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Psychosocial Correlates of Affective Distress: Latent-Variable Models of Male and Female Adolescents in a Community Sample

Lawrence M. Scheier[1] **and Gilbert J. Botvin**[2]

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Latent-variable confirmatory factor analysis was used to examine the interrelationships of depressive and anxious symptomatology and 13 measures of psychosocial functioning in a community-based sample of adolescents participating in a school-based drug abuse prevention intervention. Measures of psychosocial functioning included: cognitive self-efficacy, self-management, self-reinforcement, decision-making and problem-solving skills, interpersonal skills, social anxiety, behavioral style, risk taking, conventionality, somatic complaints, perceived tangible, and adult support. Simultaneous group comparison and nested hierarchical tests were used to statistically contrast parameters obtained from male and female models. Overall, the hypothetical constructs were statistically reliable and models were psychometrically sound. Partial factorial invariance was obtained, however, the patterns of covariation between distress and psychosocial functioning were dissimilar for male and female youth. Differences clustered around affective distress, cognitive skills,

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[1]Assistant Professor of Psychology in Public Health. Received Ph.D. from University of Southern California. Research interests include life-span and developmental issues, models examining antecedents and consequences of adolescent and young adult drug abuse, and use of structural equation modeling to examine intraindividual differences in growth and changes. To whom correspondence and reprint requests should be addressed at Institute for Prevention Research, Cornell University Medical College, 411 East 69th Street, Kips Bay Room 201, New York, New York 10021.

[2]Professor of Psychology in Public Health and Psychiatry and Director of the Institute for Prevention Research. Received Ph.D. from Columbia University. Research interests include school and community-based drug prevention intervention programs, smoking cessation, child and adolescent psychosocial development and health behavior, and behavioral approaches to chronic disease risk reduction.

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and perceived functional support. More socially anxious females perceived less social support, whereas support and anxiety were positively related among male students. Male youth with high levels of conventional behavior were also socially anxious, whereas for females this relationship was absent and nonsignificant. For both male and female students, distress was moderately and inversely related to cognitive efficacy and personal competence skills. Distressed youth were also less conventional (behavioral control) and less diligent, and were characterized by greater sensation-seeking, poorer competence, and perceived less social support, and were more socially anxious with less interpersonal skills. Findings are discussed in terms of potential contributors to gender differences in distress and psychosocial functioning and their implications for the understanding of adolescent mental health.

INTRODUCTION

The developmental period of adolescence has long been associated with rapid growth and change. A vast body of research documents numerous facets of change during this period of the lifespan encompassing biological maturation (Lerner and Foch, 1987), emotional growth (Josselson, 1980), cognitive development (Keating, 1990), and rapid transitions in social and interpersonal skills (Seltzer, 1989), all leading to the formation and crystallization of an identity (Erikson, 1968; Offer, 1969). Most adolescents successfully navigate this period, and the view that adolescence is best characterized by turmoil and stress has been increasingly challenged (Powers *et al.*, 1989; Larson and Ham, 1993; Offer and Schonert-Reichl, 1992). In fact, empirical studies reinforce that in stark contrast to the typical emotional upheaval, most youth proceed through the developmental tasks of adolescence with minimal disturbance (e.g., Offer and Offer, 1975). Based on numerous empirical studies of developing youth, Offer (1987) suggests that traditional views of adolescence as a period of "storm and stress" may be colored by mental health practitioner's reliance on clinical, disturbed, or referred youth and that roughly only 20% of normal youth experience sufficient turmoil to warrant concern (Offer *et al.*, 1984).

Despite indications that adolescent development can be well managed by most youth, a growing body of information points toward this age period as one of increasing vulnerability to mental health disorders (Kazdin, 1993). Perhaps the single most conspicuous mental health problem associated with adolescence is depression (Lewinsohn *et al.*, 1993; Petersen *et al.*, 1993). Petersen *et al.* (1993) noted that "depression stands out among psychological problem of adolescence, both for its impact on adjustment during the adolescent years and its long-term effects on adult psychological functioning" (p. 159). Among a host of potential maladies

that may interfere with development, depression may also mask or be comorbid with substance use, poor school performance, and personality disorders (i.e., identity crises) that inhibit adult role functioning (Kandel, 1988; Windle *et al.*, 1986).

Given that substantial research has shown that early disruptive emotional experiences, and particularly depression, foster a continued vulnerability to mental health problems (e.g., Kandel and Davies, 1986; Leadbeater *et al.*, 1995), it is essential to learn more about the etiology of these depressive experiences and clarify important relationships with other measures of psychosocial functioning. In the current study, we tested a model that examines the correlative relations between affective distress (primarily tapping depressive and anxious mood) and psychosocial functioning in a community sample of adolescents. Given the strong empirical support for heightened levels of depressive mood in females, models were tested separately for male and female youth (e.g., Kandel and Davies, 1982; Nolen-Hoeksema, 1990). To effectively test the correlational patterns between distress and psychosocial functioning, confirmatory factor analytic techniques were used, providing a more statistically rigorous means of comparing model structures. Prior to presenting the empirical findings, we briefly review evidence of gender differences in distress obtained from both clinical and epidemiological studies. We then propose, and demonstrate empirically, that studies of psychosocial risk mechanisms can be enhanced by examining structural processes rather than mean differences, the latter of which is entirely descriptive and evades explanatory goals.

Overview of Clinical and Epidemiological Studies of Adolescent Distress

Clinical studies of affective distress in younger populations have emphasized mood disorders in young people primarily because of its disproportionate representation compared to other more infrequent psychiatric disorders during this age period (Angold, 1988; Lewinsohn *et al.*, 1993). An essential goal of these studies has been to refine differential diagnosis and nosological classification based on clinical features of affective disturbances (Kovacs 1989; Lewinsohn *et al.*, 1991). Despite the increasing focus on depression and related mood disorders, any number of methodological confounds potentially limit or qualify the generalizability of findings from clinical studies. Youth presenting for treatment may reflect referral patterns to mental health practitioners and not be demographically representative. In addition, external validity may

be affected by the selective nature of the population. For example, youth in treatment often present with high levels of comorbid symptomatology and may be more willing to converse about their problems. Thus, the picture obtained of psychosocial functioning in these youth may be colored by an exclusive focus on distress. Among youth presenting for treatment or counseling, their distraught intrapersonal status is deeply enmeshed with deficits in a wide range of interpersonal and personal competence skills, making it difficult to untangle causal relationships between distress and other facets of psychosocial functioning.

Epidemiological studies, on the other hand, have focused on establishing prevalence estimates for depressive symptoms using survey methods primarily with community samples. Despite their reliance on larger sample sizes intended for establishing effective base rates, in many cases assessments have been limited to select measures of psychological functioning (Fleming *et al.*, 1989), focused exclusively on assessing depressive symptomatology, or used too few items to reliably assess depression (Kandel and Davies, 1982).

Among other potential drawbacks, many epidemiological studies have traditionally lumped together early, middle, and late adolescence (usually ages 12–18 are considered one homogeneous age group), which may be an excessively broad delineation given the rapid onset of change associated with this age period (e.g., Fleming *et al.*, 1989; Robins and Regier, 1991). Despite these potentially limiting factors, a few studies have examined correlates of depressive symptomatology in adolescence, have included a sufficiently wide array of measures of psychosocial functioning, and have produced a consistent set of findings. Briefly, these studies have shown that depressive mood is negatively and moderately related to all facets of positive interpersonal (i.e., family support) and intrapersonal functioning (i.e., self-esteem) and positively and moderately related to negative functioning (i.e., stress and social anxiety). Moreover, these findings have been consistent with respect to age and gender (e.g., Kandel and Davies, 1982; Leadbeater *et al.*, 1995; Lewinsohn *et al.*, 1993).

Studies that have implemented "high-risk" cutoff scores to delineate depressive mood status (i.e., low vs. high) have shown that subjects reporting high levels of depressive mood also report more externalizing (i.e., fighting and delinquency) and internalizing problems (i.e., sadness and suicidal ideation); more academic and behavior problems (i.e., truancy, absenteeism, antisocial activity); poorer self-perceptions (i.e., lower self-esteem, attractiveness, and perceived popularity), and more negative perceptions of their behavior by their peers, teachers, and parents (Kandel and Davies, 1982).

Consistently, in almost every epidemiological study that has examined adolescent depressive mood, females report higher levels of depressed mood (Kandel and Davies, 1982; Nolen-Hoeksema and Girgus, 1994; Petersen *et al.*, 1991; Roberts *et al.*, 1991). Moreover, where behavioral high-risk cutoff scores are used, females are disproportionately represented in the high-risk depressive categories (Kandel and Davies, 1986; Roberts *et al.*, 1991). Evidence exists to support the emergence of these differences as early as 13 years of age in both nonclinical (Nolen-Hoeksema, 1990) and clinical samples (Kashani *et al.*, 1990). In sum, both age and gender differences in depressive symptoms are evident in the literature, although not as much research has examined precisely how these differences influence psychosocial functioning (see also Offer and Schonert-Reichl, 1992, for a review).

Importance of the Current Study

The current study focused on examining the patterns of relationships between symptoms of affective distress (i.e., depressive and anxious mood) and 13 measures of psychosocial functioning. The study had three immediate goals: (1) to examine the statistical association between affective distress and psychosocial functioning, (2) to ascertain the psychometric properties of the hypothetical dimensions of psychosocial functioning, and (3) to contrast statistically the parameters and correlative patterns obtained from models generated for male and female youth.

In addition to these goals, the current study expanded upon earlier research in several ways. First, a larger and more conceptually diverse set of measures assessing affective distress (i.e., depression and anxiety) and psychosocial functioning were examined in a cohort of youth in early adolescence. Because early adolescence is a critical period for the formation of identity, and the development of cognitive skills is integral to the successful formation of identity, some degree of developmental integration would be expected between these diverse facets of psychosocial functioning. Based on correlational methods, we examine the associations between diverse facets of functioning including personal competence, social skills, distress, and interpersonal relations.

Finally, most studies of depressive symptoms have contrasted groups using conventional summated scales, where observed statistical differences are determined on the basis of deviation from central tendency. The use of means to determine statistical differences glosses over important and often undetected developmental considerations. This may be especially pertinent for females who experience the onset of menarche during this

period and may depart somewhat from males in their experiences because of endocrine-related changes that induce higher levels of depression (e.g., Brooks-Gunn and Petersen, 1983). More specifically, females may experience greater distress with regard to specific mood symptoms (e.g., feeling blue) that are directly attributable to menarche, however, their overall depressive state may be no different from their male counterparts. To better understand the emergence and etiology of depression, empirical and conceptual relationships between depressive mood and other key psychosocial measures need to be examined during critical formative stages of development.

METHOD

Sample Description

Data for the current study were obtained as part of a longitudinal investigation conducted between 1985 and 1991, which was designed to study the etiology and prevention of tobacco, alcohol, and other illicit drug abuse. the study was conducted at three suburban sites including central and eastern upstate New York and Long Island. These areas present a mixture of rural, suburban, and urban locations, are predominantly (91%) White, and middle class. Overall, 5900 students in the seventh grade (Time 1 pretest) were randomly administered three forms of a closed-ended questionnaire. Collectively, the three forms included a wide array of psychosocial, behavioral, and attitudinal correlates of adolescent substance use. The current analyses are based on a single *form* randomly administered by trained field personnel during a one-hour, classroom session. This random administration canvassed one-third of the students (N = 1980: 52.6% male) and assured equal gender and sociodemographic representation for each of the three forms. The remaining students received one of two different forms containing only a 2/3 overlap with respect to the items assessing psychosocial functioning. Selection of items for inclusion in the current study was based solely on the need to identify correlates of depressive and anxious symptomatology (and excluded the substance use items).

Measures

Overall, 53 measured variables or scales were used to reflect 14 latent constructs including: Affective Distress, Diligence/Persistence, Conventional Behavior, Risk Taking, Somatic Complaints, Cognitive

Self-Efficacy, Self-Reinforcement, Decision-Making Skills, Problem-Solving Confidence, Self-Management Skills, Interpersonal Skills, Social Anxiety, Perceived Functional (tangible), and Adult Support. Each latent construct was hypothesized *a priori* and items or scales were constrained to load on only one factor, thus mimicking simple structure. Extensive psychometric analyses have been conducted with all of these measures including both exploratory and confirmatory factor analyses (Botvin, 1993). All of the items have been shown to have excellent face, construct, and factorial validity. Where derived instruments were used, empirical determination of the conceptual integrity of multiitem scales was based on principal components and common factor analysis with varimax rotation. In instances where scales have been modified from the original source, items with the highest factor loadings were chosen for inclusion in the parent study.

From the original 53 items, 12 items from the 38-item Mental Health Inventory (MHI) were used to reflect a latent construct of Affective Distress (Veit and Ware, 1983). The MHI was intended to assess symptoms of psychological distress including both general positive and negative affect in community samples. Seven of the items tapped depressive symptomatology (i.e., anhedonia, loss of motivation, and depressed mood) and five of the items tapped anxiety (i.e., agitation, nervousness, and irritability). All of the items were worded almost identically to many clinically derived self-report assessments of depression with an emphasis on internalizing symptoms (e.g., Radloff, 1977).

Based on the high intercorrelation of the anxiety and depressive symptoms subscales and their moderately high estimate of internal consistency ($\alpha = .77$), three four-item random parcels were formed and these were used to reflect a latent factor of Affective Distress.[3] Sample items, psychometric properties (Cronbach alphas), and sources for these and the remaining psychosocial scales are contained in Table I. A 5-point anchored response format was used for the distress items ranging from *none of the time* (1) to *most of the time* (5). Likewise, response formats for the remaining psychosocial scales were 5-point anchored scales ranging from *strongly agree* (1) to *strongly disagree* (5), and in some case, *never* (1) to *almost always* (5).

[3]In preliminary confirmatory analyses conducted to determine the psychometric properties of these scales, the depressive and anxious items were constrained to load on separate latent constructs. These two constructs were correlated at .96, reinforcing that a single affective distress complex was indistinguishable into distinct dimensions of anxiety and depressive affect (for further discussion of this issue see also Brady and Kendall, 1992, and Ollendick and Yule, 1990; Kendall and Watson, 1989).

Table I. Reliabilities, Sample Items, and Sources for Measures Used in Analyses[a]

Composite name	Sample item	FS	F	M	Principal source
Affective Distress (12)	I felt downhearted or sad. I felt restless, fidgety or impatient.	.77	.75	.80	Veit and Ware (1983)
Somatic Complaints (7)	I had indigestion. I had health problems.	.68	.72	.64	Langner (1962) Kovacs (1980)
Diligence (4)	I stick to what I'm doing until I'm finished.	.61	.58	.65	Kendall and Wilcox (1979)
Conventional Behavior (3)	I bother other students when they're trying to work.	.69	.66	.69	Kendall and Wilcox (1979)
Risk Taking (4)	I would enjoy fast driving I enjoy taking risks.	.73	.71	.72	Eysenck and Eysenck (1975)
Self-Efficacy (5)	When I make plans I am almost certain to make them work.	.67	.67	.68	Paulhus (1983) Paulhus and Christie (1981)
Self-Reinforcement (9)	The way I achieve my goals is by rewarding myself every step along the way.	.77	.77	.77	Heiby (1983)
Decision-Making Skills (5)	I think about choices that exist before I take any action.	.81	.82	.81	Wills (1986) Bugen and Hawkins (1981)
Problem-Solving Confidence (5)	I trust my ability to handle new and difficult problems.	.72	.70	.75	Heppner and Petersen (1982)
Self-Management Strategies (8)	If I am feeling sad I try to think about pleasant things.	.76	.77	.75	Rosenbaum (1980)
Social Anxiety (9)	Feeling like you are the center of attention in a group.	.80	.79	.82	Richardson and Tasto (1976)
Interpersonal Skills (14)	Making requests or asking favors.	.79	.80	.79	Botvin (1993)
Functional Support (4)	I let out my feelings with someone I feel close to.	.76	.76	.76	Wills (1986)
Perceived Adult Support (5)	Sources of support (clergy, doctor, counselor, teacher).	.73	.75	.72	Wills (1986)

[a] Numbers in parentheses reflect the number of items in scale (some multiitem scales divided into random parcels). Reliabilities were computed using Cronbach's alpha. Item scales range from *none of the time* (1) through *most of the time* (5); *strongly disagree* (1) through *strongly agree* (5); *never true* (1) through *almost always true* (5); *never* (1) through *almost always* (5); *not at all confident* (1) through *very confident* (5); *not at all nervous* (1) through *very nervous* (5). FS: full sample; F: females; M: males.

The remaining 13 latent constructs tapped various facets of psychosocial functioning that formed the core psychosocial assessment of the longitudinal drug prevention study. Selection of these scales in the parent study were based on a rich vein of clinical and developmental theories including cognitive-behavioral (e.g., Bandura, 1977), problem behavior (Jessor and Jessor, 1977), and social efficacy models of adolescent drug use (Pentz, 1983).

Seven items drawn from existing scales of physical health symptoms were used to reflect a latent construct of Somatic Complaints. These items include specific symptoms (i.e., indigestion and stomach aches) as well as assessment of general health ("I had health problems") and sleeping problems. Many of these items can be found in the vegetative symptom subscale of standard epidemiologically based assessments of depression (Kovacs, 1980). Based on the Kendall and Wilcox (1979) Self-Control Rating Scale, we included four items to assess diligence (e.g., "I like to switch from one thing to another") along with three items to assess conventional behavior (e.g., "I usually sit still most of the time in class"). Four additional items from the Eysenck and Eysenck (1975) personality scale were used to assess Risk Taking (e.g., "I would enjoy fast driving"). Together, these three constructs reflect temperamental style or behavioral impulse control (e.g., Scheier and Botvin, 1995). Despite their conceptual similarity, and in order to facilitate testing potential gender differences, we chose to maintain three distinct latent constructs tapping these areas of developmental functioning. This decision was made especially in light of the fact that, compared to their female counterparts, male youth generally report higher levels of antisocial behavior (low conventionality), high risk taking, and poor impulse control.

The remaining constructs tapped two important and developmentally relevant facets of psychosocial functioning including personal competence and social efficacy (sources and sample items are included in Table I). A total of five latent constructs assessed various aspects of competence including: Cognitive Self-Efficacy (personal efficacy and cognitive mastery in the nonsocial world involving situations of personal achievement), Decision-Making Skills (direct-action cognitive strategies used for problem solving), Self-Reinforcement (implementation of internal reward mechanisms), Problem-Solving confidence (perceived confidence in applied activities), and Self-Management Strategies (self-control procedures and affective management skills to reduce emotional stress). The four remaining social efficacy constructs included Social Anxiety (fear or anxiety related to social assertiveness and interpersonal events), Interpersonal Skills (assertiveness and confidence in applying instrumental social skills), Perceived Functional (tangible: i.e., "find someone special to share my problems with"), and Perceived Adult Support ("talk with my mother or father"). As with the previous psychosocial

scales, items were selected for inclusion in the parent drug abuse prevention study based on their developmental appropriateness and their relationship to the conceptual model being tested.

Model Analysis Strategy

To ascertain the statistical congruence between male and female youths, we tested several hierarchical (nested) models. Essentially, and based on the model construction, two pieces of information were available in these data. The first model comparison step assessed whether there is a common factor structure between the two groups (the null model being that a baseline model fits both groups equivalently). If the null model is accepted, it would imply that the interpretative meaning of the factors (by virtue of their parameter loadings) does not differ between male and female youths. In this and all subsequent model tests, a restricted estimation technique was used, allowing items (scales) to load on only one factor (thus mimicking simple structure). Post hoc model modification procedures available in the EQS structural equations program (Bentler, 1989) indicate empirically in what manner the overall two-group model might be enhanced on the basis of relaxing previously constrained parameters. Relaxation of model constraints (reparameterization of factor loadings or factor covariances) was based on substantive theory and relied on the multivariate Lagrange modification index to determine the reasonableness of any cross-group constraints (improvement in χ^2 corresponding to relaxing a previously constrained parameter). Following this procedure, a more restrictive test was implemented that incorporated the findings from the assessment of factorial invariance and equivalently constrained the factor covariances across gender groups. The null form of this test suggests that the statistical relations between psychosocial functioning and distress were not different for male and female youths.

Several criteria were used to evaluate statistically the overall model fit, including (a) χ^2 to degree of freedom ratio (optimally less than 5.0); (b) a p value associated with the χ^2 ($p > .05$); (c) the Comparative Fit Index (CFI: a sample-size adjusted analogue to the Normed Fit Index [Bentler and Bonett, 1980] indicating the amount of covariation accounted for in the sample data by the hypothetical model [Bentler, 1990]); and the standardized root-mean-square-residual (RMSR), indicating the amount of residual covariation unaccounted for by the hypothesized model (or lack of fit). Benchmarks for this latter statistic are considered adequate if less than .05 and for the CFI are considered adequate approaching .90. A nonsignificant model ($p > .05$) confirms a satisfactory and statistical congruence between

the sample covariances and the hypothetical model (i.e., the data are a reasonable approximation of the hypothetical structure).

RESULTS

Summary descriptive statistics for males and females and gender differences for the observed scales are presented in Table II. A maximum-likelihood, regression-based, statistical imputation procedure (Dixon, 1992) was used to maximize the sample available for analysis. Both pre- and postimputed means are presented for comparison.[4]

Gender Differences in Mean Composites

Male and female students significantly differed on half of the 14 psychosocial scales. Females were more diligent and more conventional and reported they utilized more self-management strategies, perceived more peer social support and more social anxiety. Males, on the other hand, reported higher levels of sensation seeking and somatic complaints, and perceived greater adult support to discuss their problems. Interestingly, males and females did not differ significantly in their absolute levels of distress (this was also true of the distress scale when it was pared down to include only the depressed mood items).

We then computed separate male and female measurement models using the EQS statistical program (Bentler, 1989). Covariances among all 14 latent constructs were estimated freely, although no complex factor loadings were permitted. Factor intercorrelations from the male and female models are contained in Table III (estimated correlations corresponding to the males are contained in the lower triangle).

[4]Empirical studies reveal that statistical imputation does not bias parameter estimates when item nonresponse is low (less than 5%). In the current study, the regression-based imputation procedure relied on casewise present data to fill in for missing values. Such a model-based procedure allows for a larger set of significant explanatory variables to be included in the prediction of the nonresponse item. Although there is some diminution to the residual variance estimates consistent with this type of procedure, extensive statistical analyses have demonstrated empirically that no disfigurement to the basic covariance patterns occurs with maximum likelihood data estimation (see, for example, Rubin, 1987). Prior to imputation, all scales were prorated for the number of items prior to imputation and scales with less than 70% complete data set to missing. Cases with greater than 50% missing data were eliminated. The missing data pattern was monotone, and both grades and substance use were significantly associated with missingness.

Table II. Summary Descriptive Statistics by Gender for Composite Psychosocial Scales: Before and After Maximum Likelihood Imputation

Observed scale	Males (N = 758)				Females (N = 747)				Mean gender difference[b]
	N[a]	Mean		SD	N	Mean		SD	
Distress	659	10.29	(10.29)	2.22	653	10.35	(10.36)	2.40	0.44
Diligence	905	3.24	(3.27)	0.75	864	3.36	(3.35)	0.79	3.03[e]
Conventional Behavior	891	3.71	(3.71)	0.90	855	4.13	(4.11)	0.78	9.54[f]
Risk Taking	857	3.00	(3.00)	0.88	834	2.57	(2.57)	0.81	-9.96[f]
Somatic Complaints	633	1.94	(1.96)	0.76	629	1.84	(1.85)	0.65	-2.87[e]
Self-Efficacy	954	3.90	(3.90)	0.62	889	3.87	(3.85)	0.56	-1.00
Self-Reinforcement Skills	927	10.60	(10.61)	1.78	881	10.70	(10.70)	1.59	1.14
Decision-Making Skills	759	3.52	(3.52)	0.78	751	3.53	(3.53)	0.74	0.30
Problem-Solving Confidence	544	3.48	(3.48)	0.58	542	3.49	(3.48)	0.58	0.20
Self-Management Skills	796	13.31	(13.33)	2.81	788	13.87	(13.85)	2.67	3.95[f]
Perceived Functional Support	730	3.23	(3.24)	0.92	712	3.68	(3.68)	0.88	9.61[f]
Perceived Adult Support	739	1.74	(1.73)	0.77	721	1.64	(1.64)	0.69	-2.48[d]
Interpersonal Skills	970	13.85	(13.79)	2.66	899	13.69	(13.67)	2.59	-1.19
Social Anxiety	587	8.68	(8.70)	2.11	576	9.11	(9.11)	2.25	3.85[f]

[a] Sample size varies for preimputed data set; total N's male = 1018, female = 919.
[b] Reported as t values. Males coded 0, females coded 1.
[c] Numbers in parentheses are scale means before imputation.
[d] $p \leq .05$.
[e] $p \leq .01$.
[f] $p \leq .001$.

Table III. Factor Intercorrelations Corresponding to the Affective Distress Confirmatory Measurement Model: Males (Lower Triangle) and Females (Upper Triangle)[a]

	1 DIS	2 DILIG	3 CONVB	4 RISK	5 SOMATIC	6 SELFEFF	7 REINF	8 DECISION	9 CONFD	10 ROSEN	11 SUPPORT	12 ADULT	13 INTER	14 SOCANX
1	1.0	$-.48^{d}$	$-.31^{d}$	$.25^{d}$	$.58^{d}$	$-.30^{d}$	$-.27^{d}$	$-.22^{d}$	$-.52^{d}$	$-.37^{d}$	$-.21^{d}$	$-.12^{b}$	$-.29^{d}$	$.33^{d}$
2	$-.49^{d}$	1.0	$.63^{d}$	$-.43^{d}$	$-.31^{d}$	$.55^{d}$	$.30^{d}$	$.41^{d}$	$.59^{d}$	$.43^{d}$	$.19^{d}$	$.20^{c}$	$.24^{d}$	$-.27^{d}$
3	$-.36^{d}$	$.67^{d}$	1.0	$-.59^{d}$	$-.36^{d}$	$.48^{d}$	$.32^{d}$	$.36^{d}$	$.35^{d}$	$.39^{d}$	.24	-.05	$.21^{d}$	-.02
4	$.29^{d}$	$-.51^{d}$	$-.53^{d}$	1.0	$.22^{d}$	$-.26^{d}$	$-.19^{d}$	$.31^{d}$	$-.26^{d}$	$-.27^{d}$	$-.16^{c}$	-.06	-.09	-.05
5	$.48^{d}$	$-.35^{d}$	$-.34^{d}$	$.21^{d}$	1.0	$-.22^{d}$	$-.15^{d}$	$-.18^{d}$	$-.24^{d}$	$-.15^{c}$	$-.14^{b}$	$.16^{c}$	$.23^{d}$	$.24^{d}$
6	$-.35^{d}$	$.62^{d}$	$.55^{d}$	$-.17^{c}$	$-.25^{d}$	1.0	$.73^{b}$	$.47^{d}$	$.67^{d}$	$.55^{d}$	$.30^{d}$	$.12^{b}$	$.36^{d}$	$-.12^{b}$
7	$-.34^{d}$	$.41^{d}$	$.35^{d}$	$-.11^{b}$	$-.11^{b}$	$.78^{d}$	1.0	$.42^{d}$	$.51^{d}$	$.64^{d}$	$.32^{d}$	$.18^{c}$	$.37^{c}$	-.04
8	$-.40^{d}$	$.47^{d}$	$.49^{d}$	$-.28^{d}$	$-.24^{d}$	$.55^{d}$	$.52^{d}$	1.0	$.60^{d}$	$.60^{d}$	$.32^{d}$	$.26^{d}$	$-.29^{d}$	.07
9	$-.50^{d}$	$.60^{d}$	$.41^{d}$	$-.63^{d}$	$-.34^{d}$	$.54^{d}$	$.49^{d}$	$.61^{d}$	1.0	$.60^{d}$	$.27^{d}$	$.18^{d}$	$.44^{d}$	$-.29^{d}$
10	$-.44^{d}$	$.51^{d}$	$.44^{d}$	$.32^{d}$	$-.22^{d}$	$.59^{d}$	$.63^{d}$	$.67^{d}$	$.53^{d}$	1.0	$.38^{d}$	$.20^{d}$	$.37^{c}$	-.03
11	$-.35^{d}$	$.30^{d}$	$.29^{d}$	$-.28^{d}$	$-.09^{b}$	$.38^{d}$	$.39^{d}$	$.46^{d}$	$.39^{d}$	$.55^{d}$	1.0	$.19^{d}$	$.29^{d}$	-.08
12	-.00	$.13^{b}$	-.06	$-.18^{d}$	$.21^{d}$	$.10^{b}$	$.13^{c}$	$.13^{c}$	.06	$.18^{d}$	$.35^{d}$	1.0	$.15^{c}$	-.06
13	$-.41^{d}$	$.37^{d}$	$.33^{d}$	-.03	$-.20^{d}$	$.56^{d}$	$.51^{d}$	$.50^{d}$	$.51^{d}$	$.51^{d}$	$.26^{d}$	.01	1.0	$-.39^{d}$
14	$.19^{d}$	$-.33^{d}$	$.11^{b}$	$-.11^{b}$	$.15^{c}$	$-.17^{d}$	$-.11^{c}$	-.07	$-.29^{d}$	-.06	$.09^{b}$	-.05	$-.35^{d}$	1.0

[a] Significances determined by critical ratio of unstandardized parameter estimate divided by standard error. Labels: Dis: Affective Distress; DILIG: Diligence/Persistence; CONVB: Conventional Behavior; RISK: Risk Taking; SOMATIC: Somatic Complaints; SELFEFF: Self-Efficacy; REINF: Self-Reinforcement; DECISION: Decision-Making Skills; CONFD: Problem-Solving Confidence; ROSEN: Self-Management Skills; SUPPORT: Perceived Functional (tangible) Support; ADULT: Adult Support; INTER: Interpersonal Life Skills; SOCANX: Social Anxiety.

Results of the Male Model

Fit statistics for the male CFA model indicated an adequate fit, $\chi^2(1234, N = 758) = 2769.63, p < .001$, CFI = 877, $\chi^2/df = 2.24$, RMSE = .04. The CFI approaches the benchmark of .90 and indicates that 87.7% of the sample data covariation is accounted for by the hypothesized model. Although the p value is significant (indicating that other hypothetical structures could be fit to the data), the small RMSR indicates that little covariation was left in the residual matrix and that the model is an extremely good approximation of the true sample covariances.

Several factors including the large size of the model (the numbers of freely estimated parameters results from the combined variances, covariances, factor loadings, and residual variances) and the moderately large sample size ($N > 500$) make it difficult to achieve a nonsignificant p value (e.g., Bentler and Bonett, 1980). Despite the exploratory nature of these analyses, we chose not to fine-tune these models with the addition of residual covariances or complex factor loadings.[5]

Standardized factor loadings corresponding to the male CFA model are contained in Fig. 1 (loadings corresponding to males are positioned above the line and the corresponding residual variances [numbers inside the small circles] are the topmost number for males). As expected, all of the hypothesized factor loadings were significant ($p < .001$) and statistically reliable. Based on the balanced psychometric characteristics for the indicators of Affective Distress, all three random parcels contributed equally to the variation of the latent construct (thus negative affectivity is distributed equally among symptoms of depressive mood and anxious/agitation). In fact, relatively few of the latent constructs had disproportionate factor loadings for their corresponding indicators, with the exception of one indicator of Somatic Complaints (i.e., "indigestion"), one indicator of Problem-Solving Confidence (i.e., "when I try to handle a problem, things usually work out the way I expect"), two indicators of Functional Support (i.e., "when something bothers me or I feel I upset I, talk with one of my friends" and "talk with my mother or father"). The latter result suggests some differentiation between utilization of a general strategy (e.g., "Find someone special to share problem with") and specific coping responses that utilize a particular individual as a resource.

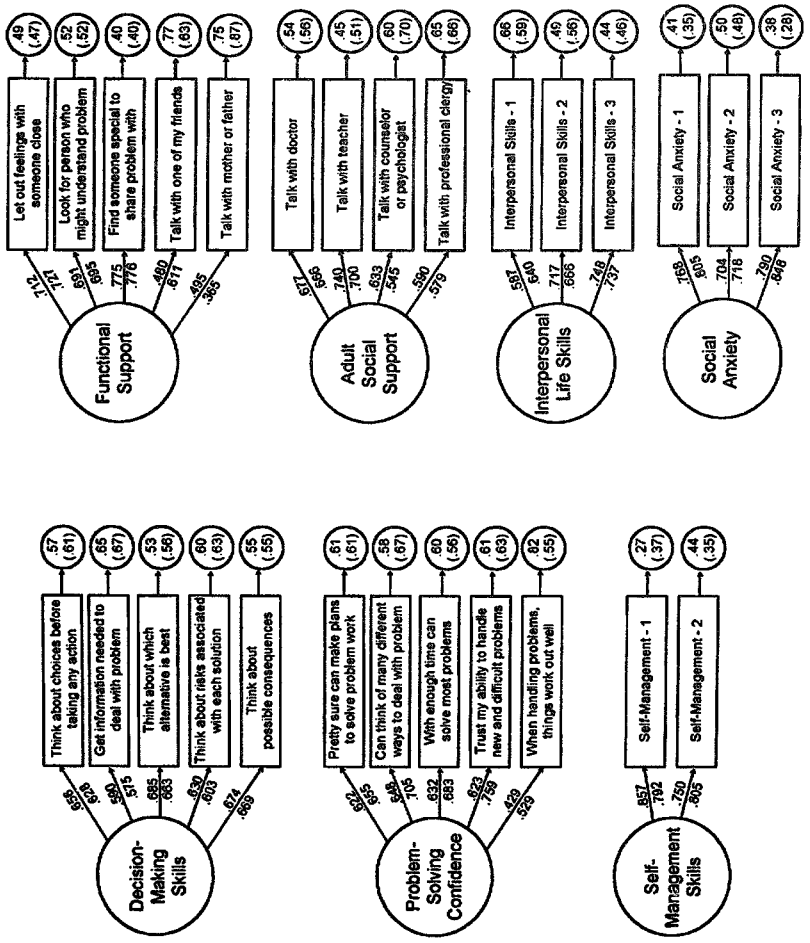
[5]In general *post hoc* model fitting includes relaxing constraints (i.e., allowing complex factor loadings rather than maximizing simple structure) or adding residual covariances (both within and between constructs), the latter which captures elements of both method (i.e., item wording) and shared construct variance. To obtain a more fine-grained analysis of potential enhancements to measurement and structural models, the EQS statistical software program provides a multivariate stepwise modification procedure indicating where relaxing specific constraints might improve the overall good.

Among the key relationships between Affective Distress and the remaining psychosocial constructs, Distress was moderately and significantly associated with all but one of the latent constructs (adult support: $r = -.00$). The remaining correlations ranged from a high of $r = -.50$ with Problem-Solving Confidence to a low of $r = .19$ with Social Anxiety. In addition, the direction of these associations were as hypothesized: positive with Risk Taking, Somatic Complaints, and Social Anxiety, and negative with the remaining psychosocial constructs.

An interesting pattern of associations emerged among the measures of competency and cognitive functioning. The moderately large and fairly equivalent associations among these constructs (tapping decision-making skills, self-monitoring, self-reinforcement strategies, and cognitive self-efficacy) reinforces that these constructs may tap into a generalized set of "high-level" metacognitive strategies, expectations, and beliefs that serve to govern or regulate applications involving cognitive skills and reasoning.

Results of the Female Model

The model fit statistics for the female model also indicated an adequate fit, $\chi^2(1234, N = 747) = 3009.55$, $p < .001$, CFI = .862, $\chi^2/df = 2.44$, RMSR = .04, although slightly less covariation in the sample data was accounted for by the hypothesized model. Consistent with the pattern of covariances obtained in the male model, Risk Taking, Somatic Complaints, and Social Anxiety were all positively and significantly associated with Distress, while the remaining psychosocial measures were negatively and significantly correlated. Associations between Distress and the remaining psychosocial constructs ranged from a low of $r = -.12$ with Perceived Adult Support to a high of $r = .58$ with Somatic Complaints. In contrast to the male model, Social Anxiety and Distress were more moderately correlated for the females ($r = .33$, $p < .001$). In comparing the two models, the magnitude for several of the statistical associations between Affective Distress and the remaining psychosocial constructs differed, however, further examination of these differences is reserved for the multiple group comparison. Finally, the same pattern of overlapping variances among the measures of personal competence was observed for the females, underscoring the developmental consolidation of these cognitive skills for this age group.


Let out feelings with someone close
Look for person who might understand problem
Find someone special to share problem with
Talk with one of my friends
Talk with mother or father
Functional Support
Talk with doctor
Talk with teacher
Talk with counselor or psychologist
Talk with professional clergy
Adult Social Support
Interpersonal Skills - 1
Interpersonal Skills - 2
Interpersonal Skills - 3
Interpersonal Life Skills
Social Anxiety - 1
Social Anxiety - 2
Social Anxiety - 3
Social Anxiety
Think about choices before taking any action
Get information needed to deal with problem
Think about which alternative is best
Think about risks associated with each solution
Think about possible consequences
Decision-Making Skills
Pretty sure can make plans to solve problem work
Can think of many different ways to deal with problem
With enough time can solve most problems
Trust my ability to handle new and difficult problems
When handling problems, things work out well
Problem-Solving Confidence
Self-Management - 1
Self-Management - 2
Self-Management Skills

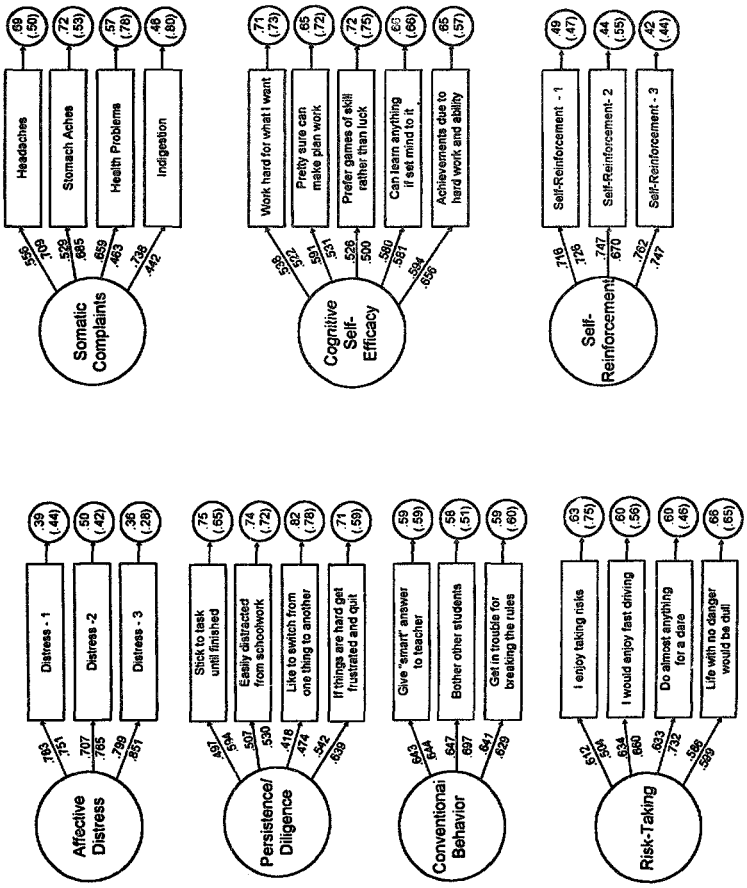


Fig. 1. Results of the confirmatory factor analysis model for males and females. Large circles represent latent constructs, rectangles are measured variables, and small circles with numbers are residual variances. Factor loadings are standardized (numbers above line correspond to males). All loadings significant ($ps < .001$; significance levels were determined by critical ratios on unstandardized coefficients). Not depicted in the figure are two-headed arrows — correlations — joining each possible pair of factors. Estimates for these correlations are given in Table III.

Results of the Simultaneous Group Comparison

The initial step in this procedure constrained the 53 factor loadings to equivalence across the gender groups. The goodness-of-fit for this model was significant, $\chi^2(2521, N = 1505) = 5949.90$, $p < .001$, CFI = .865, $\chi^2/df = 2.36$, and the significant p value indicated that a few cross-group constraints could be released (freely estimated). The nested chi-square difference between the sum of the independent group models and the invariant model was also significant, $\Delta\chi^2(53) = 170.72$, $p < .001$, indicating that the hypothesis of invariant loadings across genders could not be supported. Based on the univariate and multivariate modification indices, we released a total of 7 cross-group constraints (standardized factor loadings).

The 7 relaxed parameter constraints included two indicators of Somatic Complaints ("health problems," females = .471 and "had indigestion," females = .447 vs. .652 and .729 for males, respectively), two indicators of Functional Support ("talk with friend," females = .618 and "talk with mother or father," females = .370 vs. males = .474 and .488), and one indicator each of Risk Taking ("enjoy fast driving," females = .510 and males = .608), Self-Reinforcement (females = .678 and males = .741: a random parcel indicator), and Problem-Solving Confidence ("I trust my ability to handle new and difficult problems," females = .760 and males = .624).

Following the release of these seven parameters, none of the remaining cross-group restrictions were significant ($p < .05$) by the univariate or multivariate Lagrange Multiplier (LM) tests and a degree of partial measurement invariance was obtained. The nested chi-square difference [$\Delta\chi^2(7) = 108.56$, $p \leq .001$] indicated that the model with the released constraints was a significant improvement over the model with all 53 parameter loadings equivalently constrained. Subsequently, we tested a more restrictive model, which, in addition to the constraints applied to the measurement portion of the model, constrained the covariances to equivalence. Although it would have been ideal to have tested a model that constrained the covariances and nest this against an independence or null model, the obtained partial measurement invariance suggested that a more meaningful comparison would incorporate the slight differences in the factor loadings (it is more valid to interpret a model that incorporates the partial measurement differences than compare the covariances patterns irrespective of true underlying measurement differences).

The initial model containing the 46 constrained factor loadings and the 91 constrained covariances fit well, $\chi^2(2605) = 6004.9$, $p \leq .001$, CFI = .866, $\chi^2/df = 2.31$, and the nested chi-square difference between this model and the previous model that constrained only the factor loadings was also significant, $\Delta\chi^2(1) = 163.56$, $p \leq .001$. Based on the modification indices, we relaxed a total of 11 factor covariances to achieve a final model, $\chi2(2594) = 5926.24$, $p \leq .001$, CFI = .869, $\chi^2/df = 1.90$. The nested chi-square difference between this final model and the model with all 91 covariances constrained was also significant, $\Delta\chi^2(11) = 78.66$, $p \leq .001$ underscoring the superior fit of the final model.

Table IV contains the bivariate correlative patterns that were statistically different for males and females. An examination of these covariances underscores subtle and heretofore undetected gender differences. First, three somewhat distinct clusters were observed that involved: Affective Distress (two relaxed covariances), Cognitive Skills (four relaxed covariances), and Perceived Functional Support (four relaxed covariances). Different patterns that included both Perceived Adult Support and Social Anxiety were duplicated in the aforementioned clusters.

The most distinct gender difference was observed for Perceived Functional Support and Social Anxiety, where the association was negative for females ($r = -.10$) and positive for males ($r = .12$). Interestingly, a stronger association between Conventional Behavior and Social Anxiety was observed for males ($r = .12$) than females ($r = -.03$), whereas a stronger association between Affective Distress and Social Anxiety was obtained for females ($r = .32$) than males ($r = .22$). A sizable gender difference was also apparent for the correlation between Affective Distress and Perceived Adult support. Females had a small but significant negative association ($r = -.12$), whereas males had a nonsignificant and near zero association ($r = -.003$). The remaining correlative patterns differed only in magnitude, with the largest gender discrepancy observed between Perceived Functional Support and Interpersonal Skills (females: $r = .34$ and males: $r = .20$, respectively).

DISCUSSION

The current study examined patterns of covariation between affective distress and psychosocial functioning in a cohort of male and female adolescents. Although prior studies have examined gender differences in distress alone (i.e., mostly depressive symptoms), rarely have these studies explored relationships among as diverse a set of measures of psychosocial functioning and distress

simultaneously. With a few minor exceptions and for both males and female youth, affective distress was significantly related to most facets of psychosocial functioning. Thus, in this early stage of adolescent development, feelings of depressive mood and anxiety pervade most of the cognitive and socioemotional facets of the lives of these youth. The degree to which these relationships were dimensionally and structurally consistent across gender was the primary emphasis of this research and these findings are discussed accordingly.

Perhaps the most distinct correlates of depressive symptoms in both males and female youth were those related to cognitive efficacy. Youth characterized by high levels of affective distress were also characterized by low self-reinforcement skills, low self-monitoring, poor decision-making skills, poor personal self-efficacy, and low problem-solving confidence. In addition to deficits in personal competence and cognitive efficacy, these youth reported they lacked social efficacy, perceived diminished levels of general and specific coping resources (both adult and perceived tangible resources), were more anxious, complained of physical ailments, were less conventional, less diligent, and more sensation-seeking compared to youth characterized by low levels of affective distress.

We also found that an extremely high overlap between anxiety and depressive symptoms precluded examining their corresponding items as distinct constructs. Others (e.g., Feldman, 1993) have argued both conceptually and based on empirical evidence that depression and anxiety represent different facets of a single dimension of negative mood, albeit much of this evidence is derived from studies of college aged youth adults. The current data support this contention in a more youthful population. The observed dimensional homology between early adolescent distress and later adult distress (or negative affectivity) reinforces the developmental emergence of this broad-band construct.[6]

It is important to note that the measures of anxiety and depressive symptoms were specifically chosen to maximally differentiate anhedonic mood from restlessness and agitation and, as others have suggested, poor item discrimination is probably not the cause of the strong association between the two constructs in the current data, but rather a heightened level of agitation (both social and cognitive) may accompany dysphoric mood at this early age (e.g., Kendall and Watson, 1989).

[6]Although the debate regarding comparability of symptoms and clinical features for depression in children, adolescents, and adults is far from over, it is also worth noting that the *Diagnostic Statistical Manual* (third editor, revised) criteria (clinical features) required for a diagnosis of major depression in each of these age groupings are virtually identical, albeit some symptom substitution is allowed to account for developmental differences (i.e., irritable mood among children can be substituted for depressed mood in adults, and weight loss in children is construed as the inability to make developmentally expected weight gains [see, for example, Cantwell and Baker, 1991]).

Table IV. Results of Simultaneous Group Comparison: Gender Differences in Correlative Patterns[a]

Cluster/Dimensions	Female r_{xy}	Male r_{xy}	Absolute Difference	z Difference[b]
Affective Distress				
Affective Distress and Perceived Adult Support	-.120	-.003	0.117	-2.28[c]
Affective Distress and Social Anxiety	.316	.224[e]	0.092	1.92[c]
Cognitive skills				
Cognitive Self-Efficacy and Problem-Solving Skills	.679[e]	.539[e]	0.140	4.35[e]
Problem-Solving Skills and Somatic Complaints	-.224[e]	-.374[e]	0.150	3.20[d]
Self-Management Skills and Somatic complaints	-.152[e]	-.244[e]	0.092	1.86[c]
Perceived Functional Support				
Functional Support and Social Anxiety	-.100[c]	.118[d]	0.018	-4.24[e]
Functional Support and Perceived Adult Support	.204[e]	.339[e]	0.135	-2.83[d]
Functional Support and Interpersonal Skills	.344[e]	.198[e]	0.146	3.06[d]
Perceived Adult Support				
Adult Support and Interpersonal Skills	.145[d]	.017	0.128	2.50[c]
Social Anxiety				
Social Anxiety and Conventional behavior	-.033	.124[d]	0.091	-3.05[d]

[a] N's Male = 758 Female = 747.
[b] Fisher's r-to-z calculation reported as t values (significances based on one-tailed test).
[c] $p \leq .05$.
[d] $p \leq .01$.
[e] $p \leq .001$.

In addition to establishing a basis for understanding how distress relates to psychosociai functioning, we were also able to pinpoint subtle gender differences in the measurement of distress and various facets of psychosocial functioning. Perhaps the most compelling evidence for gender differences was provided by the subtle differences in covariance patterns between a select few measures. Overall, the simultaneous group comparison produced 11 statistical differences in the magnitude (and two discrepancies in the direction) of associations among the 14 dimensions of psychosocial functioning. Differences were most apparent in areas related to perceived functional (tangible) support, social anxiety, and cognitive skills. Compared to their male counterparts, females were more likely to report high distress associated with low levels of perceived adult support, high social anxiety associated with low levels of perceived tangible support, and high levels of perceived adult support linked positively with interpersonal skills (the latter association was almost zero for male youth). The remaining male–female differences reflected differences in magnitude, but continue to underscore the strong developmental linkages between perceived social networks and available coping resources and distress for females.

The emergence of gender differences in the patterns of covariation between distress and measures of cognitive and social functioning may harbor even more subtle socialization differences that consolidate developmentally and manifest themselves later in life as depressive symptoms. Gender differences in depression heighten during adolescence and females consistently report higher levels of depressive symptoms from adolescence onward. There appears to be a tremendous shift in emphasis for females during adolescence, with manifest changes in physical appearance, size of peer networks (which tend to be on a smaller scale for females than males), social functioning (e.g., dating), and sex role orientation (e.g., Ruble and Brooks-Gunn, 1982). As evidenced in the current findings, the basic foundation for this shift in gender-related socialization processes is circumscribed around developmental linkages between cognitive self-efficacy, perceived social support, and social and interpersonal problem-solving skills. The larger magnitude of association between distress and social anxiety, and likewise, between functional (tangible) support and interpersonal skills for female compared to male youth, may portend a developmental vulnerability that predisposes females to internalize their interpersonal concerns and increased cognitive reactivity as despair.

Limitations

There are several limitations to the current research that are worth noting. The study focused on self-report measures of affective distress and did not include sufficient measures to provide information reinforcing the

conceptual validity of affective distress or for that matter any of the measures of psychosocial functioning (e.g., multimethod, multitrait analyses) There was, however, a high degree of consistency among logically related measures (e.g., affective distress and somatic complaints), and further evidence was provided regarding the discriminant and convergent validity among the remaining psychosocial measures (the moderate empirical overlap among the measures of cognitive self-efficacy). Further replication of these results could benefit from widening the nomological network of measures and, in the case of affective distress, including greater numbers of items tapping cognitive, behavioral, vegetative, and physiological components of depression.

In addition, the measures used in the current study have limited clinical diagnostic utility and may only detect minimal or moderate (subthreshold) levels of psychological impairment. Based on the absence of a standardized clinical assessment of depression, we can only infer that exacerbated levels of depressive symptoms would maintain their pattern of statistical association with the psychosocial constructs (some support for this contention is garnered from both the adult and adolescent treatment literatures). It is quite possible, however, that with extreme depressive symptomatology the current pattern of covariation with the specific features of psychosocial functioning would not be maintained. Notwithstanding the absence of clinical diagnostic assessments, several studies have underscored that self-report depressive symptoms maintain some heuristic value for predicting vulnerability to later psychiatric disorder (Roberts *et al.*, 1991).

Finally, the cross-sectional nature of our data precludes exploration of specific developmental hypotheses. Many putative risk and protective factors that have been linked developmentally to distress (and specifically to depression) may presage experiences of distress. Future studies, which examine more than emotional "snapshots" in the lives of these youth, and which longitudinally track the development of these influences (from early childhood), may help elucidate their etiological significance.

Implications for Understanding Adolescent Mental Health

The current findings suggest three specific implications for mental health practitioners concerned with adolescent depression and affective distress. First, the similarities between male and female youth far outweigh the few statistical differences and help underscore a convergence in symptomatology and common vulnerabilities for this age cohort. If females diverge in their depressive (or anxious) symptomatology due to

psychoendocrine changes, as has been suggested in the literature, this does not surface in terms of the measures we included (e.g., social anxiety, somatic complaints, or social support). Studies of hormone–affect relations usually include biological markers, which provide a more precise picture of how changes in the endocrine system influence emotionality and psychological functioning (e.g., Brooks-Gunn and Warren, 1989). However, the current study did not include specific biological markers of pubertal processes, and future studies may want to include these measures in an effort to enhance prediction.

Second, the moderate empirical overlap between dimensions of cognitive self-efficacy, interpersonal skills, and depressive symptoms may point toward a "premorbid" psychosocial condition that accompanies the emergence of a more refined clinical depression. Thus, these findings help identify an etiological bridge between important aspects of psychosocial functioning and distress at an early age. In particular, the current findings highlight the importance of measures of personal competence skills as key ingredients in the processes related to adolescent growth and development. Findings of this nature continue to reinforce the developmental salience of cognitive factors and their potential utility as indicators of normative functioning.

In addition, the finding of a moderate to large overlap between several diverse facets of psychosocial functioning can be extremely useful to a variety of professionals who monitor the development and progress of youth. The strength of the overlap between dimensions of cognitive skills, interpersonal functioning, and distress may expedite symptom detection during the early stages of affective disturbances before manifestation of a more fully developed primary affective disorder (i.e., unipolar depression). Perhaps, greater efficacy in detection may expedite delivery of remedial treatment (which can include enhancing self-esteem and interpersonal skills). The substantial relationship between affective distress and cognitive self-efficacy also reinforces the need to integrate educational instructional programs with psychological treatment to improve these requisite skills in high-risk youth.

Third, others have reported that among adolescents, utilization of mental health and social service agencies, poor school performance, impaired social functioning, and comorbidity to name just a few, were reliable signs of major depressive syndromes and their combined recognition increased diagnostic certainty (Fleming *et al.*, 1989). The diversity of clinical features for depression and related disorders in adolescence requires a broader array of symptom indicators, especially given the close interplay of affective distress and various behavioral disorders (e.g., substance use) consistent with this age period (e.g., Labouvie, 1986). These and other findings

emphasize the need to assess and integrate a wider milieu of psychosocial functioning that in certain instances may reflect a beginning, albeit subclinical, face of depression. Notwithstanding, we made no effort to impart diagnostic criteria to the data and such clinical validation along with information from collateral sources would certainly enhance these findings.

Finally, age has long been considered a major contributing factor to developmental change. Quite possibly, as these youth mature, different facets of psychosocial functioning will emerge and manifest themselves as important developmental criteria linked to depressive symptomatology. An important question to consider is whether the picture of distress and psychosocial functioning that has emerged from these data suggests an age-specific cluster or syndrome, or whether distress and its associated psychosocial features reflect a degree of behavioral consistency that surfaces as depression in young adulthood. Only longitudinal data that monitors intraindividual developmental change will truly address these concerns.

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