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TEMPERAMENT, GENDER ROLE CONSONANCE, AND PROBLEM BEHAVIORS  
IN ADOLESCENCE

A Thesis Presented

by

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IN ADOLESCENCE

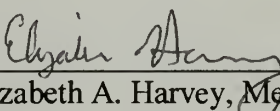
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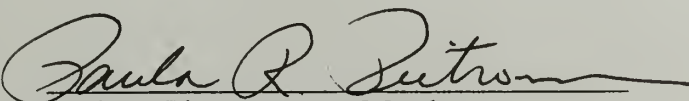
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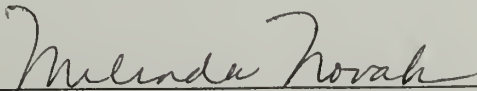
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ABSTRACT

TEMPERAMENT, GENDER ROLE CONSONANCE, AND PROBLEM BEHAVIORS  
IN ADOLESCENCE

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The present study is an attempt to expand on current understandings of the relation between temperament and adolescent problem behaviors, using gender role consonance as a measure of environmental goodness of fit. While several studies have determined that certain early childhood temperamental characteristics are predictive of a range of internalizing and externalizing behaviors, very little has been done to assess the current temperamental make-up of these internalizing or externalizing adolescents in relation to their sex. Thus, we directly explored the relation between current adolescent temperament ratings, sex, and consequent internalizing and externalizing patterns of behavior. Our sample consisted of 33 (39.8%) males and 50 (60.2%) females whose ages ranged from 15 to 20 years old with a mean age of 16.9 years old ( $SD=1.25$ ). The adolescents were administered the Revised Dimensions of Temperament Questionnaire (DOTS-R) and the Youth Self-Report (YSR). Simple regression analyses showed that internalizing difficulties are associated with an overall difficult temperament, and specifically with a tendency to withdraw from new people or experiences, with increased

rigidity around routines and schedules, with decreased smiling and cheeriness, and with decreased consistency in the amount of food eaten at each meal. Externalizing difficulties were associated only with increased rigidity around routines and schedules. Our hypothesis that sex may act as a moderator of the relation between temperament and psychosocial difficulties bore out two trends, but these findings were not indicative of a goodness-of-fit explanation of psychosocial difficulties.

## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	iii
ABSTRACT.....	iv
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
CHAPTER	
1. INTRODUCTION.....	1
Temperament.....	5
Temperament and psychosocial difficulties.....	8
Temperamental characteristics as predictive of future psychosocial difficulties....	11
Temperament in adolescents and concurrent psychosocial difficulties.....	12
Sex differences in temperament.....	15
2. THE PRESENT STUDY.....	19
Hypotheses.....	19
3. METHOD.....	22
Participants.....	22
Measures.....	22
4. RESULTS.....	27
Hypothesis 1: Difficult temperament and psychosocial functioning.....	27
Hypothesis 2: General activity level and psychosocial functioning.....	27
Hypothesis 3: Approach/Withdrawal and psychosocial functioning.....	28
Hypothesis 4: Flexibility/rigidity, mood, and distractibility and psychosocial functioning.....	28
Hypothesis 5: Exploratory analyses of sex interactions.....	28
Exploratory analyses of remaining factors.....	29
5. DISCUSSION.....	30
Gender differences in temperamental factors.....	30
Hypothesis 1: Difficult temperament and psychosocial functioning.....	31
Hypothesis 2: General activity level and psychosocial functioning.....	33
Hypothesis 3: Approach/withdrawal and psychosocial functioning.....	34
Hypothesis 4: Flexibility/rigidity, mood, and distractibility and psychosocial functioning.....	34
Hypothesis 5: Exploratory analyses of sex interactions.....	35
Exploratory analyses of remaining factors.....	37
Summary of temperamental traits and internalizing and externalizing.....	37
General questions raised about the measurement of temperament.....	38
Limitations of the current study.....	40
Areas of future research.....	41

APPENDICES.....	43
A. MEASURES .....	43
B. TABLES.....	51
C. FIGURES.....	61
REFERENCES.....	64

## LIST OF TABLES

Table	Page
1. Subscale Items of the Revised Dimensions of Temperament Scale.....	52
2. T-Tests for Sex Differences in Adolescent Temperament, Internalizing, and Externalizing Scores.....	54
3. Simple Regressions Predicting Internalizing Scores From Temperamental Attribute Scores.....	55
4. Simple Regressions Predicting Externalizing Scores From Temperamental Attribute Scores.....	56
5. Multiple Regression Analyses Predicting Internalizing Scores From Adolescent Sleep Activity Level, Sex, and Sex X Sleep Activity Level Interaction.....	57
6. Multiple Regression Analyses Predicting Internalizing Scores From Adolescent Persistence, Sex, and Sex X Persistence Interaction.....	58
7. Paired Samples T-Tests of Parent vs. Adolescent Ratings of Adolescent Internalizing and Externalizing Scores.....	59
8. Simple Regressions Predicting Parent Rated Internalizing and Externalizing Scores From Difficult Temperament Scores.....	60

## LIST OF FIGURES

Figure	Page
1. Regression Lines of Sex X Sleep Activity Level Interaction.....	60
2. Regression Lines of Sex X Persistence Interaction.....	61

## CHAPTER 1

### INTRODUCTION

The construct of temperament is one that has evolved slowly, beginning with the study of individual differences in the early part of this century. Stella Chess and Alexander Thomas, through their longitudinal research on individual differences in children, are often considered to be the leaders in the study of the concept of temperament. Their well-known New York Longitudinal Study (NYLS), begun in 1956, was the beginning of systematic investigation into temperament (Chess & Thomas, 1996). They and many subsequent researchers have come to define temperament as the stylistic component of behavior and importantly, as a rubric for a group of related traits (Chess & Thomas, 1996; Kagan, 1994; Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde, & McCall, 1987).

Temperament, according to Thomas and Chess (1996), is best understood as the "how" of certain behavioral characteristics. The construct of temperament does not address the "what" or "why" of behavior. For example, when speaking of a person's temperament, we are not observing ability, which might be considered to be the "what" of the behavior, nor are we assessing motivation, which is often considered the "why" of behavior. Thus, when observing two adolescents, we may see that they have similar IQ's and academic and career goals. They may both do well in school, may both be stronger in mathematics than in English, and may both wish to become research scientists. Yet the way that these two students interact with the world around them may be quite different. One of the students may be very active, electing to get up and pace while she

completes her homework. She may study at different times each day, and perhaps needs several things to be happening while she works. She may jump right into group projects and be eager to meet new people. Conversely, the other student may be more sedate, needing peace and quiet to complete his work, and he may choose to do each task, one at a time. Unlike the first student, he may enjoy keeping a rigid schedule, always studying between 8 and 10 at night. He may be slower to warm up to new people, and thus may not enjoy group projects. Some of the differences between these two students may be accounted for by their temperamental characteristics.

Research on temperament in children, adolescents, and adults continues to this day, with topics such as temperamental effects on affective disorders, self-esteem, perceived competence, substance abuse, and social support. Difficult temperament characteristics, such as a withdrawal reaction to new situations, a-rhythmicity in daily habits, or easy distractibility, among others, have been shown to be both concurrent with and predictive of psychosocial difficulties and strengths. (Goodyer, Ashby, Altham, Vize, & Cooper, 1993; Klein, 1992; Shaw, Ryst & Steiner, 1996; Tarter, Laird, Kabene, Bukstein, & Kaminer, 1990; Tubman & Windle, 1995; Windle, 1991; Windle, 1992b; Windle, Hooker, Lernerz, East, Lerner, & Lerner, 1986).

The present study examined the effects of temperamental difficulty and individual temperament characteristics on adolescent psychological and behavioral syndromes. Adolescence has been posited to be a "critical period" in life, during which difficulties may influence the course of further development and may increase the risk for future psychosocial difficulties (Petersen & Hamburg, 1986). Thus, understanding the temperamental origins of and contributions to specific difficulties will lead to increased

awareness and availability of services to adolescents and young adults at risk for future difficulties.

Adolescent psychological symptoms and problem behaviors are often categorized into two subgroups; internalizing problems and externalizing problems. Leadbeater, Blatt, and Quinlan (1995) describe internalizing symptoms as including depression, anxiety, suicidality and eating disorders, while externalizing symptoms include oppositional disorders, delinquency, and school problems. Researchers have consistently shown girls to exhibit more internalizing symptoms, while boys have been shown to exhibit more externalizing symptoms (Achenbach, 1991; Gjerde, Block, & Block, 1988; Keenan & Shaw, 1997; Nolen-Hoeksema & Girgus, 1994).

Keeping in mind the sex differences in both rates and types of symptoms of adolescents, this study assessed sex differences in the temperamental makeup of the participants and examined the relation of these differences to internalizing and externalizing symptoms. Specifically, sex was examined as a possible moderator of the relation of temperament to internalizing and externalizing. It was expected that an individual whose temperament is consonant with his or her gender role (as exemplified by sex) would be less likely to show psychosocial difficulties than one whose temperament is incongruent with society's expectations.

Some research has been done on the relation between temperament and socialization, but less has been done connecting temperament and socialization to problem behavior in adolescence. Keenan and Shaw (1997) explore the theory that socialization of sex differences may lead parents, teachers, and peers to respond differently to temperamental characteristics in girls and boys. Girls' temperamental

difficulty may be channeled into internalizing, through subtle unintentional pressures from parents, teachers, and peers, whereas boys' temperamental difficulty may be channeled into a more externalizing expression (Keenan & Shaw, 1997). For example, Simpson and Stevenson-Hinde (1985) were able to show that childhood shyness produced different reactions from parents depending on the sex of the child. Shyness in girls elicited positive parenting behaviors, whereas shyness in boys elicited negative parenting behaviors. Additionally, shyness in boys was later associated with increased worries and fears, which possibly implicates the negative parenting behaviors. In a similar vein, parents have been found to ignore daughters' assertions more than sons', and fathers have been found to be more likely to respond positively to their daughters' behavior if the daughters' behavior is positive (Kerig, Cowan, & Cowan, 1993). Girls are taught to be compliant and to be more self-sacrificing (i.e. relinquishing toys to peers), whereas boys are rewarded for being direct and for valuing ownership (Ross, Tesla, Kenyon, & Lollis, 1990). Keenan and Shaw (1997, p. 102) summarize the literature nicely by stating:

In early childhood, temperamental characteristics are responded to differently, discipline strategies are modified, and interventions in peer conflicts vary on the basis of the sex of the child. Although data is limited, several investigations have demonstrated that girls, relative to boys, are socialized by parents to yield to their peers, think of personal consequences of their actions, and err on the side of overcontrolled rather than undercontrolled behavior.

Overall, findings suggest that girls and boys receive different responses from parents and teachers while eliciting the same behaviors, which may lead to differences in the way that they express psychopathology (i.e. internalizing or externalizing). These

findings lead us directly to the question of whether societal pressures toward gender role compliance will negatively affect children whose temperamental characteristics are not consonant with their sex.

### Temperament

The current study will be using Chess and Thomas' (1996) theory and construct of temperament. As a result, I will go into most detail describing their theory. Thomas and Chess break temperamental profiles into nine categories, each of which are based on what they considered to be "meaningful characteristics of a child's behavior" (Chess & Thomas, 1996, p.33). Chess and Thomas initially arrived at the nine characteristics through the use of parental interviews and in-home observations with a sample pool of 22 infants. Over 80 interviews took place throughout the first 18 months of each child's life. The total sample eventually rose to 147 children from 47 families. Certain patterns began to emerge, and were eventually categorized into nine separate indices of behavioral individuality among the infants. The categories are: Activity level, rhythmicity (regularity), approach/withdrawal, adaptability, threshold of responsiveness, intensity of reaction, quality of mood, distractibility and, finally, attention span and persistence.

Additionally, Chess and Thomas were able to separate their sample, using the nine categories, into three temperamental constellations. The first constellation, which they chose to call the "easy child," represents the child who is characterized by regularity, positive approach responses to new stimuli, high adaptability to change, and a mild to moderately intense mood that is mostly positive. Children such as these are appropriately labeled "easy" because they are generally a pleasure to parents and teachers. Most of the

time these children are quick to smile, will meet new people easily and without much fuss, and are able to tolerate frustration with little anxiety. In the NYLS, the easy child represented 40% of the sample (Chess and Thomas, 1996).

The second constellation falls at the opposite end of the spectrum. They chose to label this child "difficult." A child with difficult temperament tends to adapt poorly to change, has very intense moods that are most often negative, and needs longer periods of time to adjust to new people and routines, frequently reacting with temper tantrums and long bouts of crying. Although the labeling of certain children as "difficult" is laden with value judgment and overlooks positive qualities that the child may have as a result of his or her temperament, Chess and Thomas have continued to use this label as it has been established in the temperament literature. As a result, I will use this label, although recognizing that most characteristics of the difficult child are perfectly normal, and represent one end of a range within the spectrum of child behaviors. The difficult child represented 10% of the NYLS sample (Chess and Thomas, 1996).

The third constellation, which is less relevant to this study, represents the "slow to warm up" child. These children are characterized as having mild negative reactions to new people and situations, but with repeated, non-pressured contact, are able to develop a more positive outlook toward the new situation. These children tend to be less extreme in their negativity than difficult children, and show less irregularity in biological functions. Chess and Thomas report that 15% of the sample of children from the NYLS fell into this category.

Understanding that not all children fall into one of the categories (i.e. only 65% of the children fell into one of the categories), and that each of the constellations is made up

of continuous variables is very important. There is a wide range of degree of manifestation of each of the temperamental constellations, with some children being extremely easy, while others are extremely difficult. A range of behavioral expressions can emerge within any of the nine categories making up a temperamental profile. Chess and Thomas emphasize that none of these temperamental constellations represent psychopathology. Even the extremes of these profiles should not be used as criterion for determining psychopathology, but is "rather an indication of the wide range of behavioral styles exhibited by normal children" (Chess & Thomas, 1996, p. 38). Nonetheless, research has been done that points to the fact that early childhood difficult temperament and certain temperamental profiles may be predictive of psychopathology later in life (Caspi, Henry, McGee, Moffitt, & Silva, 1995; Chess & Thomas, 1990; Gjone & Stevenson, 1997; Maziade, Capéraà, Laplante, Boudreault, Thivierge, Côté, & Boutin, 1985; Schwartz, Snidman, & Kagan, 1996).

Adding to the complicated nature of studying temperament, is the fact that temperament has been construed in many different ways, with various foci on a large range of attributes. I have delineated the characteristics of Thomas and Chess' construct of temperament because that is the theory on which much research is based. Yet there are numerous other constructs that have been used throughout the literature. For example, temperament can be separated into sub-categories such as emotionality, inhibition, lack of control, and sluggishness, all of which are not addressed in Thomas and Chess' theory. These different dimensions make reviewing the literature somewhat complex. Direct comparisons between studies that have used both different measurement techniques as well as different definitions of temperament becomes difficult if not

impossible. This literature review will focus primarily on Thomas and Chess' construct, but not to the exclusion of other theories of temperament that are of importance to the association between temperament and psychosocial difficulties in adolescence.

### Temperament and psychosocial difficulties

There are several hypotheses that attempt to explain the relations that exist between affective disorders, behavioral problems, and temperament or personality. Clark, Watson and Mineka (1994) provide a summary of four theories linking mood and anxiety disorders to temperament and personality. The first theory, the predisposition or vulnerability label, supports the idea that preexisting temperamental traits play a "causal role in the development" of affective or behavioral problems. This idea proposes that individuals who are found to have specific temperamental traits in their youth will be at a higher risk of developing a disorder.

The second model of the relationship between temperament and affective or behavioral disorders is similar to the first. Clark et al. (1994) have labeled this the pathoplasty model, describing it by stating that temperamental characteristics "modify the course or expression of a distress disorder without necessarily having a direct etiological role" (p 103). This model also includes the idea that temperamental factors may affect the surrounding environment of the individual, which may act to maintain or exacerbate the disorder.

The third model, called the "complication or scar hypothesis," purports that the difficult temperament (in adulthood), or personality traits are caused by an episode of affective or behavioral difficulty. The experience of having an affective or behavioral

disorder will change an individual's personality to the extent that he or she may show "increased dependency or insecurity" (Clark et al., 1994). According to Clark et al. (1994) these characteristics may become longstanding facets of the personality of the individual (after resolution of the affective or behavioral disorder) or may simply be "unresolved residual symptoms of the disorder" that will resolve over time.

The final model is called the continuity or spectrum hypothesis (Akiskal, 1993; Clark et al., 1994). It supports the idea that personality and temperamental traits and distress disorders fall along the same continuum. Disorders are "extreme manifestations of normal personality traits or, alternatively, certain traits are subclinical manifestations of disorder" (Clark et al., 1994). None of the four models described above need be mutually exclusive of one another. They all, most certainly, concurrently influence the development and maintenance of affective disorders and behavioral problems.

Another way of looking at the relationship between temperament and behavior problems has been labeled the "goodness of fit" theory. Thomas and Chess (1977) suggest that if a young person's temperament fits with his or her environment, the child will develop with relative ease, compared to the child whose temperament is mismatched. Thus, they speculated that "healthy development depends to a major degree on a 'goodness of fit' between temperament and the environment" (p. 29).

Several theorists have attempted to assess the validity of this relationship, with varying results. Lerner (1983) examined adolescent temperament using a self report measure, and contextual demands through parent and teacher report, and was able to show that subjects whose temperaments fit well with the environmental demands were more well adjusted than those who were less well matched. Using similar methodology,

Lerner, Lerner, and Zabski (1985) found that elementary children too, were better adjusted if their self-reported temperament matched the parent and teacher reports of demands. Conversely, Windle et al. (1986) were unable to support the relationship between environmental demands [using similar methodology as Lerner (1983) and Lerner et al. (1985)]. Their research was more supportive of the personological model of temperament and behavior problems, which posits that social context is not important in examining the relationship between psychosocial difficulties and temperament. Instead, the personological model assumes "a direct (that is non-contextually interactive) relation between temperament [and behavior problems]" (Windle et al., 1986, p. 387).

In each of these studies, environmental demands were measured by having parents and teachers complete a version of the Dimensions of Temperament Scale, which had been re-written to ask, for each item, how difficult they would find that particular behavior in a child or student. Thus, levels of environmental expectations could be calculated for each child. In the present study, we will be assessing "goodness of fit" in a different manner. Gender role socialization will be considered to be an environmental press that most children experience throughout their lives thus serving as a contextual demand for all children. We propose that children whose temperamental characteristics are inconsistent with their societally defined gender role, as exemplified by their biological sex, will be more likely to develop behavior difficulties, including both internalizing and externalizing disorders. For example, girls who are timid and passive may have a better "goodness of fit" with societal expectations than girls who are active and rambunctious. The opposite might be said for boys. Shyness and inhibition in boys

are inconsistent with societal gender role expectations and are thus considered to have a poor "goodness of fit" with the environment.

### Temperamental characteristics as predictive of future psychosocial difficulties

Several studies have examined the longitudinal association between temperament and problem behaviors, determining whether certain temperamental characteristics, assessed in infancy and childhood, are predictive of later psychosocial difficulties. For example, Gjone & Stevenson (1997), found that increased emotionality predicted anxious depressed behavior, attention problems, delinquent behavior and aggressive behavior, with the influence on delinquent and aggressive behavior being stronger in boys. Additionally, activity level predicted aggressive behavior, yet not as strongly as emotionality. Schwartz, Snidman, and Kagan (1996) reported that 21 month old, uninhibited children (those who scored high on activity ratings by parents and observers), when reassessed at age thirteen, scored higher on scales of total externalizing, and showed more delinquent and aggressive behaviors, than inhibited children did.

Caspi, Henry, McGee, Moffitt, & Silva (1995) also assessed the predictive strength of early childhood temperamental characteristics for late childhood and adolescent internalizing and externalizing behaviors. They found that the temperamental characteristic labeled "Lack of control" was more strongly associated with externalizing difficulties than internalizing; "Approach" was associated with fewer internalizing problems in boys; and "Sluggishness" was weakly associated with both anxiety and inattention, especially among girls. Maziade et al. (1985) found children labeled as having "difficult temperament" at age 7, had higher rates of clinical disorders at age 12,

than those who were rated as being "easy." Chess and Thomas (1990) reported finding that the two early childhood temperamental categories of low activity level and low adaptability were related to long-term use of tobacco, alcohol, and marijuana in late adolescence and young adulthood.

### Temperament in adolescents and concurrent psychosocial difficulties

Temperamental constructs, although created for use with infants and young children, have been expanded to include late childhood, adolescence, and even adulthood (Lerner, Palermo, Spiro, & Nesselroade, 1982; Windle & Lerner, 1986). Lerner et al. (1982) identified age continuous features of temperament, across the age span from early childhood to late adolescence and adulthood, through the construction of a self-report measure called the Dimensions of Temperament Survey (DOTS) and the Dimensions of Temperament Survey-Revised (DOTS-R) (Windle & Lerner, 1986). They believed that characteristic behavioral styles could be determined for adolescents and adults, and that they would be similar to those that were deemed important in childhood. The ability to measure adult and adolescent temperament allows researchers to examine the relationship between psychosocial difficulties and concurrent temperament.

Ten behavioral patterns emerged in constructing the DOTS-R, including: Activity level-General, Activity Level-Sleep, Approach/Withdrawal, Flexibility/Rigidity, Mood, Rhythmicity-Sleep, Rhythmicity-Eating, Rhythmicity-Daily Habits, Distractibility, and Persistence. (Descriptions of the subscales can be found in the measures section of this thesis.) Lerner et al. (1982) and Windle & Lerner (1986) deemed these characteristics as equally important descriptors of adult behavior as of child behavior. As a result of

Lerner's work, many psychologists have gone on to study temperament not just in childhood, but also in adolescence and adulthood. This has led to findings that show that certain adolescent and adult temperamental characteristics are predictive of concurrent psychosocial strengths and weakness (Windle et al., 1986; Tarter et al., 1990; Windle, 1991; Windle, 1992b; Klein, 1992; Tubman & Windle, 1995; Shaw & Steiner, 1997; Shaw, Ryst & Steiner, 1996; Goodyer, Ashby, Altham, Vize, & Cooper, 1993).

Tarter et al. (1990) looked at drug abuse severity and its relation to temperamental characteristics in adolescents, comparing normal controls to adolescents diagnosed with psychoactive substance abuse or dependence. They found that substance abusers are less regulated with respect to rhythmic patterns and goal directed motivation. Shaw et al. (1996) examined the relationship between temperament and adolescent defense mechanisms. They were able to show a significant correlation between low levels of adaptability and the use of an immature defense style. Additionally, higher emotionality scores have been found to be related to higher depression and anxious-depression scores, especially, but not exclusively in girls (Goodyer et al., 1993). Shaw & Steiner (1997) found that the temperamental characteristics of general rhythmicity and attentional focus were able to differentiate between adolescents with anorexia and those with bulimia. Klein (1992) showed that increased adaptability, attention, and reactivity were associated with high self-esteem in college students.

Windle et al. (1986) looked at perceived competence, depressive symptoms and temperament in a sample of early and late adolescents. The samples included 141 sixth graders and 240 college undergraduates who were asked to complete the Revised Dimensions of Temperament Scale (DOTS-R), the Perceived Competence Scale (PCS)

(Harter, 1982), and the Center for Epidemiological Studies – Depression scale (CES-D) (Radloff, 1977). Windle et al. showed that the temperamental characteristics, as measured using the DOTS-R (with higher scores being indicative of an easier profile on all scales except the activity level scales), of approach-withdrawal, flexibility-rigidity, mood, distractibility, and persistence, correlated positively with several forms of perceived competence including cognitive competence, physical competence, and general self-worth. Windle et al. (1986) found negative correlations between depressive symptoms and the temperamental characteristics of approach-withdrawal, flexibility-rigidity, mood, distractibility, and persistence. Thus, having easier levels of the above temperamental characteristics was found to be associated with higher levels of perceived competence, while more difficult temperamental characteristics were found to be associated with depressive symptoms.

Similarly, Windle (1991) looked at the relationship between temperament and family support, depressive symptoms, delinquent behavior, and substance use, in a sample of 297 adolescents (*M* age = 15.7 years). Unlike his previous study, he did not focus on the individual temperamental characteristics, but choose to focus on the more general construct of temperamental difficulty. Temperamental difficulty was modeled after the Chess and Thomas "difficult child" constellation described above. Windle found that the number of factors on which an adolescent was rated as "difficult" was significantly positively associated with higher substance use, lower perceived family support, higher levels of depressive symptoms, and more delinquent activity.

Windle (1992b), using a larger sample of 975 adolescents (*M* age = 15.5 years), confirmed the association between increased difficult temperament scores (using a newly

devised "difficult temperament index") and lower levels of perceived social support (both family and social), using the PCS, and higher levels of depressive symptoms, using the CES-D. He additionally attempted to find whether social support would act as either a mediating or moderating variable in the relationship between difficult temperament and depression. His data supported a mediating relationship, but the association was not as strong as the direct predictive relationship between temperamental difficulty and depressive symptoms. In a separate article, published in 1995, Tubman and Windle again showed a relationship between increased difficult temperament in adolescents and higher levels of depression, larger number of stressful life events, decreased levels of perceived family support, and use of some substances.

#### Sex differences in temperament

According to Windle (1992a), early studies of sex differences in temperament were conducted using only infants and children. In the infant studies (i.e. Buss, 1988; Maccoby & Jacklin, 1974 as cited in Windle, 1992a) boys were found to show higher activity levels and girls were shown to be more approach-oriented and sociable. Because he was interested additionally in adolescents and young adults, Windle found it important to explore sex differences within an older age group.

Windle's (1992a) study looked at sex differences in the DOTS-R using a large sample (N=975) of high-school sophomores and juniors. Earlier findings of higher activity levels in boys were not confirmed in this age group, with either general or sleep activity level. Interestingly, Windle is careful to point out that although boys and girls may be showing similar levels of activity, girls who fall within the higher range maybe

more likely to deal with negative family reactions due to gender-role inappropriate behavior.

Differences between the sex groups were found for seven out of the ten temperament factors. Girls were found to be more approach oriented or sociable (which is in agreement with studies of infants and children) and were also found to have higher levels of positive mood quality. It is important to note that the items for mood quality focus on behaviors such as frequency of smiling or acting "cheerful," rather than personal affective experience (see Table 1). As a result, this maybe tapping something quite different than the findings in which girls consistently show higher levels of depression in adolescence than boys do. Boys, on the other hand, were found to have higher levels of rhythmicity, including all three dimensions: sleep, eating and, daily habits. They also showed higher levels of attentional focus, including lowered distractibility and increased persistence. Additionally, there were no sex differences found in levels of flexibility/rigidity,

Surprisingly, despite sex differences in the individual subscales on the DOTS-R, several researchers have found no sex differences in adolescents and young adults using an overall difficult temperament profile (Windle, 1991; Bezirgianian & Cohen, 1992; Tubman & Windle, 1995; Kawaguchi, Welsh, Powers & Rostosky, 1998). This finding makes more sense when looking at the way that researchers have measured "difficult temperament." Difficult temperament is calculated by summing the number of subscales on which a particular individual obtains scores in the difficult range. So, if girls were found to be more difficult on three subscales, and boys were found to be more difficult on three separate subscales, it is likely that the differences in difficulty, when summed

together, will be little or none. Thus, finding that there are no differences in levels of difficult temperament should not lead the reader to the conclusion that there are no sex differences in more specific temperamental characteristics.

Tubman and Windle (1995) looked at sex differences in temperamental difficulty in relation to several psychosocial constructs. They found that higher levels of depression were associated with increased temperamental difficulty and being female, and that higher levels of perceived family support were negatively associated with increased difficult temperament scores and with being female. Nonetheless there were no differences in the global construct of temperamental difficulty between males and females.

Bezirgianian and Cohen (1992), while calculating difficult temperament slightly differently than the above-described method, found similar evidence for sex similarity in adolescent difficult temperament scores. Bezirgianian and Cohen utilized a scale of difficult temperament that was constructed particularly for their longitudinal study in sex differences in temperament and parenting. The scale incorporated concepts from Thomas and Chess' (1977) model, and well as from Buss and Plomin's (1986) construct of temperament. Bezirgianian and Cohen utilized parental and child interviews to obtain difficult temperament scores at several different age groups. Their results show that boys are somewhat more difficult in temperament than girls in late childhood and early adolescence are (ages 9-14 years), but this difference disappears by late adolescence (ages 14-20 years).

Kawaguchi et al. (1998), in their study on temperament and adolescent-parent relationships, using the same data set as the present study, found no sex differences in adolescent difficult temperament scores.

## CHAPTER 2

### THE PRESENT STUDY

The present study was an attempt to expand on current understandings of the relation between temperament and adolescent problem behaviors, using gender as a measure of environmental goodness of fit. While several studies have determined that certain early childhood temperamental characteristics are predictive of a range of internalizing and externalizing behaviors, very little has been done to assess the current temperamental make-up of these internalizing or externalizing adolescents in relation to their sex. I directly explored the relation between current adolescent temperament ratings, sex, and consequent internalizing and externalizing patterns of behavior.

#### Hypotheses

1. In accordance with previous studies that were able to predict behavior problems in adolescence through childhood and adolescent temperament ratings (Maziade et al., 1985; Windle et al., 1986; Windle, 1991; and Windle, 1992b), I hypothesized that current difficult temperament would be positively associated both with internalizing and externalizing behavior. I predicted that adolescents who scored highly on the difficult temperament index would show higher levels of internalizing and externalizing symptoms than those whose overall difficult temperament score was lower.
2. Also in accordance with the predictive literature (Caspi et al., 1995), I hypothesized that increased general activity level would predict higher levels of externalizing symptoms in adolescents. Adolescents who rated themselves as being unable to

remain still, and who were constantly moving, would be more likely to be the ones who acted out upon their environment (externalizing), than the ones to ruminated and experienced internalizing symptoms. The converse of this relationship, that decreased activity level would predict internalizing symptoms, has not been borne out in the literature (Prior, 1992). Thus, this relationship was explored further in our data analysis.

3. In accordance with Kagan's (1994) work on inhibited and uninhibited children, I predicted that increased approach/withdrawal scores in adolescence (indicating approach) would be associated with concurrent increased externalizing behaviors, while decreased scores with internalizing. I predicted that adolescents who exhibited the ability to approach new objects and people would be most like Kagan's uninhibited children.
4. Additionally, in accordance with Windle et al. (1986), I predicted that the temperamental attributes of rigidity, lowered mood, and distractibility would be associated with internalizing symptoms.
5. I explored the relationship between sex, temperament, and problem behaviors, assessing whether sex would moderate the relation between temperament and problem behaviors. More specifically, I hypothesized that girls who exhibited a more active temperamental style (gender role inconsonant) would be more likely to show some form of behavioral problem than those who were less active would. Similarly, I explored the idea that boys who withdrew would be more likely to show behavioral difficulties (specifically internalizing) than would those who did not withdraw. Both of these factors were proposed to be indicative of the relation

between the poor fit of the adolescent's temperament with the society that has expectations for very specific behavioral characteristics of girls and boys.

6. Finally, the study also explored other relations among the constructs, such as the relations among internalizing and externalizing and the five temperamental characteristics for which I had no specific hypotheses.

## CHAPTER 3

### METHOD

#### Participants

Participants were 83 adolescents in the Rural Adolescent and Family Study, time 2, "the intensive family phase." The Rural Adolescent Family Study is a longitudinal study looking at adolescent and family psychosocial health in nine rural Massachusetts towns. The study was conducted in three phases. The first and last phases of the study (two years apart) involved self-report questionnaires that were completed by the adolescents in a school setting. The second phase of the study involved an in-depth look at a subsample of adolescents and their families. Videotaped interactions as well as questionnaires were completed by the adolescents and both parents. Data for the current study uses questionnaire ratings taken from this "2<sup>nd</sup> phase" portion of the study.

The final sample for this study consisted of 33 (39.8%) males and 50 (60.2%) females. Ages ranged from 15 to 20 years old with a mean age of 16.9 years old (SD=1.25). The sample was primarily working class with 83.5% of the sample being Caucasian, 5.1% were American Indian, 3.8% were Asian, 2.5 were African American, 1.3% were Hispanic, and 3.8 did not specify their race.

#### Measures

Both the adolescent and parents completed a packet of measures. Demographic data was collected in the previous phase of the study, time 1, and was used in this phase of the study.

*Dimensions of Temperament Scale – Revised.* The Revised Dimensions of Temperament Survey (DOTS-R) is a 54 item, multifactorial, self-report questionnaire

which is designed to measure several dimensions of temperament (See Appendix B). The survey was developed as an age-continuous measure of temperament from early childhood to early adulthood. Subjects respond to questions using a four point Likert-type scale with response options ranging from (A) usually FALSE to (D) usually TRUE. The ten temperament attributes measured by the DOTS-R are: Activity Level-General, Activity Level-Sleep, Approach/Withdrawal, Flexibility/Rigidity, Quality of Mood, Rhythmicity-Sleep, Rhythmicity-Eating, Rhythmicity-Daily Habits, Distractibility, and Persistence. Reliability (Cronbach's alpha, N = 300, young adult group) of each sub-scale was determined by Windle and Lerner (1986), and was .84, .89, .85, .78, .89, .78, .80, .62, .81, and .74, respectively, for the ten factors listed above. Test-retest correlations with an interval of 6 weeks between tests were .75, .74, .69, .64, .63, .71, .72, .62, .64, and .59, respectively. In the present sample of adolescents, Chronbach's alphas for the ten subscales (n=82) were .88, .88, .72, .68, .88, .77, .84, .61, .82, and .70 respectively, as reported by Kawaguchi et al. (1998).

Descriptions of each of the subscales of the DOTS-R are necessary, because the labels are not necessarily representative of the items within each scale (See Table 1 for the items included in each subscale). *Activity level - general* assesses general restlessness and ability to sit still for long periods of time. On this subscale, a high score is indicative of restlessness and needs for movement. Questions include "I can't stay still for long," and "I move around a lot." *Activity level - sleep* assesses how much an individual moves about in his or her sleep, with a high score being indicative of more movement. Items include "I move a great deal in my sleep," and "I move a lot in bed." The *Approach/withdrawal* subscale assesses an individual's comfort with novel situations

and people, and hesitancy behaviors. A high score is indicative of someone comfortable in new situations, with little hesitancy. Items include "I can make myself at home anywhere," and "I usually move toward new objects shown to me." The *Flexibility/rigidity* subscale assesses one's flexibility with new routines, schedules, and objects. A high score is indicative of flexibility. Items include "Changes in plans make me restless" and, "It takes me a long time to get used to things in the home," (both are reverse scored). The *Mood* subscale assesses outward, behavioral expressions of mood such as smiling and laughing, with only two out of the seven items asking directly about inner mood states. High scores are indicative of more smiling and cheerful behaviors. Items include "I laugh and smile at a lot of things" and, "I laugh several times a day." *Rhythmicity – sleep* assesses the regularity of the time one goes to bed and wakes up, as well as the regularity of the amount of sleep one gets. A high score is indicative of regularity in bed and awake time. Items include "No matter when I go to sleep, I wake up at the same time the next morning" and, "I seem to get sleepy just about the same time every night." The *Rhythmicity – eating* subscale assesses the consistency in the amount of food eaten each day at most meals. Unlike the Rhythmicity – sleep scale, this scale does not assess the timing of meals. Items include "I usually eat the same amount each day" and, "My appetite seems to stay the same day after day." The *Rhythmicity – daily habits* scale assesses the regularity of the timing of general physical functions such as bowel movements, hunger, and energy levels. A high score is indicative of being very regular. Items include "I get hungry at about the same time each day" and, "I have bowel movement at about the same time each day." The *Distractibility* subscale generally assesses an individual's tendency to become distracted by outside factors. Counter-

intuitively, but in accordance with the pattern of high scores being "easier," high scores on this scale are indicative of an individual NOT being distractible. Items include "Once I am involved in a task, nothing can distract me from it" and "If I am doing one thing, something else occurring won't get me to stop." Finally, the *Persistence* subscale measures one's natural inclination to persist at a task. A high score is indicative of increased persistence. Items include "I persist at a task until it's finished" and "Once I take up something, I stay with it."

Following the methods of Windle (1992b) we created a difficult temperament index which was consistent with the Thomas and Chess "difficult temperament" construct. For each of the 10 DOTS-R subscales, a score of either 0 or 1 was given to indicate the absence or presence (respectively) of temperamental difficulty within that subscale. A one was assigned if the individual's score fell within the upper or lower 30<sup>th</sup> percentile of the sample, in accordance with whichever is indicative of difficulty. The three rhythmicity scales were combined in accordance with Thomas and Chess' theory, so that a score of 1 was given if the subjects score fell within the lower 30<sup>th</sup> percentile on any or all of the subscales. Similarly, the persistence and distractibility subscales were combined so that if either or both was below the 30<sup>th</sup> percentile, a score of 1 was assigned. Accordingly, subjects obtained a difficult temperament score ranging from 0 to 6, with 6 indicating more extreme difficulty.

*Youth Self-Report.* The Youth Self-Report (YSR) is a 102 item, multifactorial, self-report checklist of behavioral symptoms sometimes experienced in adolescence. Items on the YSR are scored on a three point scale: 0 = not true (as far as you know); 1 = somewhat or

sometimes true; and 2 = very true or often true. Subjects are asked to respond to each item as it describes them "now or within the past six months." Eight behavioral syndromes can be identified with the YSR, in addition to two more broad syndromes of internalizing and externalizing. The eight more narrow syndromes include: Withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior. Items from the withdrawn, somatic complaints, and anxious/depressed subscales make up the internalizing syndrome scale, while the delinquent and aggressive behavior scales form the externalizing syndrome scale. Achenbach (1991) reports considerable data supporting the reliability and validity of the YSR.

## CHAPTER 4

### RESULTS

T-tests were used to compare sex differences in temperament, internalizing and externalizing (see Table 2). Statistically significant sex differences were indicated for only 2 of the 10 temperament sub-scales and for internalizing, but not externalizing scores. Boys in this sample showed higher flexibility and higher eating rhythmicity than girls showed. Girls showed higher levels of self-reported internalizing symptoms than boys did.

Simple regressions were used to analyze the relation between temperament sub-scales and internalizing or externalizing symptoms. Hypotheses 1 through 4 are relevant to these analyses.

#### Hypothesis 1: Difficult temperament and psychosocial functioning

As expected, we found that adolescent difficult temperament was positively associated with self-reported internalizing symptoms (see Table 3). Contrary to expectations, the same relation was not found to exist between difficult temperament and self-reported externalizing symptoms (see Table 4).

#### Hypothesis 2: General activity level and psychosocial functioning

No relation between adolescent general activity level and either internalizing or externalizing was found. We had no predictions for internalizing in relation to activity level, but had expected to find a positive relation between activity level and externalizing symptoms and behaviors.

### Hypothesis 3: Approach/Withdrawal and psychosocial functioning

As per our hypotheses, we found a negative relation between approach/withdrawal scores and self-reported internalizing symptoms for the adolescents (see Table 3). Unexpectedly, no relation was found for externalizing symptoms (see Table 4).

### Hypothesis 4: Flexibility/rigidity, mood, and distractibility and psychosocial functioning

In accordance with our hypotheses, we found a negative relation between adolescent self-reported flexibility and self-reported internalizing behaviors and symptoms. A similar relation was found with self-reported mood ratings and internalizing symptoms. Contrary to our hypothesis, no relation was found between distractibility scores on the DOTS-R and internalizing scores on the YSR (see Table 3).

### Hypothesis 5: Exploratory analyses of sex interactions

Multiple regression analyses were used to examine whether sex may be a moderating factor in the relation between temperament and psychosocial difficulties. Each temperamental attribute, sex, and the temperament x sex interaction term were entered into separate regression equations. Sex did not moderate between the hypothesized sub-scales of temperament and internalizing or externalizing, but analyses did expose several trends toward significance of sex as a moderator of unexpected temperament sub-scales. We found that there was a trend indicating that sex moderated the relation between sleep activity level and internalizing scores (see Table 5). Graphing the regression lines for the interaction showed that boys exhibited a negative relation

between these factors and that girls exhibited a positive one (see Figure 1). For example, girls' sleep activity levels tended to increase as their internalizing symptoms increased, while boys' sleep activity levels tended to decrease as their internalizing symptoms increased. Similarly, sex was found to moderate the relation between internalizing symptoms and persistence scores (see Table 6). Girls exhibited a positive relation between these factors while boys exhibited a negative one (see Figure 2). For example, girls' persistence scores tended to increase as their internalizing symptoms increased, while boys' persistence scores tended to decrease as their internalizing symptoms increased.

#### Exploratory analyses of remaining factors

The exploration into the relation between behavioral symptoms and the five remaining temperament sub-scales for which we had no hypotheses showed several findings. We found a negative trend between adolescent self-reported flexibility and externalizing behaviors (see Table 4), as well as a negative relation between eating rhythmicity and internalizing behaviors (see Table 3).

## CHAPTER 5

### DISCUSSION

The purpose of this study was to explore the relation between adolescent temperament and psychosocial difficulties, with a particular eye to any gender differences within and between these constructs. Additionally, we attempted to confirm some prior findings about these relations (Windle et al., 1986; Windle, 1991; Windle, 1992b) with a rural adolescent population. I will structure this section by discussing our results and will follow this with a discussion of limitations of this study and recommendations of directions for future research.

#### Gender differences in temperament factors

In the current sample, we were surprised to find that there were few significant gender differences in the temperamental characteristics. Although we had expected there to be no differences in difficult temperament score, due to the fact that it is a composite of the individual temperament subscales, we had not expected to find so few differences within the individual subscales. Windle (1992a) reported gender differences in seven out of the ten temperamental subscales, whereas we only found two. Girls are more rigid and are less rhythmic in their eating than boys in our sample. More specifically, girls in our sample are more resistant to changes in schedules and routines, take longer to get used to change, and have more shifts in the *amount* of food they eat than boys in the sample. Consistent with Windle (1992a), but perhaps counterintuitively, girls score no lower on the mood subscale of the DOTS-R than boys. This is most likely because this mood scale measures cheerfulness, smiling, and laughing, all of which are outward manifestations of

mood, rather than internal affective states and/or self-esteem. It is these internal states which are measured by the internalizing subscale of the YSR, which *did* capture the expected gender difference in mood. The higher level of internalizing in girls at this age is supportive of previous findings (Achenbach, 1991; Gjerde, Block, & Block, 1988; Keenan & Shaw, 1997; Nolen-Hoeksema & Girgus, 1994) and was found in this sample.

Our sample of adolescents may be different than Windle's (1992a) for several reasons. We are working with a much smaller sample and thus the sex differences that Windle (1992a) found might have appeared if we had been able to increase our power. Additionally, there is the possibility that our rural sample would manifest different temperamental characteristics than that of a more urban sample. Finally, our rural sample of adolescent girls has been shown to have higher levels of internalizing symptoms than the national level (Powers & Welsh, 1998). This elevation may be affecting scores on the temperamental subscales, thus decreasing any possible sex differences within the temperamental subscales.

### Hypothesis 1: Difficult temperament and psychosocial functioning

In accordance with much of Windle's work using the difficult temperament index, (Windle, 1991; Windle, 1992b) we found that adolescents with difficult temperament are more likely to be struggling with internalizing symptoms and behaviors. But, despite support in the literature (Maziade et al., 1985; Windle et al., 1986; Windle, 1991; Windle, 1992b), this same relation did not occur in terms of externalizing behaviors. To further explore why this relation between externalizing and difficult temperament did not emerge, we decided to look at parental ratings of their children's internalizing and

externalizing behaviors using the Child Behavior Checklist (Achenbach, 1991). Parents rated their children's internalizing and externalizing symptoms significantly lower than the adolescents' self-report (see Table 7). Interestingly, when exploring the relation of parental reports of their adolescents' internalizing and externalizing behaviors and difficult temperament, the relation between difficult temperament and internalizing was reconfirmed, and a positive relation between difficult temperament and externalizing symptoms was found (see Table 8). So, despite the fact that the relationship between difficult temperament and externalizing was not found in adolescent self-report, as we had hypothesized, it was confirmed through parental report.

Much of the literature that supports the relation between externalizing behaviors and difficult temperament has been done using parental observations or parental ratings. The fact that parents' ratings, despite being much lower on internalizing and externalizing symptoms than the children's ratings, show a relation between temperamental difficulty and externalizing, may indicate that parents only recognize externalizing symptoms in children with difficult temperaments. Therefore, parents may be missing externalizing disorders in children who do not have difficult temperaments (while the adolescents themselves recognize the problem).

In further explorations, it will be interesting to see whether there exist certain constellations or clusters of temperamental factors that are associated with adolescent internalizing. For example, might adolescents who are difficult in the realms of withdrawing from new experiences, rigidity, and a-rhythmicity in eating be more likely to struggle with internalizing symptoms than those who have a difficult temperament due to distractibility, general activity level, and sleep activity level? In order to move closer to

answering this question, we broke down temperament into the nine individual factors, and looked at their relations to internalizing and externalizing one at a time.

### Hypothesis 2: General activity level and psychosocial functioning

We had predicted that there would be a relation between general activity level and externalizing symptoms, based on findings from previous research (Caspi et al., 1995) that found a relation between externalizing behaviors and "lack of control", which is similar to our "activity level" construct. This relation did not appear. It is likely that the two constructs, "general activity level" and "lack of control" are measuring different behavioral attributes. At face value, these two constructs appear to be the same, but actually differ in several ways. Most importantly, the factor "lack of control" is based on observational ratings of 3 to 5 year-olds, whereas we are assessing "activity level" in adolescents. Thus, while childhood lack of control may be predictive of externalizing behaviors, we did not find adolescent activity level to coexist with externalizing in a significant relation. This complication points to the difficulty in comparing and compiling current temperament theories and research, which we will elaborate further below.

We had no predictions about the relation between general activity level and internalizing because previous research had not borne out any relation (Prior, 1992). In accordance with Prior's work, we found that there is no relation between internalizing scores and general activity level.

### Hypothesis 3: Approach/withdrawal and psychosocial functioning

In accordance with Kagan's (1994) work on inhibited and uninhibited children, as well as with Windle's (1986) research, we found that adolescent withdrawal behavior predicted internalizing symptoms. For example, adolescents who reported that they do not "feel at home anywhere", move away from new objects and people, and reject things that are new or unfamiliar, were more likely to have elevated internalizing scores. Surprisingly, the opposite relation between the factors, in which elevated approach behavior would predict externalizing symptoms, was not shown. This lack of relation is inconsistent with Kagan's (1994) research showing that uninhibited children are more likely to exhibit externalizing behaviors later in life. In this discrepancy the complexity of measuring and reporting temperamental data is highlighted once again. Kagan's work was looking at whether infant and childhood temperament is predictive of later psychosocial difficulties, while the current study is only able to look at a concurrent relation between these factors. Similarly, the measurement of temperamental factors in each of the studies is quite different with Kagan using observational methods rather than self-report measures.

### Hypothesis 4: Flexibility/rigidity, mood, and distractibility and psychosocial functioning

Windle et al. (1986) found that the temperamental traits flexibility/rigidity, mood, and distractibility were predictive of depressive symptomatology as measured by the CES-D. As a result, we expected to find these same traits as being predictive of internalizing symptoms in adolescents. The relation was supported with both higher

rigidity and lowered mood being predictive of internalizing symptoms, but not with distractibility. Therefore, adolescents who describe themselves as resisting changes in routine, as needing lots of time to adjust to new schedules, as not smiling and not laughing very often are likely to experience internalizing symptoms.

The relation between distractibility and internalizing may not have emerged for several reasons. Most importantly, Windle (1986) used the CES-D (Radloff, 1977) as his measure of depressive affect and behaviors, while we are using the Youth Self Report (Achenbach, 1991). The internalizing subscale of the YSR combines three factors, withdrawn, depression/anxiety, and somaticizing, while the CES-D focuses primarily on depression symptoms. This difference may be enough to account for the different findings. But additionally, Windle's (1986) sample was comprised of 6<sup>th</sup> graders and college students, and did not include any middle adolescents, which is the population from which our sample was drawn.

#### Hypothesis 5: Exploratory analyses of sex interactions

Our hypothesis that sex may act as a moderator of the relation between temperament and psychosocial difficulties bore out two trends. We found a trend indicating that sex moderates the relation between sleep activity level and internalizing scores. For example, girls who move around a great deal in their sleep tend to report more internalizing symptoms, whereas boys who do not toss and turn in their sleep show increased internalizing symptoms. Similarly, sex was found to moderate the relation between internalizing symptoms and persistence scores. For example, girls who report persisting at tasks were more likely to have increased internalizing symptoms. Whereas

boys who report that they are unable to stay with an activity for a long time are more likely to have increased internalizing symptoms.

Going back to the question as to whether gender inconsonant temperament may act as an environmental stress for the adolescent due to a poor goodness of fit with society, we are left with few answers. Based on speculation by Windle (1992a) we were curious to see whether girls with higher activity levels, which are inconsonant with their sex, would be more likely to evidence either internalizing or externalizing symptoms than boys with similar activity levels. This relation did not occur. Similarly, based on some of Kagan's (1994) work we wondered whether boys who withdraw or are more rigid would be more likely to show internalizing symptoms than girls with the same profile. This relation also did not emerge. The fact that several sex interactions did arise, yet not those that were expected, leaves our understanding of what is actually happening unclear. It could be that when measuring temperament in adolescents, we are also tapping internalizing and externalizing symptoms, rather than measuring entirely different constructs. For example, Clark, Watson and Mineka (1994) present several relations between temperament and psychopathology, one of which suggests that psychopathology may simply be an "extreme manifestation" of temperamental and personality traits. If this is true, the sex differences in temperament may be ways in which boys and girls differ in their reactivity to and expression of depression and anxiety.

If our hypothesis that gender role inconsonant temperament may act as an environmental stress were to be true, then we would want to look further at the two traits in which the interaction emerged. But it seems unlikely that movement or lack of movement during sleep is differentially handled by parents, teachers, or caregivers

depending on the sex of the child. Thus, this interaction seems not to be attributable to goodness of fit with societal expectations. Persistence, on the other hand, may be treated differentially depending on the sex of the child, or may in fact be a societally influenced way that adolescents respond to internalizing. Perhaps girls cope with internalizing through increased persistence, while boys react with decreased persistence. It would be interesting to see whether the increased persistence scores in these girls is related to the increased rumination that Nolen-Hoeksema and Girgus (1994) found in their depressed adolescent girls.

#### Exploratory analyses of remaining factors

For the several temperamental traits for which we had no hypotheses, several findings emerged. Adolescents who rated themselves as being very rigid and resistant to change were found to have elevated externalizing scores. These adolescents also showed high internalizing scores, indicating that in our sample, increased rigidity is associated with both internalizing and externalizing in adolescence. Additionally, we found that adolescents with decreased eating rhythmicity, those who varied from meal to meal, and from day to day in the amount that they ate, reported higher internalizing symptoms.

#### Summary of temperament traits and internalizing and externalizing

In an attempt to look at all of the individual temperamental characteristics together, and their relations to internalizing and externalizing, we arrive at a complex and interesting picture. Internalizing difficulties are associated with an overall difficult temperament, and specifically with a tendency to withdraw from new people or

experiences (approach/withdraw), with increased rigidity around routines and schedules (flexibility/rigidity), with decreased smiling and cheeriness (mood), and with decreased consistency in the amount of food eaten at each meal (eating rhythmicity). Externalizing difficulties were associated only with increased rigidity around routines and schedules.

It seems that internalizing symptoms and behaviors are more strongly related to temperament than externalizing, leaving open the question as to whether internalizing disorders are more biologically based than externalizing disorders. This possibility is of course based on the assumption that the temperamental characteristics, which we have measured, are biologically based and are present before the onset of internalizing symptoms. Although this question is clearly not within the bounds of the current study, it raises yet another question to be answered within the growing literature of adolescent and adult temperament.

#### General questions raised about the measurement of temperament

As stated in the literature review, temperament has been measured many different ways. In the present study, we chose to use adolescents' own ratings of their temperamental characteristics, but other researchers have chosen to use parental or outside observer ratings of temperament. Because adolescents spend more time away from their parents than children, and may edit their presentation in the presence of their parents, parental assessment of adolescent temperament may be limited or inaccurate. Conversely, it seems likely that adolescents may be poor self-monitors and inconsistent reporters, leaving their self-reported temperament questionable. Outside observer ratings of adolescent temperament is also riddled with complications similar to the parental

ratings. Additionally, because different ages suggest different methods of assessment, later comparison between studies becomes difficult. The question is raised as to whether parents who are rating their young child are attending to similar states and behaviors as the child or adolescent themselves.

Beyond the level of direct versus observational assessment of temperament, the actual constructs of temperament vary (see Goldsmith et al., 1987). For example, Buss and Plomin (1986) divide temperament into the factors emotionality, activity, sociability, and shyness. Caspi et al. (1985) include factors such as "lack of control" and "sluggishness," while Kagan (1984) focuses primarily on the factor he labels inhibition. Because temperament can be broken down in so many ways, comparison between the constructs becomes difficult. Add that to the fact that researchers use parental report, outside observer ratings, or self-report, and drawing conclusions about how temperament affects psychosocial difficulties becomes complex and indirect.

Similarly, researchers have been attempting to use similar constructs for temperamental attributes, originally defined in infants, for children, adolescents and young adults. I believe that it is risky for us to assume that subscales using items that are clearly related to infant movements and temperament (e.g. the approach/withdrawal item stating "My first response to anything is to move my head toward it") will be appropriate for adolescents and young adults. It is unclear as to whether these items may mean different things and have different implications at varying developmental stages. Conversely, in assessing adolescent temperament, it is important to try to keep the adult construct as congruent with the infant/child construct as possible, to ensure that we are measuring the same thing.

This dilemma raises the question as to whether adolescent and adult temperament is a useful construct, or whether it is overly confounded with personality and environmental factors. Temperament in adolescence has been shown to be somewhat unstable (Tubman & Windle, 1995), thus leading to the question of what adolescent temperament really is, and whether it is truly biologically determined. Perhaps temperament in adolescence is more susceptible to psychosocial influences and should be redefined as such. For example, it is unclear as to whether, in measuring temperament, we are actually assessing various symptoms of internalizing itself, whether we are looking at personality traits, or are actually seeing early temperamental patterns.

#### Limitations of the current study

The most prominent limitation of the current study is that it is built on a small sample, with very little statistical power. A small sample size makes it difficult to generalize to the greater population of adolescents. Conversely, having used a small sample made it harder to actually observe significant findings, so the significant associations that were found are statistically robust.

The fact that we only have access to self-report measures on adolescent temperament, and have used no observational methods can also be considered a drawback. But observations of adolescents are nearly impossible to obtain and would be unreliable. We observe babies because they can't speak for themselves, but adolescents can speak for themselves.

Additionally, our temperament data are only cross-sectional, therefore it becomes difficult to know if these are long-standing temperamental traits or are partially

concurrent behavioral reflections of internalizing disorders. Thus, if adolescent internalizing symptoms subside, will there also be shifts in their temperamental profile? We also have no way to know whether the temperamental traits preceded the internalizing, thus playing some sort of a causal role. Because of the cross-sectional nature of the temperamental data, we may be looking at the way that internalizing syndromes manifest themselves, rather than seeing that having certain temperamental traits makes one vulnerable to internalizing.

#### Areas of future research

Many ideas for future research emerge directly from the limitations of the current study and the limitations behind the construct of temperament. Further research needs to be done to piece apart the constructs of personality and temperament in young adulthood and beyond. Longitudinal research such as that by Thomas and Chess is important, as are attempts to understand the biological factors behind temperament. If we were able to operationalize temperament, or certain pieces of temperament through biology, we may be able to better understand the continuity and discontinuity of temperament. Perhaps it would be useful to additionally operationalize adult temperament through self-report measures, self-observation, and brief interviews to help identify what adults and adolescents view as important temperamental traits in themselves.

Additional research also needs to be done to begin to piece apart the relation between psychopathology and temperament to see if a direct etiological role can be determined. Once again, longitudinal research is needed to assess whether the findings of this study hold up over time, and whether the temperamental traits are present before the

onset of internalizing or externalizing difficulties. Understanding the relation between temperamental traits and internalizing and externalizing is extremely important in light of the negative outcomes facing adolescents with these difficulties. If these adolescents can be identified earlier, as being at risk for future difficulties, preventative measures may be taken.

APPENDIX A  
MEASURES

## Youth Self Report

Below is a list of items that describe kids. For each item that describes you now or within the past six months, please circle the number 2 if the item is very true or often true of you. Circle the 1 if the item is somewhat or sometimes true of you. If the item is not true of you circle the 0.

- |   |  |
|---|--|
| <p>0 1 2 1. I act too young for my age</p> <p>0 1 2 2. I have an allergy (describe):<br/> <hr style="width: 100%; border: 0.5px solid black; margin-top: 5px;"/> <hr style="width: 100%; border: 0.5px solid black; margin-top: 5px;"/></p> <p>0 1 2 3. I argue a lot</p> <p>0 1 2 4. I have asthma</p> <p>0 1 2 5. I act like the opposite sex</p> <p>0 1 2 6. I like animals</p> <p>0 1 2 7. I brag</p> <p>0 1 2 8. I have trouble concentrating or paying attention</p> <p>0 1 2 9. I can't get my mind off certain thoughts (describe):<br/> <hr style="width: 100%; border: 0.5px solid black; margin-top: 5px;"/></p> <p>0 1 2 10. I have trouble sitting still</p> <p>0 1 2 11. I'm too dependent on adults</p> <p>0 1 2 12. I feel lonely</p> <p>0 1 2 13. I feel confused or in a fog</p> <p>0 1 2 14. I cry a lot</p> <p>0 1 2 15. I am pretty honest</p> <p>0 1 2 16. I am mean to others</p> <p>0 1 2 17. I daydream a lot</p> <p>0 1 2 18. I deliberately try to hurt or kill myself</p> <p>0 1 2 19. I try to get a lot of attention</p> <p>0 1 2 20. I destroy my own things</p> <p>0 1 2 21. I destroy things belonging to others</p> <p>0 1 2 22. I disobey my parents</p> <p>0 1 2 23. I disobey at school</p> <p>0 1 2 24. I don't eat as well as I should</p> <p>0 1 2 25. I don't get along with other kids</p> <p>0 1 2 26. I don't feel guilty after doing something I shouldn't</p> <p>0 1 2 27. I am jealous of others</p> <p>0 1 2 28. I am willing to help others when they need help</p> <p>0 1 2 29. I am afraid of certain animals, situations, or places, other than school (describe):<br/> <hr style="width: 100%; border: 0.5px solid black; margin-top: 5px;"/></p> <p>0 1 2 30. I am afraid of going to school</p> <p>0 1 2 31. I am afraid I might think or do something bad</p> | <p>0 1 2 32. I feel that I have to be perfect</p> <p>0 1 2 33. I feel that no one loves me</p> <p>0 1 2 34. I feel that others are out to get me</p> <p>0 1 2 35. I feel worthless or inferior</p> <p>0 1 2 36. I accidentally get hurt a lot</p> <p>0 1 2 37. I get in many fights</p> <p>0 1 2 38. I get teased a lot</p> <p>0 1 2 39. I hang around with kids who get in trouble</p> <p>0 1 2 40. I hear things that nobody else seems to hear (describe):<br/> <hr style="width: 100%; border: 0.5px solid black; margin-top: 5px;"/></p> <p>0 1 2 41. I act without stopping to think</p> <p>0 1 2 42. I like to be alone</p> <p>0 1 2 43. I lie or cheat</p> <p>0 1 2 44. I bite my fingernails</p> <p>0 1 2 45. I am nervous or tense</p> <p>0 1 2 46. Parts of my body twitch or make nervous movements (describe):<br/> <hr style="width: 100%; border: 0.5px solid black; margin-top: 5px;"/></p> <p>0 1 2 47. I have nightmares</p> <p>0 1 2 48. I am not liked by other kids</p> <p>0 1 2 49. I can do certain things better than most kids</p> <p>0 1 2 50. I am too fearful or anxious</p> <p>0 1 2 51. I feel dizzy</p> <p>0 1 2 52. I feel too guilty</p> <p>0 1 2 53. I eat too much</p> <p>0 1 2 54. I feel over tired</p> <p>0 1 2 55. I am overweight</p> <p>0 1 2 56. Physical problems with out known medical cause:<br/> a. Aches or pains<br/> b. Headaches<br/> c. Nausea, feel sick<br/> d. Problems with eyes (describe):<br/> <hr style="width: 100%; border: 0.5px solid black; margin-top: 5px;"/> e. Rashes or other skin problems<br/> f. Stomachaches or cramps<br/> g. Vomiting, throwing up<br/> h. Other (describe):<br/> <hr style="width: 100%; border: 0.5px solid black; margin-top: 5px;"/></p> |
|---|--|

Continued next page

Youth Self Report continued

- 0 1 2 57. I physically attack people
- 0 1 2 58. I pick my skin or other parts of my body (describe): \_\_\_\_\_
- 0 1 2 59. I can be pretty friendly
- 0 1 2 60. I like to try new things
- 0 1 2 61. My school work is poor
- 0 1 2 62. I am poorly coordinated or clumsy
- 0 1 2 63. I would rather be with older kids than with kids my own age
- 0 1 2 64. I would rather be with younger kids than with kids my own age
- 0 1 2 65. I refuse to talk
- 0 1 2 66. I repeat certain actions over and over (describe): \_\_\_\_\_
- 0 1 2 67. I run away from home
- 0 1 2 68. I scream a lot
- 0 1 2 69. I am secretive or keep things to myself
- 0 1 2 70. I see things that nobody else seems able to see (describe): \_\_\_\_\_
- 0 1 2 71. I am self conscious or easily embarrassed
- 0 1 2 72. I set fires
- 0 1 2 73. I can work well with my hands
- 0 1 2 74. I show off or clown
- 0 1 2 75. I am shy
- 0 1 2 76. I sleep less than most kids
- 0 1 2 77. I sleep more than most kids during day and/or night \_\_\_\_\_
- 0 1 2 78. I have a good imagination
- 0 1 2 79. I have a speech problem (describe): \_\_\_\_\_
- 0 1 2 80. I stand up for my rights
- 0 1 2 81. I steal things at home
- 0 1 2 82. I steal things from places other than home
- 0 1 2 83. I store up things I don't need (describe): \_\_\_\_\_

- 0 1 2 84. I do things other people think are strange (describe): \_\_\_\_\_
- 0 1 2 85. I have thoughts that other people would think are strange (describe): \_\_\_\_\_
- 0 1 2 86. I am stubborn
- 0 1 2 87. My moods or feelings change suddenly
- 0 1 2 88. I enjoy being with other people
- 0 1 2 89. I am suspicious
- 0 1 2 90. I swear or use dirty language
- 0 1 2 91. I think about killing myself
- 0 1 2 92. I like to make others laugh
- 0 1 2 93. I talk too much
- 0 1 2 94. I tease others a lot
- 0 1 2 95. I have a hot temper
- 0 1 2 96. I think about sex too much
- 0 1 2 97. I threaten to hurt people
- 0 1 2 98. I like to help others
- 0 1 2 99. I am too concerned about being neat and clean
- 0 1 2 100. I have trouble sleeping (describe): \_\_\_\_\_
- 0 1 2 101. I cut classes or skip school
- 0 1 2 102. I don't have much energy
- 0 1 2 103. I am unhappy, sad or depressed
- 0 1 2 104. I am louder than other kids
- 0 1 2 105. I use alcohol or drugs other than for medical conditions (describe): \_\_\_\_\_
- 0 1 2 106. I try to be fair to others
- 0 1 2 107. I enjoy a good joke
- 0 1 2 108. I like to take life easy
- 0 1 2 109. I try to help other people when I can
- 0 1 2 110. I wish I were of the opposite sex
- 0 1 2 111. I keep from getting involved with others
- 0 1 2 112. I worry a lot

Revised Dimension of Temperament Survey—Child (Self)

HOW TO ANSWER: On the following pages are some sentences. They are about how children like you may behave. Some of the sentences may be true of how you behave and others may not be true for you. For each sentence we would like to say if the sentence is usually true for you, is more true than false for you, is more false than true for you, or is usually false for you. There are no "right" or "wrong" answers because all children behave in different ways. All you have to do is answer what is true for you.

Here is an example of how to fill out this questionnaire. Suppose a sentence said:

"I eat the same things for breakfast every day."

If the sentence were usually false for you, you would respond:

"A," usually FALSE.

If the sentence were more false than true for you, you would respond:

"B," more FALSE than true.

If the sentence were more true than false for you, you would respond:

"C," more TRUE than false.

If the sentence were usually true for you, you would respond:

"D," usually true.

On the line to the left of each sentence write an A if the sentence is usually false for you, write a B if the sentence is more false than true for you, write a C if the sentence is more true than false for you, or write a D if the sentence is usually true for you.

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PLEASE REMEMBER THESE FOUR THINGS AS YOU ANSWER:

1. Give only answers that really tell about you. It is best to say what you really think.
2. Don't spend too much time thinking over each question. Give the first answer as it comes to you. Of course, the sentences are too short to say everything that you might like. But give the best answer you can. Some sentences may seem just like others because they are about the same things. But, each sentence asks about a different part of the way you behave. Therefore, your answers may be different.
3. Answer every question one way or another. Don't skip any.
4. Remember,  
A = usually FALSE  
B = more FALSE than true  
C = more TRUE than false  
D = usually TRUE

THANK YOU FOR YOUR HELP

A = usually FALSE

C = more TRUE than false

B = more FALSE than true

D = usually TRUE

- 
1. \_\_\_\_\_ It takes me a long time to get used to a new thing in the home.
  2. \_\_\_\_\_ I can't stay still for long.
  3. \_\_\_\_\_ I laugh and smile at a lot of things.
  4. \_\_\_\_\_ I wake up at different times.
  5. \_\_\_\_\_ Once I am involved in a task, nothing can distract me from it.
  6. \_\_\_\_\_ I persist at a task until it's finished.
  7. \_\_\_\_\_ I move around a lot.
  8. \_\_\_\_\_ I can make myself at home anywhere.
  9. \_\_\_\_\_ I can always be distracted by something else, no matter what I may be doing.
  10. \_\_\_\_\_ I stay with an activity for a long time.
  11. \_\_\_\_\_ If I have to stay in one place for a long time I get restless.
  12. \_\_\_\_\_ I usually move towards new objects shown to me.
  13. \_\_\_\_\_ It takes me a long time to adjust to new schedules.
  14. \_\_\_\_\_ I do not laugh and smile at many things.
  15. \_\_\_\_\_ If I am doing one thing, something else occurring won't get me to stop.
  16. \_\_\_\_\_ I eat about the same amount for dinner whether I am home, visiting someone, or traveling.
  17. \_\_\_\_\_ My first reaction is to reject something new or unfamiliar to me.
  18. \_\_\_\_\_ Changes in plans make me restless.

A = usually FALSE

C = more TRUE than false

B = more FALSE than true

D = usually TRUE

- 
19. \_\_\_\_ I often stay still for long periods of time.
20. \_\_\_\_ Things going on around me can not take me away from what I am doing.
21. \_\_\_\_ I take a nap, rest, or break at the same times every day.
22. \_\_\_\_ Once I take up something, I stay with it.
23. \_\_\_\_ Even when I am supposed to be still, I get very fidgety after a few minutes.
24. \_\_\_\_ I am hard to distract.
25. \_\_\_\_ I usually get the same amount of sleep each night.
26. \_\_\_\_ On meeting a new person, I tend to move towards him or her.
27. \_\_\_\_ I get hungry about the same time each day.
28. \_\_\_\_ I smile often.
29. \_\_\_\_ I never seem to stop moving.
30. \_\_\_\_ It takes me no time at all to get used to new people.
31. \_\_\_\_ I usually eat the same amount each day.
32. \_\_\_\_ I move a great deal in my sleep.
33. \_\_\_\_ I seem to get sleepy just about the same time every night.
34. \_\_\_\_ I do not find that I laugh often.
35. \_\_\_\_ I move toward new situations.
36. \_\_\_\_ When I am away from home I still wake up at the same time each morning.
37. \_\_\_\_ I eat about the same amount at breakfast from day to day.
38. \_\_\_\_ I move a lot in bed.

A = usually FALSE

C = more TRUE than false

B = more FALSE than true

D = usually TRUE

---

39. \_\_\_\_ I feel full of pep and energy at the same time each day.
40. \_\_\_\_ I have bowel movements at about the same time each day.
41. \_\_\_\_ No matter when I go to sleep, I wake up at the same time the next morning.
42. \_\_\_\_ In the morning, I am still in the same place as I was when I fell asleep.
43. \_\_\_\_ I eat about the same amount at supper from day to day.
44. \_\_\_\_ When things are out of place, it takes me a long time to get used to it.
45. \_\_\_\_ I wake up at the same time on weekends and holidays as on other days of the week.
46. \_\_\_\_ I don't move around much at all in my sleep.
47. \_\_\_\_ My appetite seems to stay the same day after day.
48. \_\_\_\_ My mood is generally cheerful.
49. \_\_\_\_ I resist changes in routine.
50. \_\_\_\_ I laugh several times a day.
51. \_\_\_\_ My first response to anything is to move my head toward it.
52. \_\_\_\_ Generally I am happy.
53. \_\_\_\_ The number of times I have a bowel movement on anyday varies from day to day.
54. \_\_\_\_ I never seem to be in the same place for long.

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APPENDIX B

TABLES

Table 1. Subscale Items of the Revised Dimensions of Temperament Scale

Subscale Dimension	DOTS-R item
Activity Level-General	2. I can't stay still for long. 7. I move around a lot. 11. If I have to stay in one place for a long time I get restless. 19. I often stay still for long periods of time.* 23. Even when I am supposed to be still, I get very fidgety after a few minutes. 29. I never seem to stop moving. 54. I never seem to be in the same place for long.
Activity Level-Sleep	32. I move a great deal in my sleep. 38. I move a lot in bed. 42. In the morning, I am still in the same place as I was when I fell asleep.* 46. I don't move around much at all in my sleep.*
Approach/Withdrawal	8. I can make myself at home anywhere. 12. I usually move towards new objects shown to me. 17. My first reaction is to reject something new or unfamiliar to me.* 26. On meeting a new person, I tend to move towards him or her. 30. It takes me no time at all to get used to new people. 35. I move toward new situations. 51. My first response to anything is to move my head toward it.
Flexibility/Rigidity	1. It takes me a long time to get used to a new thing in the home.* 13. It takes me a long time to adjust to new schedules.* 18. Changes in plans make me restless.* 44. When things are out of place, it takes me a long time to get used to it.* 49. I resist changes in routine.*
Mood	3. I laugh and smile at a lot of things. 14. I do not laugh and smile at many things.* 28. I smile often. 34. I do not find that I laugh often.* 48. My mood is generally cheerful. 50. I laugh several times a day. 52. Generally I am happy.
Rhythmicity-Sleep	4. I wake up at different times.* 25. I usually get the same amount of sleep each night. 33. I seem to get sleepy just about the same time every night. 36. When I am away from home I still wake up at the same time each morning. 41. No matter when I go to sleep, I wake up at the same time the next morning. 45. I wake up at the same time on weekends and holidays as on other days of the week.

Continued next page

Table 6. Multiple Regression Analyses Predicting Internalizing Scores From Adolescent Persistence, Sex, and Sex X Persistence Interaction (N=69)

Variable	Unstandardized B	Std. Error	Standardized Beta	p<
Persistence	-1.559	.884	-.336	.082
Sex	-10.788	9.433	-.597	.257
Sex x persistence interaction	1.985	1.109	.989	.078

Table 2. T-Tests for Sex Differences in Adolescent Temperament, Internalizing, and Externalizing Scores

Variables	Males			Females			t
	N	M	SD	N	M	SD	
Difficult Temperament	31	2.45	1.46	47	2.55	1.53	-.30
Activity Level-General	32	20.16	5.45	50	19.14	4.60	.87
Activity Level-Sleep	33	10.42	3.55	50	10.98	3.51	-.70
Approach/Withdrawal	32	21.13	3.74	48	19.85	2.96	1.61
Flexibility/Rigidity	32	15.97	2.25	50	14.60	3.01	2.35*
Mood	32	23.22	4.61	50	23.92	3.42	-.74
Sleep Rhythmicity	33	12.70	3.71	50	12.04	3.99	.77
Eating Rhythmicity	33	16.09	3.72	50	10.46	3.86	3.11**
Daily Rhythmicity	32	11.13	3.32	50	10.32	2.58	1.17
Distractibility	32	11.25	3.46	49	11.45	2.42	-.28
Persistence	32	8.06	1.92	50	8.42	1.93	-.82
Internalizing	26	12.38	8.19	44	17.84	8.42	-2.67*
Externalizing	26	13.73	5.82	44	14.09	6.58	-.24

\* $p < .05$

\*\* $p < .01$

Table 1 continued

Rhythmicity-Eating	<p>16. I eat about the same amount for dinner whether I am home, visiting someone, or traveling.</p> <p>31. I usually eat the same amount each day.</p> <p>37. I eat about the same amount at breakfast from day to day.</p> <p>43. I eat about the same amount at supper from day to day.</p> <p>47. My appetite seems to stay the same day after day.</p>
Rhythmicity-Daily Habits	<p>21. I take a nap, rest, or break at the same times every day.</p> <p>27. I get hungry about the same time each day.</p> <p>39. I feel full of pep and energy at the same time each day.</p> <p>40. I have bowel movements at about the same time each day.</p> <p>53. The number of times I have a bowel movement on anyday varies from day to day.*</p>
Distractibility	<p>5. Once I am involved in a task, nothing can distract me from it.</p> <p>9. I can always be distracted by something else, no matter what I may be doing.*</p> <p>15. If I am doing one thing, something else occurring won't get me to stop.</p> <p>20. Things going on around me can <u>not</u> take me away from what I am doing.</p> <p>24. I am hard to distract.</p>
Persistence	<p>6. I persist at a task until it's finished.</p> <p>10. I stay with an activity for a long time.</p> <p>22. Once I take up something, I stay with it.</p>

\*Items are reverse scored.

Table 3. Simple Regressions Predicting Internalizing Scores From Temperamental Attribute Scores

Variable	N	Beta	R <sup>2</sup>
Difficult Temperament	65	.363	.132**
Activity Level-General	68	.130	.017
Activity Level-Sleep	69	.133	.013
Approach/Withdrawal	66	-.236	.055*
Flexibility/Rigidity	68	-.403	.162***
Mood	69	-.389	.151***
Sleep Rhythmicity	69	-.097	.009
Eating Rhythmicity	69	-.330	.109**
Daily Rhythmicity	68	-.134	.018
Distractibility	67	-.034	.001
Persistence	68	-.044	.002

\*p<.06      \*\*p<.01      \*\*\*p<.001

Table 4. Simple Regressions Predicting Externalizing Scores From Temperamental Attribute Scores

Variable	N	Beta	R <sup>2</sup>
Difficult Temperament	65	.150	.022
Activity Level-General	68	.152	.023
Activity Level-Sleep	69	.113	.013
Approach/Withdrawal	66	.021	.000
Flexibility/Rigidity	68	-.223	.050*
Mood	69	.066	.004
Sleep Rhythmicity	69	-.086	.007
Eating Rhythmicity	69	-.162	.026
Daily Rhythmicity	68	-.005	.000
Distractibility	67	.024	.001
Persistence	68	-.020	.000

\*p<.065

Table 5. Multiple Regression Analyses Predicting Internalizing Scores From Adolescent Sleep Activity Level, Sex, and Sex X Sleep Activity Level Interaction (N=69)

Variable	Unstandardized B	Std. Error	Standardized Beta	p<
Activity Level-Sleep	-.536	.492	-.213	.281
Sex	-6.241	6.575	-.350	.346
Sleep x sex interaction	1.120	.606	.768	.069

Table 7. Paired Samples T-Tests of Parent vs. Adolescent Ratings of Adolescent Internalizing and Externalizing Scores

Variables	Parent			Adolescent			t
	N	M	SD	N	M	SD	
Internalizing	70	9.59	7.62	70	15.81	8.69	6.06*
Externalizing	70	7.26	6.29	70	13.96	6.26	7.41*

\*p<.001

Table 8. Simple Regressions Predicting Parent Rated Internalizing and Externalizing Scores From Difficult Temperament Scores

Dependent Variable	N	Beta	R <sup>2</sup>
Internalizing	73	.355	.126*
Externalizing	73	.363	.132*

\*p<.005

APPENDIX C  
FIGURES

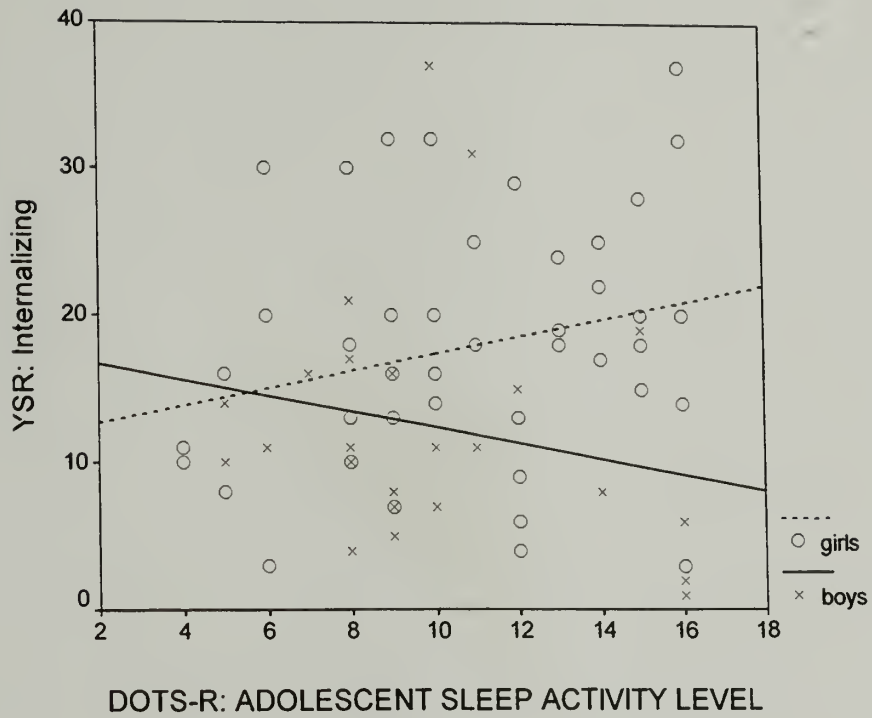


Figure 1. Regression Lines of Sex X Sleep Activity Level Interaction

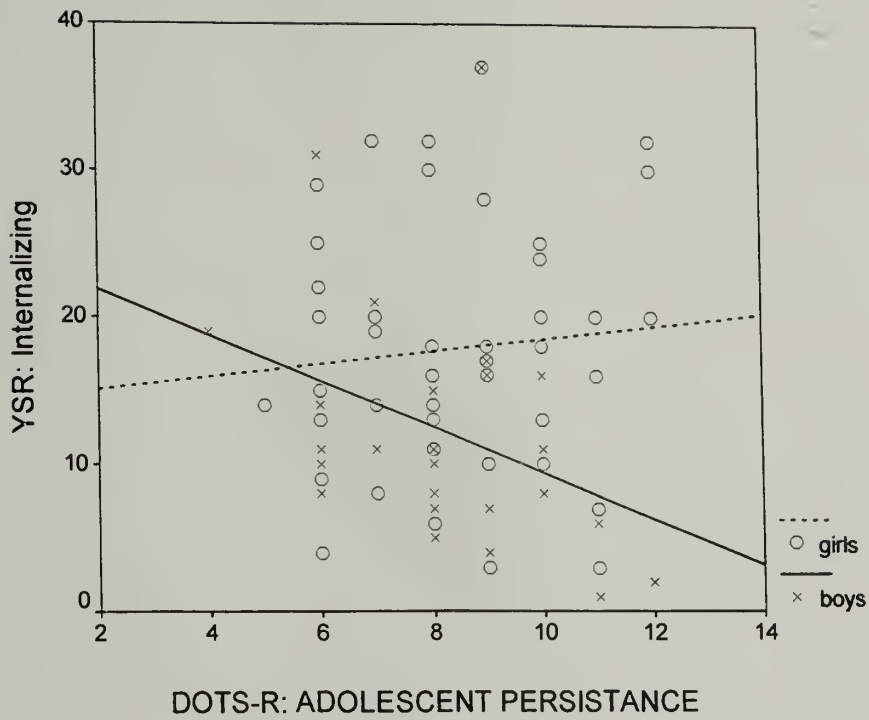


Figure 2. Regression Lines of Sex X Persistence Interaction

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