ABSTRACT

This empirical study investigated the multivariable relationship between psychological distress and the combination of a set of four trauma events (victim of violence, witness of violence, victim of accidents, and interpersonal loss) and a set of four protective factors (emotional social support, sense of personal efficacy, easygoing temperament, and gender) among a sample of 1,066 graduating high school seniors in a large urban community. Each of the eight independent variables had a statistically significant zero-order correlation with psychological distress. The set of eight variables (four trauma and four protective) had a multiple correlation of \( R = .61 \) with psychological distress accounting for 38% of the variance (considered a very large effect size by Cohen (1988)). The protective factors had a larger effect on psychological distress than did the trauma variables. The study demonstrates the desirability of using a multideterminant approach rather than a single-determinant approach in the study of psychological distress.

Psychological distress (symptoms of anger, anxiety and depression) is surprisingly common among adolescents. For example, approximately one-quarter of adolescents experience a major depressive disorder (Lewinsohn, Rohde, & Seeley, 1998) and approximately one-half of older adolescents report moderate or high levels of depressive symptoms (Rosenthal & Schreiner, 2000). Depression and anxiety are highly co-morbid and may represent a single dysfunctional psychological state (Cf., Briere 1995; Olino et al., 2008), which is often described as "psychological distress." Many studies have attempted to identify the causes of psychological distress, and several types of traumatic events have been found to be correlated with it.

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Unfortunately, the correlations between various specific types of traumatic experiences and psychological distress are rather small. Quantitative reviews of the literature estimate the correlations of psychological distress with selected traumas to be: for community violence $r = .25$ (Wilson & Rosenthal, 2003); for childhood sexual abuse $r = .13$ (Rind, Tromovitch, & Bauşerman, 1998) to $r = .21$ (Paolucci, Genuis, & Violato, 2001); for domestic violence $r = .15$ (Kitzman, Gaylord, Holt, & Kenny, 2003) to $r = .28$ (Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003); for disasters $r = .17$ (Rubonis & Bickman, 1991); for accidents $r = .25$ (Ozer, Best, Lipsey & Weiss, 2003); and for interpersonal loss $r = .25$ (Lazarus, 1990).

These small correlations at first were interpreted optimistically as indicating that not everyone who was exposed to trauma developed psychological distress. This realization resulted in a search for resiliency and protective factors—characteristics and conditions that, when they co-occur with trauma, tend to diminish the ensuing level of psychopathology. However, the research on resiliency and protective factors has not been very productive (Buckner, Beardslee, & Bassuk, 2004; Gorman-Smith & Tolan, 2003). A number of potential protective factors have been identified, but the empirical evidence for any of them is quite scarce (Luthar, 2006), and the correlations between protective factors and psychological distress is typically rather small—between .10 and .30 (see above).

The level of understanding of the origins of psychological distress seems to be not very high; research has identified a number of potentially traumatic events and a number of potential protective factors, but has not been able to account for substantial amounts of the variance in the distribution of psychological distress in community populations. The low empirical correlations between psychological distress and trauma and protective variables, however, may be an artifact of a “single-determinant of behavior” orientation in the research. When a behavior actually has multiple determinants, this fact in itself places constraints on the size of the correlation between the behavior and any one of the determinants (Ahadi & Diener, 1989; Strube, 1991). Research based on a single-determinant strategy is doomed to find small relationships when a behavior has multiple determinants.

raised the possibility of "multiple protective variables operating in concert." However, these ideas have not been implemented, and there have been almost no empirical studies of the cumulative effects of sets of multiple traumatic events or of the cumulative effects of sets of multiple protective factors.

The present paper presents a multivariate study of the combined effect of exposure to several types of potentially traumatic experiences during high school and the presence of several protective factors during the high school years on the level of manifesting psychological distress in late adolescence. The hypothesis is that a combination of exposure to several traumatic events and the presence of several protective factors will account for a substantial amount of the variance in the manifestation of psychological distress symptoms among late adolescents.

**METHOD**

**Design.** The research used a cross-sectional correlational research design; all the data are collected at the same time. Information was collected using a printed questionnaire administered in a classroom setting by trained undergraduate research assistants. The data were analyzed using hierarchical multiple regression. The design used a convenient purposive sample rather than a probability sample. The purpose was twofold: one, to obtain a sample of older adolescents living in a large urban center who were relatively homogeneous in age; and two, to obtain a sample that is heterogeneous in type of school attended, gender, economic status, and race/ethnicity. The homogeneity in age and type of community would increase the internal validity of the study, and the diversity of the sample in terms of other demographic variables would increase the external validity. The sample was also limited to schools in which the administration allowed the research to be carried out.

**Sample.** The sample comprised 1,066 older adolescents (age 18). These were graduating seniors in four different high schools in one large U.S. city: an elite academic magnet school serving a city-wide clientele in which most students received a state Regent's diploma; a school serving a geographic area in which most students received a local non-Regents diploma; a vocational training school in which students received a certificate of attendance; and an alternative school for high school dropouts from which the students received a GED. The sample was very diverse: 42% were male and 58% female; in terms of household income, 10% reported an income of less than $15,000 per
year and 9% reported an income higher than $100,000 per year, with the median annual income being $40,000; in terms of race and ethnicity, 20% were Asian, 40% African American, 15% Latino, 20% White, and 5% reported "other" including mixed.

**Measures.** All measurement was based on self-report. The dependent variable, Psychological Distress, was measured by an additive scale comprising the 25 items in the dysphoria domain of Briere's (1995) *Trauma Symptom Inventory*. The scale reflects the frequency of experiencing the symptoms of anger, anxiety and depression during the past two months. The scale was standardized on a large national representative sample of adults in the U.S. It has construct validity in that it differentiates with a large effect size between psychiatric patients and non-patients (Briere, 1995). The scale has an internal consistency reliability of .95.

Experience with trauma (during high school years) deals with four common experiences among adolescents: being a victim of interpersonal violence in the community outside home, witnessing interpersonal violence to others in the community outside the home, interpersonal loss, and being a victim of accidents. The victim of violence items and the witness of violence items were adapted from the NIMH Survey of Exposure to Community Violence (Richters & Saltzman, 1990). The Victim of Violence scale contains seven items (e.g., having been beaten up or mugged); it has an internal consistency reliability of .70 (Wilson & Rosenthal, 2003). The Witness of Violence scale contains 11 items (e.g., seeing someone else being attacked or stabbed with a knife); it has an internal consistency reliability of .91 (Wilson & Rosenthal, 2003). The items in the Interpersonal Loss scale were adapted from the Negative Life Events Scale (Lazarus, 1990); the one-week test-retest reliability of this scale was .79. Experiencing an Accident was measured by a single self-report item.

The study included four protective factors that have been identified in the literature (Luthar, 2006): emotional social support, a sense of personal efficacy, an easygoing temperament, and being a male. Emotional Social Support was measured by a six-item additive scale (e.g., "One good thing about my life is that I always had some person older than me around whom I could count on for support."); it has an internal consistency reliability of .87 (Rosenthal & Wilson, 2008). Sense of Personal Efficacy was measured by a seven-item additive scale (e.g., "I am usually successful in getting my plans to work out."); it has an internal consistency reliability of .75 (Rosenthal & Wilson, 2008). Easygoing Temperament was measured by a two-item additive scale (e.g., "Most
people would describe me as an easygoing person.”); it has an internal consistency reliability of .75. Gender was self-reported with a single item.

**Data analysis.** Data were analyzed by hierarchical multiple regression using SPSS. Three models were tested: trauma variables alone; protective variables alone; and trauma variables and protective variables together. Bivariate relationships are reported in terms of zero-order correlation and partial correlation; multivariate relationships are reported in terms of $\beta$, $R$, $R^2$ and $R^2$ change. The large sample size ($N = 1,066$) provides statistical power to detect even a small relationship at a stringent significance level ($p < .01$) 95% of the time (Cohen, 1988).

**RESULTS**

**Distribution on Variables**

The sample was quite diverse on all of the variables.

**Psychological distress.** Some individuals in the sample reported never experiencing any of the 25 psychological distress symptoms in the past two months, while others reported experiencing all the symptoms often in the past two months. The median level of psychological distress was equivalent to experiencing all 25 of the symptoms “seldom” during the previous two months.

**Experience of trauma.** There also was great variability within the sample on exposure to trauma during the high school years. In terms of being a Victim of Violence in the community during the high school years, 40% were never a victim, 34% were a victim once or twice, and 25% reported being a victim of community violence more than two times. Regarding Witness of Violence, within the sample 5% reported never witnessing community violence during high school years, 12% witnessed violence once or twice, 53% reported witnessing violence several times, and 30% witnessed often. With regard to experiencing Interpersonal Loss during the high school years, 34% reported having experienced none, 46% reported experiencing one loss, and 20% reported experiencing two or more interpersonal losses. In terms of Experiencing an Accident during the high school years, 67% reported never being in an accident, 29% reported being involved in an accident once or twice, and 4% reported experiencing several accidents.

**Protective factors.** The presence of protective factors also varied. The theoretical range for the Sense of Personal Efficacy scale ranges from 5-25, and the sample fully covered this theoretical range. However, the
distribution on this variable was highly negatively skewed indicating that scores clustered around higher scores; the members of the sample in general reported a relatively high Sense of Personal Efficacy. The sample's actual range of scores on the Emotional Social Support scale covered the entire theoretical range of the scale (6-30), but the distribution was extremely negatively skewed; most of the sample agreed strongly with the statements indicating the presence of an adult confidant. Similarly, the distribution of the sample on Easygoing Temperament covered the entire theoretical range for the scale (2-10); the distribution was moderately negatively skewed with the typical individual in moderate agreement with the statement that he or she was easygoing. The sample was made up of 42% males and 58% females.

**Bivariate Correlations between Independent Variables and Distress**

All eight of the independent variables were statistically significantly correlated with psychological distress (see Table 1). Although there was some intercorrelation among the eight variables, seven of the eight remained statistically significantly correlated with distress after the effects of the other variables were partialled out. The zero-order correlations between the individual trauma variables and distress ranged from $r = .20$ to $r = .26$—similar to trauma-distress correlations reported in the literature. The correlations between protective factors and distress were more varied: those for Personal Efficacy and Social Support were greater than $r = .30$ and those for Easygoing and Gender were less than $r = .20$. The four trauma variables were positively related to distress; the four protective factors were negatively related.

**Multi-variables Analyses**

The multiple correlation between the four trauma variables and distress was $R = .35$, accounting for 12% of the variance in psychological distress symptoms (see Table 1). Incorporating multiple types of trauma in a regression equation is considerably better at predicting distress than any single type of trauma alone. The multiple correlation between the four types of protective factors and psychological distress was $R = .52$ accounting for 26% of the variance in distress.

The multiple correlation between psychological distress and the combined trauma and protective variables was $R = .61$ accounting for 38% of the variance in distress. Six of the eight variables had statistically significant weights in the regression equation—the two that failed to reach significance were Interpersonal Loss and Easygoing Temperament. Note that these two did have statistically significant zero-order bivariate correlations with psychological distress, but their effects overlapped with the other variables in the multiple analyses.
Table 1

Bivariate and Multiple Correlations between Psychological Distress and Trauma and Protective Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Zero-Partial</th>
<th>$\beta^b$</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
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</thead>
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<tr>
<td><strong>Trauma Variables</strong></td>
<td></td>
<td></td>
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<tr>
<td>Accident</td>
<td>.25***</td>
<td>.14***</td>
<td>.08**</td>
<td></td>
<td></td>
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<tr>
<td>Victim of Violence</td>
<td>.24***</td>
<td>.07*</td>
<td>.12***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Witness Violence</td>
<td>.26***</td>
<td>.13***</td>
<td>.22***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal Loss</td>
<td>.20***</td>
<td>.12***</td>
<td>.05</td>
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<td></td>
<td></td>
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<td>.35*** .12*** .12***</td>
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<td><strong>Protective Variables</strong></td>
<td></td>
<td></td>
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<tr>
<td>Personal Efficacy</td>
<td>-.46***</td>
<td>-.36***</td>
<td>-.36***</td>
<td></td>
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</tr>
<tr>
<td>Social Support</td>
<td>-.34***</td>
<td>-.23***</td>
<td>-.17***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easygoing</td>
<td>-.14***</td>
<td>-.05</td>
<td>-.04</td>
<td></td>
<td></td>
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<tr>
<td>Gender (male)</td>
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<td>-.14***</td>
<td>-.22***</td>
<td></td>
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<td></td>
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<td>.61*** .38*** .26***</td>
</tr>
</tbody>
</table>

*aAmong trauma variables, the other 3 trauma variables were partialled out. Among protective variables, the other 3 protective variables were partialled out. bEight variable (trauma plus protection) regression equation.

*p < .05, **p < .01, ***p < .001.
The effect of the set of protective factors was approximately 2\frac{1}{2} times the effect of the set of trauma variables.

DISCUSSION

The hypothesis guiding the study, that a combination of exposure to several traumatic events and the presence of several protective factors will account for a substantial amount of the variance in manifesting psychological distress symptoms among late adolescents, was confirmed. The multiple correlation between a set of eight of variables (four types of trauma and four protective factors) was $R = .61$. (Note however, that only six of the eight variables had statistically significant beta weights in the regression equation; the other two variables overlapped with the six in their relationship with psychological distress.) These eight variables accounted for 38% of the variance in psychological distress in a diverse sample of older adolescents; this is deemed a very large effect size by Cohen (1988). This finding contrasts with the typical finding reported in studies of single traumas that trauma has a small to medium effect size relationship with distress. The result validates the contention that psychological distress in adolescents is a multi-determined phenomenon and that research in this area should move to using multi-variable rather than single-variable designs.

The research brings into sharp focus the necessity of taking into consideration multiple types of trauma experience when trying to understand the occurrence of psychological distress in adolescents. But it also brings into even sharper focus the necessity of considering the presence of protective factors in conjunction with trauma experience in understanding psychological distress. Indeed the findings suggest that the presence of protective factors may be of as great importance (and perhaps even greater importance) as exposure to potentially traumatic events in understanding psychological distress. The set of protective factors used in the present study accounted for 2\frac{1}{2} times the amount of variance in distress as did the set of potentially traumatic events used in the study.

Some of the ancillary findings of the study also deserve to be noted. The distribution of exposure to potentially traumatic events such as Victim of Violence, Witness of Violence, Interpersonal Loss, and Accidents illustrates the high degree of exposure to potentially traumatic events that is characteristic of the experience of older urban adoles-
cents. But the findings further indicate that these adolescents are also characterized by high levels of protective resources. Most of these then have a high level of Sense of Personal Efficacy and of Emotional Social Support. It appears that the absence of these protective resources is the less usual situation, and its absence constitutes a vulnerability state for developing psychological distress. Preventive and ameliorative interventions aimed at reducing levels of psychological distress might focus on screening for the absence of these protective resources, and identifying individuals who can benefit from interventions focused on building protection.

The research has three limitations that must be considered in interpreting the findings: first, it uses a convenient purposive sample rather than a probability sample; second, it considers a somewhat restricted set of both potentially traumatic events and of protective factors; and third, it uses a correlational rather than an experimental research design. The lack of a probability sample limits the strict generalizing of the results to a specific defined population; however, the diversity of the sample in terms of types of schools, gender, economic status, and race/ethnicity increases the range of general applicability of the findings. The tradeoff would seem to be a reasonable one. Further, the sample is similar to more general populations in terms of the distribution of psychological distress. The distribution of psychological distress in the sample is similar to the distribution among young adults in the national representative sample used to standardize the Trauma Symptom Inventory (Briere, 1995). The size of the relationship between exposure to violence and psychological distress within the present sample is the same as the mean relationship between these two variables found in a meta-analysis of 37 separate studies involving over 17,000 adolescents (Wilson & Rosenthal, 2003). These similarities provide a strong argument for the generalizability of the findings of the present study to a wide range of adolescents in the U.S.

Although the present study had a multi-determinant rather than a single-determinant orientation, and examined the effects of multiple types of trauma and multiple protective factors on psychological distress, it used only four trauma variables and four protective factors. Obviously there are more than four types of potentially traumatic events—for example, sexual assault and domestic violence—and these may be more traumatic than being a victim or a witness to community violence. In addition, other protective factors may well exist—for example, religious beliefs and abstract cognitive ability—and these may be as protective as Emotional Social Support or a Sense of Personal Efficacy. The results of the research may well have been different with
different sets of trauma and protective variables, and with larger sets of these variables. Nevertheless, the restricted sets of variables employed in the present study demonstrated the superiority of using a multi-variable approach to accounting for differences in psychological distress. Larger sets of variables, if they are relatively independent of each other, are likely to be more effective in predicting levels of distress. On the other hand, the finding that protective factors are more highly correlated with distress than is trauma exposure may be an artifact of the particular variables contained in each set. The issue of just how much of the variation in psychological distress may be accounted for by the combination of trauma exposure and protective factors and of the relative importance of trauma and protection must await further research with larger sets of explanatory variables.

Certainly, one must keep in mind that the research used a correlational rather than an experimental design, and that the relationships found in the research are correlations between variables, not cause and effect relationships.

Nevertheless, in spite of these limitations, the findings of the research constitute a reasonable first approximation of the quantitative impact of a combination of trauma experience and the presence of protective variables on psychological distress among older urban adolescents. They may stimulate new thinking about interventions to prevent or ameliorate psychological distress.

REFERENCES


