based on the absolute value of respondents' interest scores within activity categories. Those who obtained mean scores of 3.00 or higher for at least half the activity categories they reported, and means under 2.00 on no more than a quarter of activities reported, were categorized as consistently high

Table 8

Classification of Participant Interest Using Different Schemes

		HC			
		Wave 2			
		Consistently low	Average	Consistently high	Total
Wave 1	Consistently low	23	19	1	43
	Average	16	59	14	89
	Consistently high	3	12	29	44
	Total	42	90	44	176
		Relative			
		Wave 2			
		Consistently low	Average	Consistently high	Total
Wave 1	Consistently low	26	11	2	39
	Average	18	66	17	101
	Consistently high	2	13	21	36
	Total	46	90	40	176
		Absolute			
		Wave 2			
		Consistently low	Average	Consistently high	Total
Wave 1	Consistently low	31	16	0	47
	Average	27	58	10	95
	Consistently high	2	14	18	34
	Total	60	88	28	176

in interest. Respondents who had mean scores of 2.00 or lower on at least half the reported activity categories and means above 3.00 on no more than a quarter of reported activities were considered to manifest consistently low interest. The rest were placed in the average category.

The frequency distributions of the three main groups of adolescents in the Absolute classification scheme for both Time 1 and Time 2 are summarized in Table 8. Based on this approach, 31 adolescents were classified as uninterested in both Waves 1 and 2, but only 18 participants were identified as interested individuals across both times. The significant Chi-square result, χ^2 (4, N = 176) = 66.59, $p < .01$, as well as a Kappa coefficient of .36, suggested the stability of the chronic interest variable. Depending on the interest category, between 53% (18 of the 34 Wave 1 high-interest adolescents) and 66% (31 of 47 Wave 1 low-interest respondents) of respondents were placed in the same interest category across Time 1 and Time 2.

A third classification scheme, the *Relative* approach, adjusted for differences in mean scores across activity categories, as well as for the different rates at which respondents participated in various activities. Respondents' overall interest in activities was determined by comparing their mean interest scores within each activity category to the mean score for that activity category across the sample as a whole. Individuals were designated as consistently high in interest if they scored at least half a standard deviation *above* the sample mean on at least half of the reported activity categories and half a standard deviation *below* the sample mean on no more than a quarter of the reported activities. Respondents were classified as consistently low in interest if they scored at least half a standard deviation *below* the sample mean on at least half the reported activity categories and half a standard deviation *above* the sample mean on no more than a quarter of the reported activities. The rest of the respondents were placed in the average

group.

As shown in Table 8, based on this scheme, 26 and 21 adolescents were classified as being consistently low or high in interest, respectively, across both waves of data collection. The significant Chi-square result, $\chi^2 (4, N = 176) = 69.55, p < .01$, as well as a Kappa statistic of .41, indicated concordance beyond chance in group assignment in fall and spring. Overall, between 58% and 67% of respondents (depending on interest category) were categorized into the same interest group across the two waves of data collection.

The final method of operationalizing chronic interest, *HLM*, involved the previously described hierarchical linear modeling analysis, a statistical method that is particularly useful in analyzing data that involve different levels or are repeated in nature. One of the advantages in using HLM to identify interested and uninterested adolescents was that with the regression model, the researcher was able to estimate each participant's average interest score when engaging in a specific activity, even if no actual data entries regarding that context had been collected. Consequently, the problem of uneven numbers of signals reported for each activity category was avoided.

The HLM procedure was carried out using the same model described above. Due to insufficient data, the analyses could not be conducted with single-wave data. That is, both Wave 1 and Wave 2 data were needed for the analyses. As a result, no separate-wave categorizations of participants were obtained, and respondents were classified into one of the three interest groups (i.e., interested, uninterested, and other) once.

The HLM procedure generated a set of estimated interest scores for each participant. With these results, a decision rule similar to the one used for the Absolute approach was applied

to identify interested and uninterested adolescents. More specifically, participants who had at least seven (i.e., half of the 14 activity categories) estimated interest scores higher than 3.00 and no more than three scores under 2.00 were categorized as chronically interested. Respondents who had at least seven scores under 2.00 and no more than three scores above 3.00 were classified as chronically uninterested. The rest were placed into the average category. Among the 176 participants who provided both Wave 1 and Wave 2 data, 26 were classified as interested adolescents, and 25 as uninterested.

Comparison of the Four Approaches

To examine whether these four approaches yielded similar results regarding identification of interested and uninterested adolescents, a series of contingency tables was created for the six pairwise comparisons (see Table 9) and Chi-square tests were conducted. Results of these analyses indicated that the four coding schemes generated similar classifications of participants into the three main groups (interested, uninterested, and other).

The HC and Absolute schemes generated similar results, χ^2 (4, N = 176) = 173.41, $p < .01$, and between 65% (20 out of 31) and 94% (17 out of 18) of respondents fell into the same interest category regardless of which categorization method was used. The Kappa coefficient is .66, indicating moderate agreement between the two classifications. It should be noted that 31 respondents were classified as uninterested adolescents by the Absolute scheme, while with the HC scheme, only 23 respondents were considered uninterested. The trend was reversed for the interested group. These figures point out that, generally speaking, the interest scores of this sample tilted toward the lower end (i.e., 2 or below), and fewer than 20 respondents had overall high absolute values (i.e., 3 or above) in their interest measures.

Table 9

Comparisons of Different Classification Schemes

		HC			
		Uninterested	Other	Interested	Total
Relative	Uninterested	19	7	0	26
	Other	4	114	11	129
	Interested	0	3	18	21
	Total	23	124	29	176

		HC			
		Uninterested	Other	Interested	Total
Absolute	Uninterested	20	11	0	31
	Other	3	112	12	127
	Interested	0	1	17	18
	Total	23	124	29	176

		HC			
		Uninterested	Other	Interested	Total
HLM	Uninterested	16	9	0	25
	Other	7	111	7	125
	Interested	0	4	22	26
	Total	23	124	29	176

(table continues)

		Relative			
		Uninterested	Other	Interested	Total
Absolute	Uninterested	25	6	0	31
	Other	1	122	4	127
	Interested	0	1	17	18
	Total	26	129	21	176

		HLM			
		Uninterested	Other	Interested	Total
Relative	Uninterested	17	9	0	26
	Other	8	114	7	129
	Interested	0	2	19	21
	Total	25	125	26	176

		HLM			
		Uninterested	Other	Interested	Total
Absolute	Uninterested	20	11	0	31
	Other	5	114	8	127
	Interested	0	0	18	18
	Total	25	125	26	176

A great proportion of overlap in terms of the classification results can also be observed between the Relative and HC schemes, χ^2 (4, N = 176) = 176.80, p < .01. Between 73% (19 out of 26) and 88% (114 out of 129) of respondents were placed into the same interest group by both classification methods. The Kappa coefficient is .68. It should be noted, however, that the Relative scheme identified fewer numbers of interested adolescents and categorized more individuals into the uninterested group, in comparison to the classification using the HC scheme. This implies a possible risk of overestimating the number of interested adolescents and underestimating that of uninterested individuals when activity effects (i.e., interestingness) are not controlled.

The HLM and HC schemes also generated very similar results, χ^2 (4, N = 176) = 166.09, p < .01, and between 64% and 89% of respondents were classified into the same group by both methods. The Kappa coefficient is .66, suggesting moderate agreement between the two schemes. However, the HLM approach identified a smaller number of interested adolescents than did the HC approach, probably because the criteria for being considered interested are harder to meet, given the sample's overall rating tendency tended to tilt toward the lower end, and not the higher end, of the 4-point scale.

Examination of the remaining pairwise comparisons of the classification schemes indicated that the Relative, Absolute, and HLM schemes yielded similar results in terms of classifying respondents into the three main interest groups. The Chi-square and Kappa statistics for the Relative versus Absolute, the Relative versus HLM, and the Absolute versus HLM comparisons are 257.70, 171.19, and 191.06, respectively; all are statistically significant at the .00 level.

For the rest of analyses in this study, the Relative scheme was selected to identify interested and uninterested adolescents for two main reasons. First, this approach is more aligned with the theories of interest in that it takes into account the possible differences of interestingness associated with different activity contexts. Categorizations based on the Relative scheme, but not those based on the Absolute and HC schemes, allow more accurate identification of the personal characteristic of chronic interest by controlling for the possible effects of situational interest. The finding that there were significant differences in terms of adolescents' average interest levels for different activities provided a good rationale for controlling for the frequency with which individuals engage in different types of activities while identifying those whose overall interest level was consistently higher than that of their peers. Second, the Relative classification scheme, but not the HLM scheme—which potentially allows researchers to control for situational interest—allows the researcher to test for the stability of chronic interest by considering individuals' placement in one of the three interest categories across time.

Possible Differences Between Interested and Uninterested Adolescents

Demographic characteristics. Chi-square analyses indicated that the relative proportion of interested and uninterested adolescents did not differ by gender, ethnicity, or socioeconomic status (see Table 10).

Psychological and social characteristics. Pearson correlation coefficients among chronic interest and the three psychological and social measures of self-determination, concentration, and social relatedness are presented in Table 11.

To further examine the effects of chronic interest on these variables, three 2 (chronic interest) x 2 (gender) x 4 (ethnicity) ANOVAs were conducted. Gender and ethnicity were

Table 10

Demographic Characteristics of Interested and Uninterested Adolescents

Characteristic	Uninterested (n = 26)		Interested (n = 21)		χ^2	df	p
	n	%	n	%			
Gender					2.39	1	.12
Female	9	34.6	12	57.1			
Male	17	65.4	9	42.9			
Ethnicity					4.07	3	.25
African American	7	26.9	8	38.1			
Caucasian	9	34.6	7	33.3			
Latino	6	23.1	1	4.8			
Other	3	11.5	5	23.8			
Mother's education					1.19	3	.76
Some high school or less	5	19.2	3	14.3			
High school equivalency or graduate	6	23.1	8	38.1			
Some college or vocational school	5	19.2	3	14.3			
College graduate or advanced degree	6	23.1	6	28.6			
Household income					1.48	3	.69
Less than $20,000	6	23.1	6	28.6			
$20,000-$39,999	6	23.1	6	28.6			
$40,000-$59,999	6	23.1	3	14.3			
$60,000 or more	3	11.5	5	23.9			

Note. Percentages do not add up to 100 because of missing data.

Table 11

Correlations among Chronic Interest, Self-Determination, Concentration, and Social-Relatedness (N = 191)

Measure	1	2	3	4
1.Chronic interest	--	.42**	.70**	.09
2. Self-determination		--	.21**	.01
3. Concentration			--	.03
4. Social relatedness				--

** $p < .01$.

entered to control for their possible contributions to these differences. The results indicate significant main effects for chronic interest on average levels of self-determination, $F(1, 32) = 19.52$, $p < .01$, partial $\eta^2 = .38$, and concentration, $F(1, 32) = 43.61$, $p < .01$, partial $\eta^2 = .58$, but not on social-relatedness $F(1, 32) = .96$, $p = .33$, partial $\eta^2 = .03$ (see Table 12). Interested adolescents tended to report a higher degree of self-determination and concentration than their uninterested counterparts. The means and standard deviations of these variables for interested and uninterested adolescents are summarized in Table 13.

For the analysis of self-determination, there was a significant interaction between chronic interest and gender, $F(1, 32) = 5.42$, $p < .05$, partial $\eta^2 = .15$, as well as the interaction between chronic interest and ethnicity $F(3, 32) = 4.30$, $p < .05$, partial $\eta^2 = .29$. For the dependent variable of concentration, the interaction between gender and chronic interest was significant, $F(1, 32) = 4.18$, $p < .05$, partial $\eta^2 = .12$. These findings, however, may lack reliability due to the

Table 12

Main and Interaction Effects of Chronic Interest, Gender, and Ethnicity on Self-Determination, Concentration, and Social Relatedness

		Self-determination			Concentration			Social relatedness		
Variable	*df*	*MS*	*F*	η^2	*MS*	*F*	η^2	*MS*	*F*	η^2
Main effect of interest (I)	1	5.91	19.52**	.38	9.20	43.61**	.58	.02	.96	.03
Main effect of gender (G)	1	.84	2.76	.08	.70	3.33	.09	.02	.75	.02
Main effect of ethnicity (E)	3	.18	.59	.05	.27	1.30	.11	.04	1.92	.15
I x G	1	1.64	5.42*	.15	.88	4.18*	.12	.08	3.62	.10
I x E	3	1.30	4.30*	.29	.11	.51	.05	.03	1.31	.11
G x E	3	1.39	4.58**	.30	.22	1.02	.09	.04	1.62	.13
I x G x E	1	.02	.06	.00	.47	2.25	.07	.04	1.83	.05
Error	32	.30			.21			.02		

Note. η^2 = effect size.

*$p < .05$. **$p < .01$.

Table 13

Means and Standard Deviations for Self-Determination, Concentration, and Social Relatedness by Chronic Interest

	Self-determination		Concentration		Social relatedness	
	M	*SD*	*M*	*SD*	*M*	*SD*
Interested (n = 21)	3.56	.51	2.94	.65	.63	.17
Uninterested (n = 25)	2.88	.70	1.56	.40	.59	.15

small effect sizes and numbers of participants in each condition.

Time use. Each participant's time use profile was created by calculating the percentage of time he or she reported engaging in each of the 14 different activities. The results for the interested and uninterested adolescents are summarized in Table 14. Because of the small sample and non-normal distributions on the 14 dependent variables, an arcsine transformation was performed prior to data analyses.

From the activity categories with the highest mean ratings, three—sports, games, and arts or academic enrichment—were selected[5] for a test of whether interested and uninterested adolescents differed significantly in the amount of time they spent in these types of activities. Three ANOVAs were conducted, with gender and ethnicity entered as factors in addition to interest group. As Table 15 shows, none of the main effects from interest group was statistically significant, suggesting that interested adolescents do not necessarily spend more time than their

[5] Community engagement, although also ranked high in terms of adolescents' average interest, was not selected for analysis due to the relatively low numbers of total ESM signals associated with this activity category in the data set.

Table 14

Percentage of Time Spent in Each Activity by Chronic Interest

	Uninterested (n = 26)		Interested (n = 21)	
Activity category	Range (%)	M (%)	Range (%)	M (%)
1. Homework	0-46	6.7	0-11	3.9
2. Chores/work	0-23	6.4	0-25	7.2
3. Academic/arts enrichment	0-19	8.2	0-17	6.6
4. Community engagement	0-22	5.4	0-14	4.1
5. Sports/physical activities	0-71	20.6	0-39	19.2
6. Leisure reading/writing	0-7	1.3	0-9	1.4
7. Socializing with peers	0-46	7.5	0-29	7.2
8. Socializing with non-peers	0-51	13.2	0-30	11.6
9. Watching TV	0-28	8.4	0-24	9.7
10. Games	0-17	5.6	0-14	6.2
11. Snacks/meals	0-19	5.6	0-32	9.1
12. Maintenance	0-16	2.8	0-6	1.7
13. Shopping	0-15	2.2	0-7	2.2
14. Other	0-20	6.3	0-20	10.0

Table 15

Main and Interaction Effects of Chronic Interest, Gender, and Ethnicity on Time Use

		Sports			Games			Arts/academic enrichment		
Variable	*df*	*MS*	*F*	η^2	*MS*	*F*	η^2	*MS*	*F*	η^2
Main effect of interest (I)	1	34.54	.10	.00	267.18	.70	.02	161.73	.61	.02
Main effect of gender (G)	1	1628.33	4.57*	.13	50.51	.13	.00	35.11	.13	.00
Main effect of ethnicity (E)	3	861.97	2.42	.19	62.65	.17	.02	217.40	.83	.07
I x G	1	30.73	.09	.00	429.53	1.13	.03	10.48	.04	.00
I x E	3	344.57	.97	.08	296.43	.78	.07	268.34	1.02	.09
G x E	3	189.55	.53	.05	350.87	.92	.08	211.46	.80	.07
I x G x E	1	1354.44	3.80	.11	1666.71	4.39*	.12	213.11	.81	.03
Error	32	356.41			380.07			263.48		

Note. η^2 = effect size.

*$p < .05$.

uninterested counterparts in interesting activities. Therefore, it can be concluded that adolescents' chronic interest may not result from frequent participation in activities that are conventionally viewed as fun or interesting. There was, however, a significant gender main effect for time spent on sports, $F(1, 32) = 4.57$, $p < .05$, partial $\eta^2 = .13$, indicating that boys spent more time (8.9% of the whole testing period) in sports than did girls (5.6%).

Discussion

The purpose of this study was to examine the characteristics of chronic interest, defined as a tendency to manifest a widespread interest toward everyday life, among adolescents. Generally speaking, two main research questions were asked: (1) Can chronic interest be viewed as a stable personal characteristic, with one's participation in activities being taken into account? and (2) How do interested and uninterested adolescents differ in terms of demographic background, and psychological and behavioral characteristics? Five major findings emerged in my exploration of these questions.

First, both the actual data and estimated scores generated by the HLM procedure indicated that adolescents' average levels of interest differed appreciably among various categories of activities. Activities that are normally considered "fun" or "play-like," such as sports and games, received the highest interest scores. Structured activities serving the purpose of enriching adolescents' development of talents or involvement with the community were also rated as highly interesting. On the other hand, activities that are typically viewed as "mundane" or "work-like," such as homework, chores, and maintenance, were considered least interesting.

The activities mentioned most frequently by respondents when they were signaled were not necessarily those that inspired high levels of interest. The activity category that was reported most frequently was watching TV, noted at 17% of respondents' signals. Respondents also spent a large proportion of time (13%) socializing (with both peers and non-peers), as well as doing homework, chores, or paid work. Interest scores for these activities varied, but most were in the low to moderate range. The sample reported spending less than 10% of their time in the two categories with the highest interest scores: arts/academic enrichment and community engagement.

These time-budget data, along with the fact that our sample varied with regard to enrollment in an after-school program, underscore the importance of considering the types of activities in which respondents are involved when attempting to identify adolescents who display chronic interest or uninterest in activities. Without consideration of teenagers' activity profiles, researchers are likely to run the risk of confounding possible contextual effects (i.e., interestingness) with the person-level variable of chronic interest.

A second major finding in this study was that there was significant but modest stability in the level of interest that respondents displayed in after-school and weekend activities over two time points in the same year. Whereas assignment to interest categories at the fall and spring measurement points was significantly related, an appreciable number of respondents were not consistently classified into the same category. For example, using the "relative score" scheme for creating interest categories, only 58% of respondents who displayed high interest in fall also manifested this level of interest in spring. Likewise, only 66% of those labeled as low in interest in fall maintained this label in spring. The significant level of consistency lends credibility to the argument that chronic interest can be considered a personal characteristic, but it also underscores the importance of defining interest on the basis of data from multiple time points.

A third major finding was that different operationalizations of chronic interest led to similar results. Whether interest categories were defined on a basis similar to the Hunter and Csikszentmihalyi (2003) system or based on absolute scores that respondents gave to questions defining interest levels, or based on scores adjusted for the average interest inherent in activity categories, roughly equivalent percentages of respondents were identified as manifesting chronic interest or uninterest.

The original operationalization of interested adolescents, proposed by Hunter and Csikszentmihalyi (2003), seemed likely to overestimate the number of respondents manifesting chronic interest and underestimate the number in the uninterested category. Utilizing a slight modification that selected only those adolescents who fell into the same high- or low-interest categories across two time points, the numbers of interested and uninterested adolescents still were higher than those generated by the Relative scheme.

The number of uninterested adolescents increased, and that of the interested decreased, when the categorization was based upon the Absolute scheme. This finding indicates that, on a 4-point interest scale, the responses of our sample tended to fall toward the lower end. There are several plausible explanations for this phenomenon. First, the participants might have spent a majority of time engaging in activities associated with low degrees of inherent interestingness. Second, just as adolescents are usually portrayed, our respondents might have maintained only low-to-moderate, as opposed to moderate-to-high, levels of interest in their everyday life. Third, this response pattern might simply have reflected teenagers' reluctance to use high absolute scores to rate their interest levels. Discussion of these possibilities is beyond the scope of this paper, and further investigation is needed before solid conclusions can be drawn.

The fourth major finding in this study was that interested adolescents significantly outscored their uninterested counterparts on self-determination and concentration. This echoes Hunter & Csikszentmihalyi's (2003) finding that interested adolescents had a higher degree of internal locus of control, supporting the notion that chronic interest may be viewed as an index of psychological health. Some may argue that the close association between chronic interest and concentration or self-determination is due to the conceptual overlap of these constructs. Bridges

(2003) noted that "autonomy, control and motivation are highly correlated constructs" (p. 167), and interest and concentration are often considered simultaneously when defining motivation-related constructs such as intrinsic enjoyment (Hamilton, Haier, & Buchsbaum, 1984) and engagement (Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003).

Finally, chronic interest was not associated with a number of background and outcome variables in this study. Consistent with Hunter and Csiskentmihalyi's (2003) findings, there were no significant gender differences between interested and uninterested adolescents. Results regarding ethnicity and SES effects were inconsistent with those reported by Hunter and Csikszentmihalyi (2003). According to these researchers, White adolescents are more likely than African American adolescents to fall into the uninterested category, and poor adolescents are more likely than their middle-class counterparts to fall into the interested category. In the current study, ethnicity and socioeconomic differences between the interested and uninterested groups were not evident. This discrepancy in findings should be interpreted with caution due to the different schemes adopted in the present study and by Hunter and Csikszentmihalyi (2003) for identifying interested and uninterested adolescents. Furthermore, the small sample sizes of both the interested and uninterested groups in the current study may have made it more difficult to detect significant differences.

There also were nonsignificant differences between the interested and uninterested adolescents in terms of social relatedness and time use. The finding for social relatedness, characterized by a tendency to engage in activities with other people, can be interpreted in two ways. First, the may be no relationship between chronic interest and a preference to spend time with people. Although adolescents are typically viewed as "social" beings whose natural

inclination is to prefer having company over solitude, and interested adolescents may arguably be said to possess a high degree of social interest, our data indicate that being chronically interested does not necessarily make one more likely to seek out opportunities to be with others, and being an uninterested individual does not necessarily indicate a lack of interest in interacting with others.

The results regarding the similar time use patterns between interested and uninterested adolescents are intriguing. On the one hand, the finding that interested adolescents did not spend more time than their uninterested counterparts engaging in inherently "fun" activities, (e.g., playing games or watching TV) validates the main concept of this study—chronic interest. Apparently, these youth were adept at finding something interesting about whatever they were doing. On the other hand, this finding is somewhat unexpected based on our previous knowledge about interested adolescents. Hunter and Csikszentmihalyi (2003) suggested that interested adolescents have a greater potential for success because chronic interest facilitates the development of greater internal resources, or self-management skills, which motivate continuous learning and an effective investment of one's time or energy. In an earlier study, Hunter (2002) found evidence that interested adolescents spend more time in active activities such as hobbies or arts/music enrichment classes than do their uninterested peers. Our data show no such difference, implying that interested adolescents are not necessarily more efficient than bored ones in how they use their out-of-school time. Interested youth are just as likely as uninterested youth to spend a large proportion of their spare time watching TV or playing games.

How, then, is it possible that interested adolescents, those with a tendency to feel autonomous and concentrated—a quality closely related to motivation to learn—are not

manifesting strength in self-regulation through their time use patterns? Two possible explanations may be suggested. First, chronic interest may indicate efficiency in self-regulation at the emotional but not the behavioral level. That is, this construct may refer to a person's inclination to find or appreciate the novelty and excitement of activities, but this positive emotionality does not translate to the capacity to develop a good working or living style. Second, it may be possible that the connection between one's actual behavior and the affective or cognitive aspect of interest occurs only under certain circumstances. That is, an individual's own cognitive maturity or socialization from the schools or families may play a role. In this study, the participants were age 13 or 14, and these individual differences may not have been established or readily observable. It may be more likely that we would detect differences in self-management skills between interested and uninterested people in an older sample. Furthermore, a wise use of time requires skills such as goal setting, decision making, or self-disciplining, each of which may be closely related to one's age and growing experiences. For example, challenges and support provided in the family context have been found to have a close association with the degree to which adolescents develop *undivided interest*, a phenomenon in which individuals acquire a high sense of importance for their actions, in addition to the more affect-based, spontaneous interest (Rathunde, 1993, 2001). Therefore, in order to examine how chronically interested and uninterested adolescents vary with regards to their working habits, our variable of study should be expanded so that the cognitive dimension of interest is also considered.

Several limitations of this study should be pointed out. First, as has been addressed earlier, our small sample size may have made it less likely that we would find significant differences between interested and uninterested adolescents. Second, our sample was fairly homogeneous.

All participants were in eighth grade, and were selected from schools with after-school programs targeted at economically disadvantaged youth. This sample may not be representative enough for conclusions to be generalized to other adolescent populations. Third, our experience-sampling data were collected only during a certain range of after-school and weekend hours, preventing us from drawing an accurate or complete portrait of the lives of interested and uninterested adolescents.

Despite these limitations, this study sheds some light on adolescent chronic interest. In sum, adolescents seem to manifest different degrees of overall interest toward their everyday encounters. Our method of identifying interested adolescents allows us to distinguish between the issues of *opportunity* and *capacity* when assessing interest. The tendency to be chronically interested or uninterested, according to our coding scheme, is less a problem of whether an individual has the opportunity to experience interest, but more about whether he or she has the capability of being interested across a variety of contexts. Results indicated that this tendency to be either interested or uninterested is somewhat stable, and a longitudinal design is strongly recommended for studying chronic interest. Chronic interest is related to self-determination and concentration, and may be viewed as an element of psychological health. This characteristic, however, does not predict actual behavioral differences, particularly with regard to time use patterns.

The findings of this study have both theoretical and practical implications. Theoretically, this study incorporated research on interest into the study of adolescent development. By controlling for possible situational effects of interest, we were able to demonstrate that chronic interest may be used to characterize adolescents, and that individual differences were stable.

However, changes in individuals' assignment to one of the interest groups were also observable among at least one third of the sample. Many issues remain to be investigated. For example, future research may study the relationship between chronic interest and other personality dimensions, or test the inheritability of interest, to further ascertain whether chronic interest is rooted in personality. Researchers may also investigate the different aspects (e.g., affective, cognitive, and behavioral) of chronic interest to further understand how it may be associated with adjustment or well-being.

In a practical sense, this study has demonstrated the need for society to pay attention to adolescent chronic interest. As social scientists have been advocating the importance of raising active and engaged adolescents, chronic interest appears to be a correlate of competencies such as initiative (Larson, 2000) or self-management skills such as information seeking and effective usage of one's energy. Our finding that chronic interest did not predict behavioral differences implies that, perhaps, chronic interest needs proper socialization to bring about the most optimal outcomes. As researchers have continuously emphasized the important role that schools and families play in the development of adolescent motivation, personality, and working habits (Eccles, 1992; Halverson & Wampler, 1997), chronically interested adolescents may benefit from optimal levels of guidance and acquire better self-management skills such as goal-setting and persistence. By providing cognitively stimulating resources such as encyclopedias or cultural events (Hunter, 1999), or by engaging youth in challenging and supportive styles of communication (Rathunde, 1997), schools and families may help adolescents to advance not only their overall affect-oriented, *spontaneous interest*, but also the goal-oriented *sense of importance*. The combination of these leads to the development of *undivided interest* (Rathunde,

1998)—a tendency that has been linked to the development of talent and vital engagement.

As Hamilton (1983) clearly suggested more than 20 years ago, "To develop attentional habits that provide enjoyment and avoid boredom is a central task of adolescence" (p. 365). Chronic interest appears to be an asset, which, when paired with proper socialization, may predispose adolescents to a more enjoyable and fulfilled life. With recent discoveries that adolescence is a developmental period during which "reprogramming" of neural connections takes place (Casey, Giedd, & Thomas, 2000; Kersting, 2004), great hope lies ahead with regard to socializing interested and adaptive adolescents.

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Appendices

Appendix A: The ESM Logbook

Time signaled: _____ Time filled out: _____

1. Where were you?

2a. Were you at an **after-school program**? Yes No

2b. Name of the program:

3. What was the **main** thing you were doing?

4. What else were you doing?

5. Who was **doing** this activity with you? Circle **all** that apply.

No one	Other adults I know
Mom/stepmom	1 friend
Dad/stepdad	2 or more friends
Brother/sister Age _____	Other kids
Adult relative	Boyfriend/girlfriend
Child relative Age _____	Anyone else? Who?
Teacher(s)	_____
Program staff	_____

6. Who else was around but doing something else?

No one	Other adults I know
Mom/stepmom	1 friend
Dad/stepdad	2 or more friends
Brother/sister Age _____	Other kids
Adult relative	Boyfriend/girlfriend
Child relative Age _____	Adults I don't know
Teacher(s)	Anyone else? Who?
Program staff	_____

7. Circle an answer for **each** question about what you were doing.

	Not at all	Some what	Pretty much	Very much
a. How much choice did you have about this activity?	1	2	3	4
b. How important was this activity to you?	1	2	3	4
c. Was it interesting?	1	2	3	4
d. Was it challenging?	1	2	3	4
e. Did you enjoy what you were doing?	1	2	3	4
f. How hard were you concentrating?	1	2	3	4
g. Were you using your skills?	1	2	3	4
h. Did you wish you were doing something else?	1	2	3	4

8. How were you feeling when you were signaled? Circle an answer for **each** feeling.

	Not at little	A what	Some much	Very all
Lonely	1	2	3	4
Happy	1	2	3	4
Angry	1	2	3	4
Stressed	1	2	3	4
Excited	1	2	3	4
Bored	1	2	3	4
Scared	1	2	3	4
Sad	1	2	3	4
Relaxed	1	2	3	4
Proud	1	2	3	4
Worried	1	2	3	4

Appendix B: List of Activity Categories and Sample Composites

1. Homework
2. Chores/work: chores and paid job
3. Academic or arts enrichment: academic enrichment (e.g., hands-on science projects or Spanish class), art enrichment, educational computer use (e.g., researching a hobby or interest online), arts/crafts (e.g., knitting or painting by number), or dancing/singing/music activities
4. Community engagement: organized interests (e.g., scouts, 4-H, or gardening club), community service (e.g., volunteer work), or religious activities (e.g., youth fellowship group)
5. Sports/physical activity: organized sports (e.g., supervised/coached football, basketball), informal or solitary sports (e.g., pick-up basketball), and non-sport physical activity (e.g., bike riding, taking a walk)
6. Leisure reading/writing: reading (e.g., magazines) or writing (e.g., letters) for fun
7. Socializing with peers: talking, partying, or horse-playing with friends, child relatives, boyfriend/girlfriend, or other kids
8. Socializing with non-peers: talking or partying with individuals other than peers
9. Watching TV: watching TV, rented video, or movie
10. Games: playing sit-down games, or computer/video games
11. Snacks/meals: eating or drinking
12. Maintenance: transit, personal maintenance, passive participation or waiting
13. Shopping: recreational shopping or errand shopping
14. Other: all activities that do not fall into the above 13 categories