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Stress and psychopathology in children and adolescents: is there evidence of specificity?

Susan D. McMahon,[1] Kathryn E. Grant,[1] Bruce E. Compas,[2] Audrey E. Thurm,[1] and Sydney Ey[3]

[1]DePaul University, USA; [2]University of Vermont, USA; [3]Pacific University, USA

Research on the relations between specific stressors and specific psychological outcomes among children and adolescents is reviewed. Specificity, the notion that particular risk factors are uniquely related to particular outcomes is discussed from a theoretical perspective, and models of specificity are described. Several domains of stressors are examined from a specificity framework (e.g., exposure to violence, abuse, and divorce/marital conflict) in relation to broad-band outcomes of internalizing and externalizing symptoms. Studies that tested for specificity conducted within the past 15 years are examined, and definitional problems are highlighted. Little evidence for specificity was found. Methodological problems in the literature and the lack of theory-driven specificity research are discussed, and directions for future research are identified. **Keywords:** Stress, psychopathology, specificity, child, adolescent.

Understanding the role of stress in the lives of children and adolescents is of both theoretical and practical significance. At the theoretical level, most prevailing models of developmental psychopathology recognize the potential importance of psychosocial stress in the etiology and maintenance of both internalizing and externalizing disorders in youth[1] (e.g., Cicchetti & Toth, 1991, 1997; Haggerty, Sherrod, Garmezy, & Rutter, 1994; Rutter, 1989). At the practical level, conditions and problems continue to worsen for children and adolescents. Levels of poverty, violence, and family adversity appear to be increasing (Children's Defense Fund, 1999), along with rates of emotional and behavioral problems in young people (Achenbach & Howell, 1993). Despite these trends, research on psychosocial stress and its relation to maladaptive outcomes in childhood and adolescence has lagged behind similar research with adults. Reviews concerning the impact of psychosocial stress on youth published in the past 15 years present a picture of a field early in its development (Cohen & Park, 1992; Compas, 1987; Johnson, 1986; Johnson & Bradlyn, 1988). In particular, research focused on testing theoretically-driven, developmentally-based models of *specific* relations between particular stressors and particular psychological outcomes has been lacking.

Specificity refers to the determination that a particular risk factor is uniquely related to a particular outcome (Garber & Hollon, 1991). In psychopathology research, a focus on specificity reflects an attempt to move beyond Selye's (1956) model in which 'general change' is associated with 'general distress'. Understanding specific pathways that link risk with maladjustment (e.g., death of a parent is linked to depressive symptoms, but not disruptive behavior) is central to the goals of developmental psychopathology (Cicchetti & Cohen, 1995). Developmental psychopathology also considers equifinality, wherein many different avenues (of stressful experiences) can lead to the same outcome, and multifinality, in which similar conditions lead to multiple outcomes (Cicchetti & Toth, 1997). It is particularly important to examine specificity in children, as it is assumed that individual pathways evolve, and the causal processes contributing to these varied trajectories are multilevel. Developmental psychopathology acknowledges that many systems affect a child's behavior, including family variables, larger contextual variables, environmental stressors, and biological vulnerability. In this way, a model of developmental psychopathology does not presuppose evidence exists for specificity of environmental stressors and outcomes, although it does not disregard this possibility. It is only through theoretical guidance and empirical study that we may examine the strength of multifinality, equifinality and their equilibrium or middle ground, specificity.

In spite of the potential importance of this avenue of research, very few investigators have *intentionally* tested for specificity relations between particular stressors and particular psychological outcomes. Many studies have *explored* the relations between particular stressors and particular outcomes, yet to date there has been no attempt to integrate these findings. The purposes of the present review are to: 1) examine research on specificity relations between particular stressors and particular psychopathological outcomes, 2) summarize and integrate empirical findings, 3) define remaining concerns, and 4) highlight important directions for the next phase of research. The integration of these findings uses a lens of broad-band patterns of outcomes

[1] We use the term 'youth' throughout this review to refer to children and adolescents.

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(i.e., internalizing versus externalizing behaviors). Although the field would benefit from moving toward a more narrow focus to capture the connections between specific stressors and specific outcomes, the variability in studies, particularly in terms of measurement and definition, and the lack of studies that focus on specificity, necessitate a more global review at this point in time.

Methods of specificity research

The basic methodological requirement for specificity research is that the stressful experience is categorized by type of stressor, the psychological outcome is categorized by type of psychopathology, or both stressor and outcome are categorized. Although stressors can be categorized in numerous ways, categorization by type of event is the most appropriate. Categorizations based on frequency, duration, or severity of stress are less appropriate for specificity research, as specificity effects may be confounded with additive effects of stress (Rutter, 1989; Garmezy, 1987). For example, there is considerable evidence for the additive (and even multiplicative) effects of stress, such that exposure to more stressful life events or to more severe stress is predictive of more severe psychological symptoms (Rutter, 1989). However, much additional work needs to be done in conceptualizing and measuring stressors in a manner that captures the complexity of stressors in order to establish a meaningful examination of specificity in relation to psychological outcomes.

Categorization by type of stressful experience can be accomplished in several ways. Specific types of major life events may be compared. For example, parental divorce may be compared to death of a parent or child abuse. Major life events may also be subcategorized based on specific characteristics. For example, child abuse may be classified as physical abuse or sexual abuse (Manly, Cicchetti, & Barrett, 1994; Wolfe, Sas, & Wekerle, 1994). Exposure to violence may be classified as experienced versus witnessed violence, and chronic versus singular. One of the major challenges with this type of approach is that major events may subsume a large number of smaller events that have different characteristics. For example, divorce and exposure to violence may involve exposure to both conflict and loss. Another approach is to group individual stressors listed on cumulative measures of stressful life events based on theoretically derived categories. For example, events may be categorized as 'achievement events' versus 'affiliative events', or 'loss events' versus 'conflict events' (Sandler, Reynolds, Kliewer, & Ramirez, 1992). This type of categorization could be further refined to include various subcategories that describe stressors that are similar in nature in order to examine specificity between stressors and outcomes. For example, in terms of loss events, death of a parent due to physical illness could be differentiated from death of a parent as a result of acts of violence. Unfortunately, there is no agreed upon taxonomy of event characteristics, and theoretical characteristics may be highly correlated with one another.

In order to understand the many complexities regarding understanding the influence of stressors on psychopathology, several steps need to be taken in order to develop a taxonomy of stressors for youth of various ages and backgrounds. Grant et al. (in press) suggest several steps to developing such a system. The first step would be to conduct structured interviews that assess events/circumstances as 'objectively threatening to the health or well-being of youth'. Then, lists of stressors can be generated and level of threat can be evaluated by external raters, taking into account the context of the stressor. Checklists can be developed for children of various ages and backgrounds, and norms can be established, using a method similar to Achenbach's method (1991; Achenbach and Dumenci, 2001) for examining psychopathology.

Psychological outcomes can be categorized by type using several different approaches. Single symptoms, clusters of symptoms (or syndromes), or disorders may be compared. For example, studies using the CBCL (Achenbach, 1991) may report results in terms of specific symptoms (e.g., endorsement of depressed mood vs. temper tantrums), narrow-band syndromes (e.g., anxious-depressed syndrome vs. aggressive syndrome), or broad-band syndromes (internalizing vs. externalizing syndromes). Categorization of psychological outcomes is complicated by the comorbidity among different outcomes. In addition, there are many methodological difficulties when stressors and psychopathology are examined together, including contamination of stress and outcomes, common method variance, and time precedence. Beyond categorization of stress and psychological outcome, specificity research does not require a specific methodology per se. However, design of a study directly affects the type and degree of specificity that may be gleaned from the results.

Models of specificity

Three specificity designs have been utilized in the literature and are outlined in Figure 1: Stressor specific, Outcome specific, and Stressor-Outcome specific. The Stressor specific model includes several stressors and one outcome. This design allows for the identification of specificity of stressor in relation to a particular outcome, but does not allow for determination of specificity of outcome. In this model, the effect of each stressor on the outcome should be assessed independently of other stressors. The outcome could be identified as unique or common to various stressors. For example, Jarvelin, Moilanen,

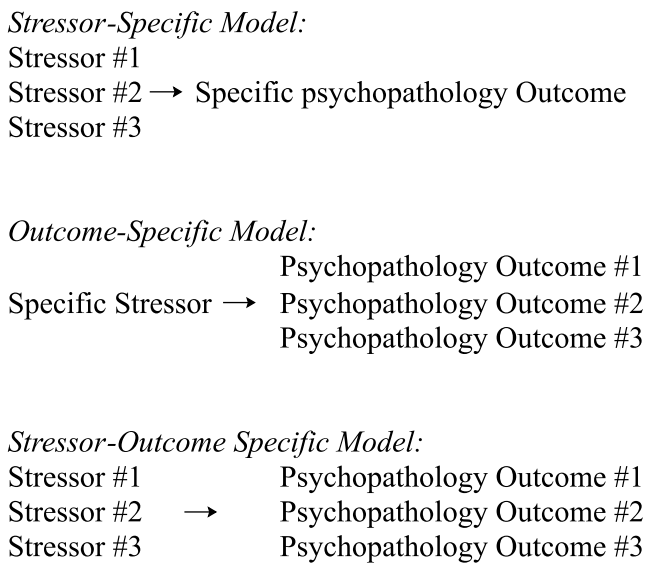


Figure 1 Models of specificity designs

Vikevainen-Tervonen, and Huttunen (1990) examined a number of stressful life events in relation to enuresis in children and found that divorce was the only stressful experience significantly related to enuresis. However, since only one psychological outcome was examined, it is unknown whether divorce would also predict other outcomes in this sample (e.g., depression, aggression).

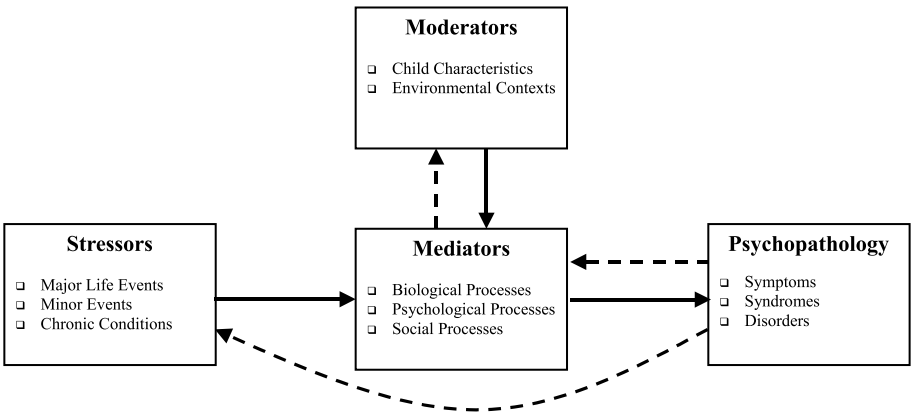
The Outcome specific model includes several outcomes but only one stressor, allowing for the identification of specificity among outcomes but not among stressors. For example, Brody and Forehand (1990) examined rates of internalizing and externalizing symptoms among children exposed to marital conflict and found that internalizing symptoms were associated with parental conflict while externalizing symptoms were not. However, since only one stressful experience was examined, it is unknown whether other stressors would also predict high rates of internalizing symptoms relative to externalizing symptoms.

The Stressor-Outcome specific model includes a heterogeneous sample of stressors and a range of psychological outcomes, allowing for specificity of both stressor and outcome to be determined (Garber & Hollon, 1991). Each of the stressors can be examined in relation to each of the outcomes. Unlike Stressor specific and Outcome specific models, Stressor-Outcome specific models fully address whether a specific stressor is uniquely related to a specific outcome. Optimally, both the unique and common effects would be examined across different stressors. Sandler et al. (1992) utilized a Stressor-Outcome specific design to test the hypotheses that stressful events categorized as 'conflict events' would specifically predict externalizing symptoms and stressful events categorized as 'separation events' would specifically predict internalizing symptoms. Using multiple categories of stressful experiences and multiple psychological outcomes, Sandler and colleagues (1992) found some evidence for their hypotheses (described further below).

Theoretically, models of specificity exist within the framework of broader conceptual models that include moderators and mediators of the relation between stress and psychological symptoms as well as reciprocal and dynamic relations among these variables (see Figure 2). Specific relations between particular stressors and particular outcomes may be mediated by psychological, biological, or social processes, or moderated by child characteristics or environmental context (Grant et al., in press). Thus, the specific form of symptoms may differ as a function of individual, family, or community factors, mediating processes, and the specific nature of the stressor. For example, death of a parent may be linked to depressive symptoms, and not disruptive behavior; but this relation may be particularly strong for older (adolescent) females, and may only exist when death of a parent is accompanied by additional household burdens. Very few studies testing full specificity designs (i.e., specific stressors linked to specific outcomes, via specific mediators, in the context of specific moderators) have been conducted. Although examination of specific mediators and moderators are beyond the scope of this study, it is important to acknowledge that they may influence our understanding of specific relations between stressors and outcomes. As a first step, however, it may be helpful to examine the results of available studies to take a closer look at the concept of specificity in relations between stressors and outcomes.

Method of review

Literature was reviewed using both computer (PsychLit and PsychInfo) and manual methods (tracking citations). A computer-generated search was conducted using the following keywords: stress (or events or hassles) and psychopathology (or psychological symptoms or psychological disorder) and child (or adolescent), limited to empirical studies published in scientific journals in English. This search was repeated with specific additional stressors substituted for the stress term: abuse, divorce (or marital conflict), violence, poverty (or low income), illness (or death). Searches including these particular stressors were conducted because these stressors have not always been defined as stressors within specific studies but have received a great deal of research attention. Results of these additional searches were combined with the original search and duplicates removed, leaving approximately 1,500 original empirical articles on the relation between stress and psychological symptoms during childhood or adolescence published in scientific journals between 1987 and 2001. Research from this era was selected, because the last comprehensive reviews of



Central Hypotheses of Conceptual Model:

1. Stressors lead to psychopathology.
2. Moderators influence the relation between stressors and psychopathology.
3. Mediators explain the relation between stressors and psychopathology.
4. There is specificity in the relations among stressors, moderators, mediators, and psychopathology.
5. The relations among stressors, moderators, mediators, and psychopathology are reciprocal and dynamic.

Figure 2 Conceptual model of the role of stress in the etiology of child/adolescent psychopathology (Grant et al., in press)

this literature appeared approximately 15 years ago (Compas, 1987; Johnson, 1986).

Approximately 15% of these studies (over 200 studies) tested for specific associations between particular stressors and particular outcomes (either cross-sectionally or longitudinally). Studies that defined stress as an environmental threat to the individual, or as a transactional relationship (*relationship* between person and environment *perceived* as taxing or exceeding resources and endangering well-being; Lazarus & Folkman, 1984), were included in this review. We excluded studies using a pure 'response-based' definition of stress (i.e., psychological or physiological distress in response to external events; Selye, 1974), as this definition is overly confounded with psychological symptoms.

The relative ease with which studies may examine specificity relations, without intentionally setting out to do so, has resulted in numerous studies with results regarding specificity effects. However, testing for specificity was not central to the research aims of most of these studies, and, in most cases, specific relations examined were not guided by developmental psychopathology theory. Rather, researchers included more than one stressor and more than one outcome in analyses focused on other research questions. Nonetheless, examination of results of these studies is an essential first step toward evaluating the validity of specificity theory.

The major focus of this review is on the more rigorous Stressor-Outcome specific studies (summarized in Table 1) and on the broad categorization of internalizing versus externalizing outcomes. In some cases, only internalizing or externalizing outcomes were examined, so these studies were not included in the review or the table. Given the preliminary nature of this review (it is the first to review evidence of specificity effects), the dearth of theory-driven studies, and the variability in measurement of psychological outcomes in those studies that met inclusion criteria, examination of more specific psychological outcomes is not warranted (although many specific outcomes are reported in Table 1). Results of Outcome specific studies are also briefly reviewed (but not presented in the table), as determination of specificity of outcomes is most pertinent to the field of developmental psychopathology. Results of Stressor specific studies are not reviewed, as these studies do not allow us to contrast psychological outcomes based on the broad categorization system of internalizing versus externalizing outcomes.

Stressors that have been the focus of Stressor-Outcome specific studies include exposure to violence, abuse, and divorce/marital conflict.[2] In each of the areas, we looked for consistent patterns of specificity. That is, stressors within a particular category were related to internalizing but not externalizing outcomes, or externalizing but not internalizing outcomes. Mixed evidence for specificity was reported when there was not a consistent pattern of specificity (i.e., stressors were related to internalizing outcomes but other stressors within the same category were related to externalizing outcomes). No evidence of specificity was reported when particular stressors were not related to either externalizing or internalizing outcomes or were related to both internalizing and externalizing outcomes. Results of Stressor-Outcome and Outcome Specific studies are reviewed below, and findings of specificity for Stressor-Outcome studies (specificity, mixed specificity, no specificity) are presented in Table 1.

[2] Some of the studies fit into more than one category, so they are cross-referenced in Table 1.

Table 1 Studies using 'Stressor-Outcome' designs to test for specificity between stress and symptoms (internalizing and externalizing) among children and adolescents

Exposure to Violence

Author	Sample	Design	Stress measure	Outcome measure	Findings
Attar, Guerra, & Tolan (1994)	384 children (1st, 2nd & 4th grade; 50% F; 57% AA, 43% L)	C/S & L (2 ts, 1 year apart)	self-report cumulative stress scale (SI)	teacher-report aggressive & anxious-depressed symptoms (TRF)(int & ext)	***Specificity for ext (not int):*** *transitions & exposure to violence* (but not circumscribed events) predicted *aggressive* symptoms cross-sectionally (not anxious-depressed sx) & *circumscribed events & exposure to violence* (but not transitions) predicted *aggressive* symptoms over time
Durant, Pendergrast, & Cadenhead (1994)	224 adolescents (11–19 yrs; 56% F; 100% AA)	C/S	several types of exposure to violence (modified SECV), exposure to domestic violence (CTS)	self-report depressive sx (CDI), conduct symptoms (gang fighting, physical fights, domestic violence) (DYSSRDQ) (int & ext)	***Specificity for ext (not int):*** *exposure to violence & victimization* by violence was correlated with all types of *conduct* symptoms; *exposure to domestic violence* was specifically related to *domestic fighting*
Gorman-Smith & Tolan (1998)	245 youth (11–15 yrs at Time 1; 100%M; 100% AA & L) & caregivers	L (2 ts, 1 year apart)	exposure to violence; stressful life events, family relations (dev by au), parenting (modified PYS)	parent, youth, & teacher report of anxiety/ depression & aggression (int & ext)	***Mixed Specificity:*** *Exposure to violence* was related to *aggression & anxiety/ depression*, but *other stressors* were related to *anxiety/depression*, not aggression at Time 2
Levendosky & Graham-Bermann (1998)	121 children (7–12 yrs; 51% F): 60 of battered women & 61 controls (53% W, 47% AA)	C/S	witnessed battering of mother (CTS), witnessed psychological abuse of mother (VAWS); mother-report income	mother-report (CBCL) (int & ext)	***Specificity for int (not ext):*** exposure to *battering of mother* was associated with *internalizing* (but not externalizing) symptoms; Exposure to psychological abuse of mother was associated with internalizing & externalizing symptoms ***No Specificity for poverty:*** Income was not associated with either internalizing or externalizing symptoms
Lynch & Cicchetti (1998)	322 children (7–12 yrs): 188 maltreated, 134 nonmaltreated (37% F; 62% AA, 12% L, 2% O)	L (2 ts, 1 year apart)	exposure to violence (CVS), maltreatment (DSS records)	teacher report int & ext; child report PTSD sx (Levonn Measure), depression & anxiety (Checklist of Child Distress Symptoms) (int & ext)	***Mixed Specificity for exposure to violence:*** *exposure to violence* was related to *ext & depressive symptoms*; Exposure to violence was specifically related to depressive symptoms (but not general ext or int) ***Specificity for ext for sexual abuse:*** *Sexual abuse* was specifically related to *externalizing* behavior (relationship); ***No Specificity for maltreatment:*** related to both int & ext behavior
McCloskey, Figueredo, & Koss (1995)	365 children (6–12 yrs; 50% F; 53% W, 35% L, 6% AA, 2% O) in shelters or treatment	C/S	exposure to domestic violence (e.g., verbal, physical, sexual, partner to mother, partner to child, mother to child)	parent & self-report psychological disorders (CBCL, CAS) (int & ext)	***Mixed Specificity:*** *exposure to domestic violence* was associated with *aggression, hyperactivity, delinquency, depressive symptoms, obsessive-compulsive symptoms, oppositional behavior, anxiety, separation anxiety, somatic & withdrawal symptoms* (but not enuresis & encopresis)

Table 1 Continued

Exposure to Violence

Author	Sample	Design	Stress measure	Outcome measure	Findings
O'Keefe (1994a)	185 children (7–13 yrs; 49% F; 37% L, 21% AA, 42% W) in shelters	C/S	marital violence, mother–child aggression, father–child aggression (modified CTS)	parent report (CBCL) (int & ext)	***Mixed Specificity:*** *marital violence & mother-child aggression* were both related to both *internalizing & externalizing problems*, but *father–child aggression* was *not* related to either internalizing or externalizing
O'Keefe (1997)	935 adolescents (14–20 yrs; 59% F; 53% L, 13% AA, 20% W, 7% AS, 7% O)	C/S	self-report inter-parental aggression, child physical abuse (modified CTS)	self-report (YSR) (int & ext)	***No Specificity:*** both interparental aggression & physical abuse were related to both internalizing & externalizing behavior
Osofsky, Wewers, Hann, & Fick (1993)	53 children (9–12 yrs; 100% AA; NFDP)	C/S	parent-report exposure to violence (SECV); family conflict (CTS)	parent report (SCSS, CBCL) (int & ext)	***Specificity for int (not ext):*** *witnessing violence & victimization* were specifically related to *internalizing* syndrome, but not externalizing; no specificity found for family conflict (related to both int and ext)
Rossman, Bingham, & Emde (1997)	86 children: 30 parent violence (4–9 yrs; 47% F; 44% W, 32% AA, 24% O), 14 dog attack (29% F; 47% W, 13% AA, 13% L, 27% O) & 42 mild stress controls (60% F; 90% W, 2% L, 8% O)	C/S	maternal report parental violence (CTS); dog attack; parent & child report mild stressors (modified LEQ)	parent-report PTSD (CBCL-PTSD, CDC, modified PTSD-RI) & int & ext sx (CBCL); self-report PTSD sx (PTSD-RI & CDC) (int & ext)	***Specificity for int (not ext):*** *parental violence* group exhibited heightened rates of parent-report *internalizing* symptoms (CBCL-PTSD) relative to other 2 groups & higher rates on of *PTSD* sx (PTSD-RI) (& dog attack group higher) than mild stress group; *dog attack* group exhibited higher rates of child-report *dissociative* sx than children in the other 2 groups;
Sternberg, Lamb, Greenbaum et al. (1993)	110 children (8–12 yrs): 16 witnessed SV, 33 physically abused, 30 witnessed & abused, 31 controls (44%F; W)	C/S	exposure to interparental violence &/or physical abuse (DFS reports)	self-report depressive sx (CDI); int & ext syndromes (YSR), parent-report (CBCL) (int & ext)	***Specificity for ext (not int):*** *witnessing marital violence* was associated with *externalizing* behaviors (no specificity for physical abuse)(parent report) (no specificity by child report)
Tang (1997)	59 children (6–13 yrs): 21 in shelters, 20 in tx, 18 intact families (56% F; 100% Chinese)	C/S	inter-parental verbal & physical abuse (mother report) or child abuse (verbal or physical) (modified CTS)	self-report of anxiety (STAI-C), depression (DSRS) & parent-report of aggression (CBCL) (int & ext)	***Mixed Specificity:*** *husband to wife physical abuse* was associated with *depression, anxiety & aggressive* symptoms; *interparental verbal & physical abuse* was associated with both *depression & anxiety* symptoms; *husband to wife verbal abuse & husband to child physical abuse* were associated with *depression & aggression symptoms*; *husband to child verbal abuse* was associated with *depression* symptoms; *mother to child physical abuse* was associated with *aggression* symptoms

See also Jouriles, Barling, & O'Leary (1987) in Abuse.
See also Jouriles et al., (1996a, b); Marttunen et al., (1994) in Divorce/Marital Conflict.

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Abuse					
Ackerman, Newston, McPherson et al. (1998)	170 children (7–13 yrs): 127 sexually abused, 43 physically abused (49% F; 72% W, 28% AA)	C/S	physical abuse & sexual abuse; referred by hospitals & agencies; DHS reports	self & parent report 13 diagnoses (DICA); parent & teacher report (CBCL, TRF) (int & ext)	***Specificity for physical abuse ext (not int):*** *physical abuse* was specifically related to *ODD & Conduct Disorder* (DICA); physical abuse was associated with more behavior problems than sexual abuse (CBCL) ***No Specificity for sexual abuse***
Bayatpour, Wells et al., (1992)	352 pregnant teenagers (12–19 yrs; 63% L, 19% W, 14% AA, 5% AS)	C/S	self-report physical abuse or sexual abuse (clinical interview)	self-report substance use, suicidal ideation & attempts (clinical interview) (int & ext)	***No Specificity for physical or sexual abuse:*** Both physical abuse & sexual abuse were significantly associated with suicidality & substance use in pregnant teenagers
Boney-McCoy & Finkelhor (1995)	2000 children & adolescents (10–16 yrs; 48% F; 80%W, 10% AA, 7% H, 3% O)	C/S	self-report of sexual assault, violence by parents, non-parental family violence, simple assault, aggravated assault attempted kidnapping (dev by au)	self-report symptoms of PTSD (SC-90-R, modified by Sanders, Arata & Kilpatrick), sadness, & acting out with teacher (dev by au)(int & ext)	***Mixed Specificity for physical abuse:*** *aggravated assault* specificity relating *to PTSD & acting out at school* (but not sadness); *attempted kidnapping* was specifically related to *PTSD*; *genitalia violence* was specifically related to *PTSD & acting out at school* (but not sadness) ***No Specificity for sexual assault*** *Specificity findings by gender:* simple assault relating specifically to sadness & acting out (but not PTSD)(boys); parental violence was associated with PTSD & acting out (but not sadness) (girls); non-parental family violence was specifically related to acting out at school (girls); attempted kidnapping related to sadness in girls & acting out in boys
Caviola & Schiff (1988)	270 adolescents (13–18 yrs): 150 abused (51%F); 60 chemically dependent (39%F); 60 controls (53%F); NFDP	C/S	sexual abuse, physical abuse, incest, & physical abuse & incest (treatment program & child abuse reporting records)	sx of suicide, delinquency, sexual acting out (method not described)(int & ext)	***No Specificity for physical or sexual abuse:*** all abuse was related to symptoms of suicide, delinquency, & sexual acting out
Cohen, Spirito, Sterling et al., (1996)	105 abused children (12–18 yrs; 69% F; NFDP); inpatient psychiatric unit	C/S	physical abuse (by adult family member), sexual abuse (sexually coerced contact by adult) & boy sexual & physical abuse (based on admission)	self-report depressive sx (CDI), behavior problems (YSR), personality disorder, depression, conduct disorder, substance abuse & psychosis (DICA-R & clinical eval)(int & ext)	***No Specificity for physical or sexual abuse:*** for diagnoses based on type of abuse

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Crittenden, Claussen, & Sugerman (1994)	100 maltreated children (6–17 yrs; 47% F; 18% W, 37% AA, 33% L, 10% Haitian, 2% O)	C/S	physical abuse, physical neglect, both, risk for abuse & psychological maltreatment (standardized assessments, rating scales & interviews)	parent & case coordinator report of sx of conduct disorder, aggression, attention, anxiety-withdrawal, psychosis, motor excess (RBPC); self-report depressive sx (CDI)(int & ext)	***Specificity for int (not ext) for physical abuse:*** *physical abuse* & *depressive* symptoms specifically related; *physical neglect* specifically related to *inattention, anxiety-withdrawal, motor excess*; *emotional abuse* specifically related to socialized *aggression, inattention, anxiety withdrawal, psychotic* symptoms; *emotional neglect* specifically related to *inattention* symptoms ***No Specificity for neglect***
DePaul & Arruabarrena (1995)	66 children (5–11 yrs): 17 physically abused, 24 physically neglected, 25 non-abused (100% Basque; NFDP)	C/S	parent report physical abuse and physical neglect (Child Abuse Potential Inventory (CAP))	teacher report of sx (TRF) (int & ext)	***Specificity for int (not ext) for physical abuse:*** *physical abuse* was specifically related to *internalizing* symptoms ***Specificity for ext (not int) for neglect:*** *physical neglect* was specifically related to *externalizing* symptoms, compared to control group
Deblinger, McLeer, Atkins, Ralph, & Foa (1989)	87 children (3–13 yrs): 29 sexually abused, 29 physically abused, 29 non-abused inpatient (47% F; NFDP)	C/S	sexual abuse, physical abuse; hospital medical records	clinician reported sx of PTSD (re-experiencing phenomena, sexual acting out, avoidance behavior, & hyperarousal), suicidal ideation, somatic complaints (dev by au) (int only)	***Specificity for sexual abuse and sexual acting out:*** *sexual abuse* (not physical abuse) found specifically related to re-experiencing symptoms of *PTSD* (e.g. sexual acting out, sexually inappropriate behavior, avoidance)
Dykman et al., (1997)	125 children (8–12 yrs): 109 abused in treatment & 16 controls (57% F; 67% W, 33% AA)	C/S	sexual abuse & physical abuse (psychiatric facilities & government agencies for abuse)	parent report PTSD (DICA), int & ext syndromes, sexually aggressive behavior (CBCL, DICA), teacher report (TRF), child report PTSD (DICA) (int & ext)	***Specificity for sexual abuse int (not ext, or sexual acting out):*** *sexual abuse* (not physical abuse) was specifically associated with *PTSD* and not other outcomes ***No Specificity for physical abuse***
Feldman et al., (1995)	193 children (8–12 yrs): 106 physically abused, 87 controls (29% F; 56% AA, 38% H, 5% W, 1% AS)	C/S	physical abuse (agency report), witnessing spouse/partner abuse (interview dev by au)	teacher report & parent report int & ext syndromes (CBCL, TRF), peer report of acceptability (dev by au) (int & ext)	***Specificity for ext (not int) for physical abuse:*** *physical abuse* (& not witnessing spousal violence) was specifically associated with *externalizing*

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Friedrich, Jaworski, Huxsahl, & Bengtson (1997)	350 children (7–18 yrs): 72 inpatient sexually abused (80%F), 38 inpatient, likely abused (68% F), 165 inpatient control (42% F), 75 control (56% F; 'most W')	C/S	history of sexual abuse, physical abuse	self-report sx of dissociation (TSC-C), sexual concerns (R, TSC-C, CBCL); parent report MMPI, CDC, C-SBI) (int & ext)	***Specificity for sexual abuse int (not ext) & sexual acting out:*** *sexual abuse* was specifically related to *sex items* on the CBCL (parent report), but not by child report; no specificity found for sexual concerns (no other variables predicted it), some specificity was found for dissociation symptoms; duration & nature of sexual abuse (but not physical abuse) predicted dissociation ***No Specificity for physical abuse***
Gale, Thompson, Moran, & Sack (1988)	202 children (0–7 yrs; 90% W, 10% O): 37 sexually abused (76% F), 35 physically abused (51% F), 130 nonabused (42% F)	C/S	sexual abuse, physical abuse (referral from DSS & clinical evaluation)	therapist report sx of depression, anxiety, withdrawal, noncompliance, aggression, inappropriate sexual behavior, affective disorder, somatic complaints, suicidal ideation (int & ext)	***Specificity for sexual abuse int (not ext) & sexual acting out:*** *sexual abuse* was specifically related to *sexual behavior problems* (compared to physical abuse & no abuse), & *withdrawal* symptoms (compared to no abuse); sexual abuse was also found to be specifically related to *lowered noncompliance* ***No Specificity for physical abuse***
Hernandez (1995)	6224 children (6th, 9th & 12th graders; 48% F; 85% W, 8% AI, 7% AA)	C/S	self-report physical abuse, incest, or extrafamilial sexual abuse (interview dev by au)	self-report eating disorder (2 of: binge eating, using laxatives or vomiting), anxiety sx, suicidal thoughts, substance use (dev by author)(int & ext)	***No Specificity for physical or sexual abuse:*** all three types of abuse were associated with eating disorders, anxiety, suicidal thoughts, substance use
Hernandez, Lodico, & DiClemente (1993)	2983 adolescents (9th & 12th grade; 100%M; 91% W, 9% AA) (412 abused)	C/S	self-reported incest, non-incest sexual abuse, physical (dev by au)	self-reported substance abuse, suicidal & delinquency sx (sexual aggressiveness, violent acts) (dev by au) (int & ext)	***Specificity for sexual abuse ext (not int or sexual acting out):*** *sexual abuse* (both incest & extrafamilial) was specifically related to *drinking problems* (compared to physical abuse); no specificity for sexual aggression (high in both abuse groups) or for other delinquency behaviors (high in both groups except for a specific relation between *sexual abuse* & *truancy*) ***No Specificity for physical abuse***
Jouriles, Barling, & O'Leary (1987)	45 children (5–13 yrs; 52% F) from maritally violent homes	C/S	parent report, witnessing inter-spousal aggression, parent–child aggression (CTS)	symptoms of conduct, depression, inattention, anxiety-withdrawal, psychosis, motor excess & socialized aggression (parent report, R-BPC) (int & ext)	***Mixed Specificity for physical abuse:*** *parent–child aggression* was related to *conduct problems, attention problems, anxiety-withdrawal, & motor excess in boys*, but only related to *anxiety-withdrawal in girls*

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Kaplan et al., (1997)	198 abused adolescents (12–18 yrs); 99 physically abused; 99 nonabused (50%F; 100% W)	C/S	physical abuse (state records), Parental Bonding Instrument; FACES; # parents in home, separation from parent, head trauma	depressive disorders, disruptive disorders, substance abuse (SADS for children, Conners' Teacher Rating Scale) PTSD (SKID-NP), available school & medical info (int & ext)	***Mixed Specificity for physical abuse:*** for current diagnoses, *abuse* increased the risk for being diagnosed with *unipolar depressive disorders, disruptive disorders, & cigarette smoking*, but not ADHD or PTSD; For lifetime disorders, abuse increased risk of major depression, dysthymia, conduct disorder, drug abuse or dependence, & cigarette smoking, but not ADHD or PTSD
Kolko, Moser, & Weldy (1988)	103 inpatient children (5–14 yrs): 29 sexually abused, 52 physically abused (27% F; 72% W, 28% AA)	C/S	sexual abuse, physical abuse (medical chart record), physical exams & Sexual Abuse Symptom Checklist (dev au)	parent report sx of sexual activity, anxiety, depression, conduct problems, withdrawal (SASC) & aggression, sexual behavior, anxiety, withdrawal, sleep problems, depression (hospital chart review) (int & ext)	***Specificity for sexual abuse int (not ext) & sexual acting out:*** *sexual abuse* was specifically related to *sexual activity, anxiety, withdrawal, depression* ***No Specificity for physical abuse***
Livingston, Lawson, & Jones (1993)	41 clinic-referred children (6–15 yrs): 26 sexually abused, 15 physically abused (44% F; 52% AA, 48% W)	C/S	sexual abuse, physical abuse (clinic reports of abuse)	self-report behavior disorders, somatization symptoms, PTSD, depressive disorders, anxiety disorders, psychotic symptoms (DICA-6-R) (int & ext)	***Mixed Specificity for sexual abuse:*** *sexual abuse* associated with *ADHD, separation anxiety disorder, PTSD, somatization, and one psychotic symptom*; only one psychotic symptom was found specifically related to sexual abuse ***No Specificity for physical abuse***
Murata (1994)	23 children (8–12 yrs; 100%M; 91% AA, 9% W)	C/S	mother's use of violence (CTS), family stresses (FILE)	parent and teacher report internalizing and externalizing syndromes (TRF, CBCL) (int & ext)	***Specificity for int (not ext) for physical abuse:*** *mother's use of violence & family stress* were associated with *internalizing* problems (but not externalizing)
Prino & Peyrot (1994)	68 children (5–8 yrs): 21 physically abused (52% F; 57% AA, 43% W), 26 neglected (27%F; 58% W, 42% AA), & 21 controls (52%F; 57% AA, 43%W)	C/S	physical abuse, neglect (medical records, child protective services, court documented)	teacher reports aggressive and withdrawn behavior (PASS) (int & ext)	***Specificity for ext (not int) for physical abuse:*** *physical abuse* was specifically related to *aggressive behavior* (compared to neglect or control); ***Specificity for int (not ext) for neglect:*** *neglect* was specifically related to *withdrawn* behavior (compared to abuse and control)

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Rivinus, Levoy, Matzko, & Seifer (1992)	109 children (4–14 yrs; 23% F; NFDP) from psychiatric inpatient unit	C/S	parental substance abuse, physical &/or sexual abuse (intake, clinical information)	clinician report of DSM-IIIR diagnoses (clinical evaluation) (int & ext)	***Mixed Specificity for physical and sexual abuse:*** *physical &/or sexual abuse* was associated with *dysphoric mood, oppositional symptoms, PTSD & Borderline Personality Disorder*; *children of parental substance abusers & abused* were more likely to be diagnosed with *schizophrenia or ODD*; *parental substance abuse* was associated with *enuresis, obsessive-compulsive symptoms & learning disabilities*
Sadeh, Hayden et al. (1994)	100 inpatient children (2–13 yrs; 17% F; NFDP)	C/S	sexual abuse &/or physical abuse (from child & parent interview)	self-reported depression symptoms (CDI), DSM-IIIR diagnoses (interview) (int & ext)	***Specificity for sexual abuse int (not ext);*** *sexual abuse* was specifically related to *PTSD* (compared to physical abuse or no abuse) & *sleep problems* (i.e., parasomnias)(not depression) ***No Specificity for physical abuse***
Sibthorpe, Drinkwater et al. (1995)	155 Australian youth (12–17 yrs; 46% F; 7% Aborigine, 93% O)	C/S	self-report sexual & physical abuse interview questions (dev by au)	self-report substance use & suicidality sx (interview dev by au) (int & ext)	***Specificity for sexual abuse int (not ext)*** sexually (but not physically abused) participants were more likely, than those not abused, to have attempted suicide ***No Specificity for physical abuse***
Silverman, Reinherz, & Giaconia (1996)	375 adolescents (15 yrs at time 1 & 21 at time 2; 50% F; 99% W, 1% O)	L (2 ts, 6 yrs apart) & C/S	physical abuse, sexual abuse (clinical interview)	self-reported psychological syndromes (YSR), depressive symptoms (CDI) anxiety (PHSC-S) & suicidal ideation (CDI) (int & ext)	***Mixed Specificity for physical and sexual abuse:*** *sexual abuse* was associated with *somatic complaints, anxiety-depression, social problems, thought problems, attention problems, aggressive behavior, depressive symptoms, & suicidal ideation*; *physical abuse* was associated with suicidal ideation (boys), & withdrawal, somatic complaints, anxiety-depression, thought problems, attention problems, delinquent behavior, aggressive behavior (YSR) & symptoms of depression, anxiety, & suicidal ideation (girls)
Threlkeld & Thyer (1992)	117 children in tx (<17 yrs; 46% F; 55% W, 38% AA, 7% O)	C/S	sexual abuse & physical abuse (record review)	dSM diagnoses (no method identified) (int & ext)	***No Specificity for physical or sexual abuse***
White, Halpin, Strom, & Santilli (1988)	58 children (26 yrs): 17 sexually abused, 18 neglected, 23 controls (NFDP)	C/S	sexual abuse, neglect (hospital-referred)	sexual acting out, somatic complaints, withdrawal, oppositional (MCDI) (int & ext)	***Specificity for sexual acting out:*** *sexual abuse* was specifically associated with *sexual acting out* (but not other symptoms) ***No Specificity for neglect***

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Williamson, Borduin, & Howe (1991)	50 adolescents (12–17 yrs; 82% F); 12 neglected, 12 physically abused, 15 sexually abused, 11 control (75–92% W, 8–25% AA)	C/S	neglect, physical abuse, sexual abuse (Juvenile Court)	parent report of total sx (SCL-90-R), conduct, aggression, anxiety-withdrawal and attention problems (RBPC) (int & ext)	***Specificity for ext (not int) for physical abuse:*** *physical abuse* was specifically associated with *conduct problems* and socialized *aggression* (compared to control); all 3 types of *abuse* (compared to control) were associated with *attention* problems ***Mixed Specificity for sexual abuse:*** *sexual abuse* was associated with *conduct problems* and *anxiety-withdrawal* (compared to control) ***Specificity for ext (not int) for neglect:*** *Neglect* was associated with conduct problems (compare to control) and socialized aggression (compared to sexual abuse and control)
See also Lynch & Cicchetti (1998); McCloskey, Figueredo, & Koss (1995); O'Keefe (1994, 1997); Sternberg et al., (1993) & Tang (1997) in Exposure to Violence					
Divorce/Marital Conflict					
David, Forehand, & Armistead (1996)	146 adolescents (11–15 yrs; 52% F; NFDP)	L (2 ts, 1 year apart)	family conflict, (FES); witness of marital conflict (OPS), marital dissatisfaction (DAS)	parent & teacher report ext & int sx (RBPC) (int & ext)	***Mixed Specificity:*** family conflict more associated with child problems than marital satisfaction; *family conflict & witnessed marital conflict* (but not marital satisfaction) predicted *externalizing* problems at time 1 & 2 & *internalizing* problems at time 1; *witnessed marital conflict* only predicted *internalizing* at time 2 (mother report); marital satisfaction predicted externalizing problems at time 2; witnessed marital conflict predicted internalizing problems at time 1 (teacher report)
Jenkins & Smith (1990)	119 British children (9–12 yrs); poor marriages (57) & good marriages (62)	C/S	overt parental conflict, covert tension, discrepancy in reading (MMRS interview)	31 int & ext behavioral sx, parent report & child report (interview dev by Graham & Rutter plus ICD9 criteria)(int & ext)	***Specificity for ext (not int):*** there were more correlations between overt parental conflict & child behavior problems than for covert tension or discrepancy in child rearing practices, child reports indicated that all types of *conflict* were related to *externalizing* problems, but not internalizing problems (no differences for parent reports)

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Jouriles, Norwood, McDonald, & Vincent (1996a)	55 children (5–12 yrs; 66% F; 95% W, 5% O) from families seeking marital therapy	C/S	marital aggression (physical, verbal, & behavioral) (CTS)	parent-report externalizing and internalizing behavior (conduct & personality subscales of the BPC) (int & ext)	***Specificity for ext (not int):*** *physical marital aggression and other forms of marital aggression* both related to *externalizing* (but not to internalizing problems); stressor specific: other forms of aggression were more specifically related to externalizing problems than physical aggression
Jouriles, Norwood, McDonald, & Vincent (1996b)	199 children (5–12 yrs; 47% F; 39% W, 24% AA, 37% L) in battered women's shelters	C/S	marital aggression, divided into physical violence & other forms of aggression (CTS)	parent report (CBCL) (int & ext)	***Mixed Specificity:*** *physical aggression* was specifically related to *externalizing* & *other forms of marital aggression* were specifically related to *internalizing*
Marttunen, Aro, Henriksson, & Lonnqvist (1994)	53 adolescents (13–19 yrs; 17% F; 100% Finnish) who committed suicide	C/S	parental violence, separations, conflicts, parental divorce, (archival records, parent-report stress interviews, clinician-report stress interviews) (dev by au)	composite of archival, clinician & parent-report depressive disorder, substance abuse & other disorders (int & ext)	***Specificity for ext (not int):*** *parental violence* was more common among *alcohol* abusing victims than among depressive victims; *interpersonal separations* were more common among *alcohol* abusing victims than depressive victims; *Specificity by gender*: interpersonal conflicts were more common among alcohol-abusing male (but not female) victims than depressive victims
See also Conger et al. (1992, 1993, 1994) in Poverty					
Poverty					
Conger, Conger, Elder, Jr., Lorenz, Simons, & Whitbeck (1992)	205 adolescents (7^{th} grade) (100% M; 100% W)	C/S	parent-report economic hardship scale, economic pressure; observer-report marital conflict measure (dev by au)	self-report hostility symptoms (modified BDHS), int sx (SCL-90 depression & hostility subscales); sibling-report hostility sx (dev by au) (int & ext)	***Mixed Specificity for poverty:*** economic hardship indicator '*debts to assets ratio*' was associated with sibling-report *hostility* symptoms, economic pressure indicators '*make ends meet', 'material needs' & 'economic adjustments*' were associated with self-report *internalizing* symptoms & economic pressure indicator '*material needs*' was associated with sibling-report *hostility* symptoms ***Specificity for ext (not int) for marital conflict:*** *marital conflict* was associated with self-report (but not sibling-report) *hostile symptoms* (but not self-report internalizing symptoms)

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Conger, Conger, Elder, Jr., Lorenz, Simons et al. (1993)	220 adolescents (12–14 yrs, 7th grade; 100% F; 100% W)	C/S	parent-report economic hardship scale, economic pressure; observer-report marital conflict (dev by au)	self-report hostility sx (modified BDHS), int sx (SCL-90 depression, hostility, anxiety, somatization subscales); sibling-report hostility sx (dev by au) (int & ext)	***Specificity for ext (not int) for poverty:*** economic hardship indicator '*debts to assets ratio*' was associated with self-report *hostility* symptoms, economic hardship indicator '*income loss*' was associated with sibling-report *hostility* symptoms; ***No Specificity for marital conflict:*** marital conflict was associated with all three symptom measures
Conger, Ge, Elder, Jr., Lorenz, & Simons (1994)	378 adolescents (7th grade; 52% F; 100% W)	L (3 ts, 1 year apart	parent-report economic hardship scale, economic pressure; marital conflict; observer-report marital conflict (dev by au)	self-report depression & anxiety sx (SCL-90 & NEO-personality anxiety & depression subscales), ext sx (modified BDHS, SCL-90 & NEO-personality hostility subscales), & aggression (ABS-dev by au) (int & ext)	***No Specificity for poverty:*** *no poverty indicators were associated with symptoms*; ***Mixed Specificity for marital conflict:*** father-report *marital conflict* was associated with *trait hostility* (ext), *& trait anxiety* (int); observer-report marital conflict was associated with 3 of the 4 externalizing measures *(all but self-report aggressive behavior)*
See also Levendosky & Graham-Bermann (1998) in Exposure to Violence					
Illness					
Wallander, Varni, Babani, Banis, & Wilcox (1988)	270 children: 80 diabetes, 77 spina bifida, 40 hemophilia, 30 chronic obesity, 24 juvenile rheumatoid arthritis, & 19 with cerebral palsy	C/S	established illness (patients recruited based on physician diagnosis)	parent-report int & ext sx (CBCL) (int & ext)	***Specificity:*** no differences between groups on internalizing; juvenile rheumatoid arthritis lower on externalizing than other groups; cerebral palsy group lower on social competence
Cumulative Stress					
Aseltine, Jr., & Gore (1993)	918 adolescents (9th–11th grade; 59% F; 100% W)	L (2 ts, 1 year apart)	self-report family relationship stress scale, friend relationship stress scale, graduation status (dev by au)	self-report depressive sx (CES-D), alcohol use (dev by au), delinquency (modified BDS) (int & ext)	***Specificity:*** *family & friend stress* predicted *depressive* symptoms (but not alcohol abuse symptoms); *friend* (but not family) stress predicted increases in *delinquent* symptoms; *graduation* from high school predicted increases in *alcohol* abuse symptoms, but *decreases in depressive* symptoms

Table 1 Continued

Author	Sample	Design	Stress measure	Outcome measure	Findings
Lewinsohn, Gotlib, & Seeley (1995)	1507 adolescents (14–18 yrs at Time 1; 54% F; 91% W, 9% O)	L (2 ts, 1 year apart)	self-report conflict with parents & parental death (psychosocial interview dev by au)	self-report major depressive disorder & substance abuse disorder (K-SADS) (int & ext)	***Mixed Specificity:*** those with *higher rates of conflict* with parents (but not parental death) were more likely to be *depressed & use substances*
Sandler, Reynolds, Kliewer, & Ramirez (1992)	359 youth (8–16 yrs; 43% F; NFDP), 92 who had lost a parent, 94 whose parents had divorced, 99 w/ asthma, 74 controls	C/S & L	self-report cumulative stress scale (GLESC) & interview (dev by au); events categorized as 'conflict events' & 'loss events'	self-report depression (CDI) & conduct disorder sx (YHS) (int & ext)	***Specificity:*** conflict (but not loss) events were associated with conduct (but not depression) sx; loss (but not conflict) events were associated with depression (but not conduct) sx; opposite pattern in sample of youth whose parents had recently divorced
See also Attar, Guerra, & Tolan (1994) in Exposure to Violence					

General Abbreviations Key

F = female, **M** = male; **NFDP** = no further demographic information provided; **ts** = Data Collection Time Points; **C/S** = Cross-sectional; **L** = Longitudinal; **W** = White/European American, **AA** = African American, **L** = Latino, **AS** = Asian-American, **AI** = American Indian, **O** = Other.

Stress Measures Key

CTS = Conflict Tactics Scale; **CVS** = Community Violence Survey; **DAS** = Dyadic Adjustment Scale; **dev by au** = developed by authors; **FES** = Family Environment Scale; **FILE** = Family Inventory of Life Events; **GLESC** = General Life Events Schedule for Children; **HCSI** = Hispanic Children's Stress Inventory; **HURTE** = Hurricane-Related Traumatic Experiences; **LEQ** = Life Events Questionnaire; **LER** = Life Events Record; **MMRS** = Maudsley Marital Rating Scale; **OPS** = O'Leary Porter Scale; **PYS** = Pittsburgh Youth Study; **SCSS** = Survey of Children's Stress Symptoms; **SECV** = Survey of Exposure to Community Violence; **SI** = Stress Index; **VAWS** = Violence Against Women Scale.

Outcome Measures Key

ABS = Aggressive Behavior Scale; **BDHS** = Buss & Durkee Hostility Scale; **BDS** = Bachman Delinquency Scale; **BORRTI** = Bell Object Relations & Reality Testing Inventory; **BPI** = Behavior Problems Index; **CAS** = Child Assessment Schedule; **CBCL** = Child Behavior Checklist; **CBCL-PTSD** = Child Behavior Checklist Post-traumatic Stress Disorder; **CCDS** = Checklist of Child Distress; **CDC** = Child Dissociative Checklist; **CDI** = Child Depression Inventory; **C-SBI** = Child Sexual Behavior Inventory; **DIS** = Diagnostic Interview Schedule; **DICA** = Diagnostic Interview for Children & Adolescents; **DICA-R** = Diagnostic Interview for Children & Adolescents Revised; **DSRS** = Depression Self-Rating Scale; **DYSSRDQ** = Denver Youth Study Self Reported Delinquency Questionnaire; **ext** = externalizing; **GI** = Grief Index; **int** = internalizing; **JMAS** = Jesness Manifest Aggression Scale; **K-SADS** = Schedule for Affective Disorders and Schizophrenia; **MCDI** = Minnesota Child Development Inventory; **MMRS** = Maudsley Marital Rating Scale; **PASS** = Pittsburgh Adjustment Survey; **PBQ** = Preschool Behavior Questionnaire; **PHSC-S** = Piers-Harris Self Concept Scale; **P-PTSD-S** = Purdue PTSD Scale; **PTSD-RI** = PTSD Reaction Index; **PTSD-SS** = PTSD Symptom Scale; **R** = Rorschach; **RBPC** = Revised Behavior Problem Checklist; **RCMAS** = Revised Children's Manifest Anxiety Scale; **SASC** = Sexual Abuse Symptom Checklist; **SCL** = Symptom Checklist; **STAIC-TF** = State Trait Anxiety Inventory for Children-Trait Form; **TRF** = Teacher Report Form; **TSC-C** = Trauma Symptom Checklist-Children; **WWPS** Werry Weiss Peters Scale; **YHS** = Youth Hostility Scale; **YSR** = Youth Self Report.

Exposure to violence

Sixteen Stressor-Outcome specific studies tested for specific relations between exposure to violence and particular internalizing and externalizing psychological outcomes (see Table 1). Exposure to the following specific types of violence has been examined: domestic violence, community violence, and war violence. Outcomes examined include PTSD, depression, general anxiety, and aggression symptoms, and broad-band internalizing and externalizing syndromes. Unfortunately, few of these studies used the same measures of stressors and outcomes, thus limiting conclusions that may be drawn.

To examine general patterns across this disparate body of studies, we grouped outcomes into internalizing (i.e., anxiety, depression, somatization, withdrawal, PTSD) and externalizing (i.e., aggression, delinquency, attention problems, oppositionality, substance abuse) categories. Of the sixteen *Stressor-Outcome specific* studies examining both internalizing and externalizing outcomes, one-half of the studies reported evidence of mixed specificity or no specificity for particular outcomes (Gorman-Smith & Tolan, 1998; Jouriles, Barling, & O'Leary, 1987; Jouriles, Norwood, McDonald, Vincent, & Mahoney, 1996, study 2; Lynch & Cicchetti, 1998; McCloskey, Figueredo, & Koss, 1995; O'Keefe, 1994a, 1997; Tang, 1997). Five of the eight reporting specificity reported a specific relation between exposure to violence and *externalizing* outcome (Attar, Guerra, & Tolan, 1994; Durant, Pendergrast, & Cadenhead, 1994; Jouriles et al., 1996, study 1; Marttunen, Aro, Henriksson, & Lonnqvist, 1994; Sternberg et al., 1993), and three reported a specific relation between exposure to violence and internalizing outcome (Levendosky & Graham-Bermann, 1998; Osofsky, Wewers, Hann, & Fick, 1993; Rossman, Bingham, & Emde, 1997). Methodological explanations for discrepancies across studies are not readily apparent. For example, the four studies using the most similar methodology (all four used a version of the Conflict Tactic Scale and CBCL and examined a sample of predominantly preadolescent children) reported inconsistent results.

Most *Outcome specific* studies of exposure to violence failed to find evidence of specificity (Brent, Perper, Moritz, Allman et al., 1993; O'Keefe, 1994b; Pfeffer et al., 1997; Spaccarelli, Sandler, & Roosa, 1994; Brent, Moritz, Bridge, Perper, & Canobbio, 1996; Schwab-Stone et al., 1995). However, two outcome-specific studies reporting specificity effects found specificity for *internalizing* (Brent, Perper, Moritz, Friend et al., 1993; Freeman, Shaffer & Smith, 1996) while one found specificity for externalizing outcomes (Cooley-Quille, Turner, & Beidel, 1995), which suggests a pattern inconsistent with the one found in Stressor-Outcome specific studies. A theory-based explanation for these discrepant findings is suggested by the fact that both of the studies reporting specificity for internalizing symptoms focused on experiences that may also be conceptualized as loss events (i.e., *murder* of a sibling; Freeman et al., 1996, and *suicide* of a peer; Brent, Perper, Moritz, Friend et al., 1993).

Abuse

Thirty-three Stressor-Outcome specific studies tested for specific relations between child abuse and particular internalizing and externalizing psychological outcomes (see Table 1). Specific types of abuse examined include physical abuse, sexual abuse, and neglect. In most cases, these particular types of abuse were compared with one another in relation to several specific outcomes. Abuse, as a whole, was rarely examined in relation to other categories of stress. Specific outcomes examined include suicidality, substance abuse, sexual acting out, delinquency, aggression, attention problems, general anxiety, PTSD, withdrawal, somatization, eating disorders, depression symptoms, and broad-band internalizing and externalizing syndromes. As with exposure to violence studies, few of these studies used the same measures of stressors and outcomes, thus limiting conclusions that may be drawn.

Of the 33 *Stressor-Outcome* specific studies focusing on abuse, 31 studies examined internalizing and externalizing outcomes related to *physical abuse*. Of these studies, seven studies demonstrated evidence for specificity, with four reporting specificity for *externalizing* outcomes (Ackerman, Newton, McPherson, Jones, & Dykman, 1998; Feldman et al., 1995; Prino & Peyrot, 1994; Williamson, Borduin, & Howe, 1991), and three reporting specificity for internalizing outcomes (Crittenden, Claussen, & Sugerman, 1994; DePaul & Arruabarrena, 1995; Murata, 1994). Results of *Outcome specific* studies reveal a similar pattern of findings. Four of these studies, which examined both internalizing and externalizing outcomes, failed to find evidence of specificity (Glod & Teicher, 1996; Flisher, Kramer, Hoven, & Greenwald, 1997; Trickett, 1993; Pelcovitz et al., 1994). The two studies that found evidence of specificity reported evidence of specificity for *externalizing* outcomes (Hennessy, Rabideau, Cicchetti, & Cummings, 1994; Walker, Downey & Bergman, 1989).

Nineteen *Stressor-Outcome specific* studies examined both internalizing and externalizing outcomes in relation to *sexual abuse*. Twelve of these failed to find evidence of specificity (Ackerman et al., 1998; Bayatpour, Wells, & Holford, 1992; Boney-McCoy & Finkelhor, 1995; Caviola & Schiff, 1988; Cohen et al., 1996; Hernandez, 1995; Livingston, Lawson, & Jones, 1993; Rivinus, Levoy, Matzko, & Seifer, 1992; Silverman, Reinhertz, & Giaconia, 1996; Threlkeld & Thyer, 1992; White, Halpin, Strom, & Santilli, 1988; Williamson et al., 1991). Among those reporting specificity, six reported specificity for *internalizing* outcomes (Dykman et al.,

1997; Friedrich, Jaworski, Huxsahl, & Bengston, 1997; Gale, Thompson, Moran, & Sack, 1988; Kolko, Moser, & Weldy, 1988; Sadeh, Hayden, McGuire, Sachs, & Civita, 1994; Sibthorpe, Drinkwater, Gardner, & Bammer, 1995), and one (which included only males) reported specificity for externalizing outcomes (Hernandez, Lodico, & DiClemente, 1993). Although these studies suggest a pattern of increased risk for internalizing outcomes, girls are at substantially higher risk both for sexual abuse and for internalizing symptoms (Berliner & Elliott, 1996). Thus, the association between sexual abuse and internalizing outcomes may simply reflect this well-established relation. Unfortunately, the vast majority of studies reviewed above were not designed to maximally examine specificity hypotheses. Most of these studies failed to take gender into account in their examination of specificity effects (i.e., studies reporting heightened rates of internalizing symptoms among sexually abused, relative to physically abused, youth failed to control for differences in gender representation across the two samples).

Results of *Outcome specific* studies of sexual abuse provide little evidence of specificity. Thirty of 35 studies that examined both internalizing and externalizing outcomes failed to find evidence of specificity (Black, Dubowitz, & Harrington, 1994; Brand, King, Olson, Ghaziuddin, & Naylor, 1996; Chandy, Blum, & Resnick, 1996; Cohen & Mannarino, 1988; Cosentino, Meyer-Bahlburg, Alpert, Weinberg, & Gaines, 1995; Einbender & Friedrich, 1989; Garnefski & Arends, 1998; Glod & Teicher, 1996; Goldston, Turnquist, & Knutson, 1989; Hazzard, Celano, Gould, Lawry, & Webb, 1995; Hibbard & Hartman, 1992; Inderbitzen-Pisaruk, Shawchuck, & Hoier, 1992; Kuhn, Arrelano, & Chavez, 1998; Kumar, Steer, & Deblinger, 1996; Luster & Small, 1997; Mannarino, 1988; Mannarino & Cohen, 1996; Martin, 1996; McClellan, Adams, Douglas, McCurry, & Storck, 1995; McLeer, Deblinger, Henry, & Orvaschel, 1992; McLeer, Callaghan, Henry, & Wallen, 1994; Shapiro, Leifer, Marone, & Kassem, 1992; Smith & Howard, 1994; Stern, Lynch, Oates, O'Toole, & Cooney, 1995; Tong, Oates, & McDowell, 1987; Watts & Ellis, 1993; Wells, McCann, Adams, Voris, & Dahl, 1997; Wolfe, Gentile, & Wolfe, 1989; Young, Bergandi, & Titus, 1994). The few which reported specificity effects split slightly in favor of *internalizing* (Johnson & Kenkel, 1991; Mian, Marton, & LeBaron, 1996; Hussey, Strom, & Singer, 1992) over externalizing outcomes (Hussey & Singer, 1993; Rotheram-Borus, Mahler, Koopman, & Langabeer, 1996).

Due to the significant attention paid to the relation between sexual abuse and PTSD, we examined studies testing for specificity between sexual abuse and this particular psychological outcome. The majority of studies conducted in this area suggest there is a specific relation between sexual abuse and PTSD. All eight of the Stressor-Outcome studies (100%) found specificity in the relation between sexual abuse and PTSD (Deblinger, McLeer, Atkins, Ralph, & Foa, 1989; Dykman et al., 1997; Friedrich et al., 1997; Haviland, Sonne, & Woods, 1995; Livingston et al., 1993; Rivinus et al., 1992; Sadeh et al., 1994; Timmons-Mitchell, Holtz, & Semple, 1997). In addition, of the three Outcome specific studies that examined the relation between sexual abuse and PTSD, two found evidence of specificity (McClellan et al., 1995; McLeer et al., 1992) while one study did not find a specific relation between sexual abuse and PTSD (Berliner & Conte, 1995). Although the findings are quite consistent, methodological concerns related to gender-specific effects, highlighted above, temper conclusions that may be drawn.

Several sexual abuse studies also tested the hypothesis that sexual abuse is specifically associated with 'sexual acting out'. As this outcome has varied from conceptualization as an internalizing outcome (symptom of PTSD; Deblinger et al., 1989) to conceptualization as an externalizing outcome (an aggressive act; Dykman et al., 1997), we chose to examine it separately from these broad-band classification systems. Eight *Stressor-Outcome specific* studies tested for specificity for *sexual acting out*. Six (*75%*) found evidence of *specificity* (Deblinger et al., 1989; Friedrich et al., 1997; Gale et al., 1988; Higgins & McCabe, 1998; Kolko et al., 1988; White et al., 1988) and two did not (Dykman et al., 1997; Hernandez et al., 1993). Fifteen *Outcome specific* studies tested for specificity for sexual acting out. Twelve of these (*80%*) found a *specific relation* between sexual abuse and sexual acting out behaviors (Cohen & Mannarino, 1988; Cosentino et al., 1995; Einbender & Friedrich, 1989; Hibbard & Hartman, 1992; Inderbitzen-Pisaruk et al., 1992; Mannarino, 1988; Mannarino & Cohen, 1996; Mian et al., 1996; Rotheram-Borus et al., 1996; Smith & Howard, 1994; Wells et al., 1997; Young et al., 1994), and three failed to find evidence of specificity for sexual abuse and sexual acting out (Berliner & Conte, 1995; Chandy et al., 1996; Stern et al., 1995).

A small handful of *Stressor-Outcome specific* studies examined both internalizing and externalizing outcomes in relation to *neglect*. Two failed to find evidence of specificity (Crittenden et al., 1994; White et al., 1988). Of those reporting specificity effects, two reported specificity for *externalizing* outcomes (DePaul & Arruabarrena, 1995; Williamson et al., 1991), and one reported specificity for internalizing outcomes (Prino & Peyrot, 1994). The two Outcome specific studies to examine both internalizing and externalizing outcomes failed to find evidence of specificity (Famularo, Kinscherff, & Fenton, 1992; Markward, 1997).

Divorce/Marital conflict

Eight Stressor-Outcome specific studies tested for specific relations between divorce (or marital

conflict) and particular internalizing and externalizing psychological outcomes (see Table 1). Most of these studies have focused on marital conflict, rather than divorce, per se. Specific measures of marital conflict have included parent-report measures of inter-parental conflict, child-report measures of witnessing conflict, and observer-report ratings of marital interactions. Specific outcomes examined include depression, substance abuse, anxiety, somatization, aggression, hostility, antisocial, and hyperactivity symptoms, and broad-band internalizing and externalizing syndromes. As with the exposure to violence and child abuse studies, few of these studies used the same measures of stressors and outcomes, thus limiting conclusions that may be drawn.

One-half (four of eight) of the divorce/marital conflict studies reported evidence of specificity for *externalizing* outcomes (Conger et al., 1992; Jenkins & Smith, 1991; Jouriles et al., 1996; Marttunen et al., 1994). As with most of the specificity studies reviewed, variability in methodology hampers comparisons across studies for the purpose of understanding discrepancies in outcomes. However, the series of Conger studies, using similar methodologies in differing samples (Conger et al., 1992, 1993, 1994), provides an exception to this pattern. Conger and colleagues found evidence of specificity between observer-report marital conflict and externalizing outcomes in their all-male sample (Conger et al., 1992) and in their mixed sample (52% female; Conger et al., 1994), but not in their all-female sample (Conger et al., 1993). This pattern fits with recent findings that girls exhibiting heightened rates of externalizing symptoms are particularly at risk, relative to male counterparts, for co-occurring internalizing symptoms (O'Koon, 1999). Although the Conger studies do not define themselves as specificity studies, the incremental, programmatic nature of their research provides an excellent example of the type of research needed in this area.

Outcome specific studies on divorce/marital conflict provide an interesting contradiction. Although most (six) of those examining both internalizing and externalizing outcomes failed to find specificity effects (Fergusson, Horwood, & Lynskey, 1994; Forehand, Neighbors, & Wierson, 1991; Hoyt, Cowen, Pedro-Carroll, & Alpert-Gillis, 1990; Rodgers, 1994; Reese & Roosa, 1991; West, Sandler, Pillow, Baca, & Gersten, 1991), those reporting specific associations were split, slightly, in favor of *internalizing* (Brody & Forehand, 1990; Forehand, McCombs, Long, Brody, & Fauber, 1988; Long, Slater, Forehand, & Fauber, 1988) over externalizing outcomes (Gould, Shaffer, Fisher, & Garfinkel, 1998; Smith, Howard, & Monroe, 1998).

Although these findings appear contradictory, examination of the studies reporting specificity for internalizing outcomes provides evidence of an interesting pattern. All found evidence of specificity between marital conflict and internalizing symptoms within samples of youth who had *recently* experienced their parents' divorce. This pattern is consistent with theory-based work by Sandler and colleagues (reviewed below), which suggests that marital conflict, in the context of recent divorce, may be associated, in meaning, with separation and loss events and, thus, 'pull for' internalizing outcomes (Sandler et al., 1992).

Stressors from various categories

Remaining Stressor-Outcome specific studies are spread thinly across several categories (poverty, illness, cumulative stress). Four *Stressor-Outcome specific* studies have included *poverty* as a stressor, examining both internalizing and externalizing outcomes (see Table 1). Among these studies, three (Conger et al., 1992, 1994; Levendosky et al., 1998) failed to find evidence of specificity, and one (Conger et al., 1993) found evidence of specificity for *externalizing* outcomes. Most *Outcome specific* poverty studies also failed to find specific effects (Bolger, Patterson, Thompson, & Kupersmidt, 1995; DuBois, Felner, Meares, & Krier, 1994; Elder, Jr., Conger, Foster, & Ardelt, 1992; Felner et al., 1995; Kolko & Kazdin, 1993; McLoyd, Jayaratne, Ceballo, & Borquez, 1994; Mezzich et al., 1997; Reinherz et al., 1993). Those that reported specificity findings found evidence of specificity for *internalizing* outcomes (Brody & Flor, 1997; Masten, Miliotis, Graham-Bermann, Ramirez, & Neemann, 1993; Lempers, Clark-Lempers, & Simons, 1989).

Only one Stressor-Outcome illness study has been conducted (see Table 1), and most Outcome specific studies in this area, which examined both internalizing and externalizing outcomes, failed to find evidence of specificity (Burke et al., 1989; Engstrom, 1992; Kashani, Konig, Sheppard, Wilfley, & Morris, 1988; Mikail & Von Baeyer, 1990; Siegel et al., 1992). Those reporting evidence of specific effects were evenly split between specificity for internalizing (Garralda, Jameson, Reynolds, & Postlethwaite, 1988) and externalizing outcomes (Smith et al., 1998).

There were no Stressor-Outcome specific disaster (i.e., natural or human-made disaster) studies, and most *Outcome specific* disaster studies, which examined internalizing and externalizing outcomes, failed to find evidence of specificity (Durkin, Khan, Davidson, Zaman, & Stein, 1993; Laor et al., 1996; La Greca, Silverman, & Wasserstein, 1998; March, Amayaj-Jackson, Terry, & Costanzo, 1997; Shaw et al., 1995). All three of those which did find evidence of specificity, reported specificity for *internalizing* outcomes (Breton, Valla, & Lambert, 1993; Johnston, Gonzalez, & Campbell, 1987; Najarian, Goenjian, Pelcovitz, Mandel, & Najarian, 1996).

None of the Stressor-Outcome specific cumulative stress studies examined similar categories of stress

(see Table 1), precluding comparisons across studies. Nonetheless, one Stressor-Outcome specific cumulative stress study merits discussion, as it provides a prototype of theory-based specificity research. Sandler et al. (1992) tested two theory-based specificity hypotheses: (1) stressful events involving separation from important family members will be specifically associated with internalizing symptoms, and (2) stressful events involving conflict will be specifically associated with externalizing symptoms. These hypotheses were tested in four samples of children (a group of children who had experienced the death of a parent, a group who had experienced their parents' divorce, a group of children with chronic asthma, and a control group of children who had not experienced any of these stressors) to examine the interaction of specificity findings with varying environmental contexts.

Sandler and colleagues (1992) reported partial support for their hypotheses. Conflict events were associated with externalizing symptoms, but not internalizing symptoms, in two of their samples (parental death and control samples), and separation events were associated with internalizing symptoms, but not externalizing symptoms, in two of their samples (parental death and asthma samples). However, findings directly contradictory to the authors' hypotheses were found among the group of children who experienced divorce. In this group, conflict events were associated with internalizing and separation events were associated with externalizing symptoms. These findings illustrate the importance of integrating specificity and moderator designs, as the differing contexts of the various samples in this study moderated the specific relations between particular stressors and particular outcomes. Sandler and colleagues (1992) propose that the differences in specificity findings across different samples may reflect differences in meaning applied to the stressful events for different groups of children. In particular, children of divorced parents may respond differently from other children to conflict and separation events because of the interrelatedness of these two experiences within the context of divorce. This hypothesis is consistent with the findings, reported in the divorce/marital conflict section, that marital conflict was associated with internalizing symptoms among youth recently exposed to their parents' divorce (Forehand et al., 1988; Forehand et al., 1988; Long et al., 1988).

Related to Sandler and colleagues' study (1992) is an Outcome specific study, which represents the sole study to include specificity of moderator in their theory-based specificity design. Shirk, Boergers, Eason, and Van Horn (1998) hypothesized that interpersonal stress would predict depression, but not hostility, symptoms in a sample of 8th grade youth and that interpersonal schema would moderate the relation between interpersonal stress and depression, but not hostility, symptoms. The authors report support for both their hypotheses. Interpersonal stress was specifically predictive of depressive symptoms, and interpersonal schema moderated the relation between interpersonal stress and depression (but not hostility) symptoms.

Summary and integration of findings

Results of studies testing the hypothesis that particular stressors are specifically related to internalizing or externalizing outcomes provide little support for this hypothesis. In general, the results of this review are more consistent with tenets of equifinality and multifinality in the relation between stress and psychological problems in children and adolescents than they are of specificity. Across the various stressors examined (exposure to violence, abuse, divorce/marital conflict, poverty, illness, and cumulative stress), the most consistent evidence for specificity was found in relation to sexual abuse. Sexual abuse was associated specifically with internalizing outcomes, PTSD, and with sexual acting out across several studies. Interestingly, the outcomes of PTSD and sexual acting out are the two areas in this review that are more specific in nature, and these are the outcomes in which there was evidence of specificity. These findings may reflect that researchers examining sexual abuse are interested in these particular theoretically based outcomes (PTSD and sexual acting out), and because of this interest, there were enough comparable studies examining these specific relationships to reveal patterns of specificity.

The pattern of findings demonstrating a specific relation between sexual abuse and internalizing outcomes should be interpreted with caution, given the fact that this association may reflect heightened risk for both sexual abuse and internalizing outcomes among girls. Dominant theoretical models of sexual abuse (Finkelhor & Brown, 1985; Spaccarelli, 1994) argue that sexual abuse is linked with both internalizing and externalizing outcomes, through varying mediating processes (e.g., emotions, cognitions, coping), and that these relations are moderated by particular environmental contexts (e.g., offender–victim relationships, family relationships/responses and community contexts). Future research, building upon these theoretical frameworks, is needed to determine the ways in which gender (and other moderators) interact with sexual abuse in relation to particular mediating processes and specific psychological outcomes.

There are several limitations represented in the current state of the field that may have influenced our ability to detect patterns of specificity between particular stressors and broad-band outcomes. First, there are significant rates of co-occurrence and comorbidity of psychopathology among youth (Compas & Hammen, 1994). Second, there are difficulties associated with the lack of a well-established

taxonomy of stressors. Categorizing stressors based on type may include a variety of stressors that were different in nature. For example, poverty is associated with a range of additional specific stressful experiences, which include both 'conflict' (e.g., exposure to violence, physical abuse, divorce/marital conflict) and 'loss'-based stressors (e.g., deaths, separations, disasters). A third explanation is that specificity findings are moderated by specific child-based characteristics and environment-based contexts. Thus, particular stressors may be linked with particular outcomes, only in the presence of particular moderating and mediating processes.

It should also be noted that given the variability in methodology, stressors, outcomes, measures, and samples, we determined that a qualitative approach to the review would be the most appropriate; however, as the field of developmental psychopathology progresses, a meta-analytic approach to reviewing the literature is recommended. Further, although variability in measurement and definition led us to focus on internalizing versus externalizing outcomes, it is possible that this more global review led to more difficulty in detecting evidence of specificity, which, by definition, necessitates examining specific stressors in relation to specific outcomes. In addition to these limitations, there are several methodological issues that should be considered within the context of this review.

Methodological issues

Specificity research has been fraught with variability in specific constructs examined, measures used, and samples studied, seriously limiting conclusions which may be drawn about specificity itself and conclusions about why discrepancies in findings exist. Further, specific methods for examining specificity have varied. Beyond the level of design (Stressor Specific, Outcome Specific, and Stressor-Outcome Specific), analytical and statistical procedures utilized were found to be quite disparate across studies. For instance, some studies utilized a 'comparison approach' in which rates of psychological problems were compared across groups exposed to differing stressors; whereas other studies utilized a 'relational approach' in which associations between particular stressors and particular outcomes were examined in a single sample of youth. Thus, the approach utilized is likely to influence the findings reported. Although there is considerable heterogeneity within these approaches, the relational approach is generally more stringent than the comparison approach.

Most of the research conducted in the stress and coping literature is cross-sectional in nature. Thus, it is unclear the extent to which relations between stressors and outcomes change across time. A developmental approach, which takes into account changes across time and developmental trends, to understanding specificity, equifinality, and multifinality may improve our understanding of the pathways between stress and psychopathology. For example, the way children express their distress in response to stressors changes over the course of development, so age may be one potential explanation for the mixed findings on specificity.

It may also be helpful to consider differences in sampling strategies (i.e., clinical samples versus population-based samples) in examining specificity. For example, comorbidity of mood and conduct disorders in children and adolescents has been found to be higher in clinic samples than community populations. Thus, it is possible that greater specificity may exist between particular stressors and particular outcomes in community-based samples than clinic samples. In addition, different theoretical frameworks and methodological characteristics of studies may pull for particular specificity results. For example, links between parent reports of abuse and child externalizing symptoms may be stronger due to mono-informant or mono-method bias or the difficulty of assessing internalizing symptoms in a psychometrically sound manner.

Related to methodological variability is the dearth of theory-driven specificity research. In light of the large number of studies meeting minimal methodological requirements for specificity research, it is striking how few studies tested theory-based models of specificity. The work of Sandler and colleagues (1992) and Shirk and colleagues (1998) represent important exceptions. More studies like these, which test specific etiological models of developmental psychopathology, are needed.

Directions for future research

There is a need to develop and test specific models that examine the complex relations between stress and psychopathology. It is noteworthy that no single study has yet tested full specificity models (including examination of specific mediating and moderating pathways) of the role of stress in the etiology of a particular psychological outcome (see Figure 2). For example, exposure to conflict among adolescent boys leads to external, global, stable cognitive appraisals, which lead to aggression symptoms, which, in turn, lead to further conflict-based stressors. Such research is necessary to develop an empirically supported model of the role of stress in the etiology of developmental psychopathology.

Further discussion of the theoretical model presented (see Figure 2) may help to illustrate and highlight the type of work that is necessary in order to better understand the complex relations between stress and psychological outcomes. This model may be tested with various simple and complex, theoretically driven hypotheses regarding relationships between stressors and outcomes. For an example,

research testing such a model might 1) examine the influence of a particular stressor to a particular outcome (e.g., test the hypothesis that there is an association between exposure to violence and aggressive behavior by using the 'relational' approach of examining several stressors – i.e., exposure to violence, poverty, and divorce, and several outcomes – i.e., aggressive behavior, depressive symptoms and anxiety symptoms), or 2) examine both the specificity of the association between exposure to violence and aggressive behavior (as in example 1) and the influence of a particular moderator on the relation between a particular stressor and a particular outcome (e.g., test the hypothesis that male gender strengthens the association between exposure to violence and aggressive behavior), or 3) examine specificity (example 1), a potential moderator (example 2), and the influence of a particular moderator on both a particular stressor and a particular mediator (e.g., test the hypothesis that male gender strengthens the association between exposure to violence and aggressive behavior through increases in distraction and avoidant coping). In addition, reciprocal and dynamic relations among a particular moderator and a particular stressor, outcome, and/or mediating process could be examined. For example, the hypothesis that psychological problems (e.g., aggressive behavior) lead to the development of a moderating context (e.g., hostility from classmates at school) that, in turn, exacerbates the association between a particular stressor (e.g., a violent attack at school) and additional specific psychological symptoms might be tested.

In order to begin to establish more comparability between studies and to conduct a clear test of specificity, it is recommended that researchers consider the following criteria: 1) test specific, theory-based, etiological models of developmental psychopathology; 2) include at least two stressors and at least two outcomes in order to examine specificity with the more stringent Stressor-Outcome model; 3) develop a taxonomy of stressors, and in the meantime, consider refining notions of categorizing stressful life events based on theoretically-derived categories (i.e., conflict, loss, achievement); 4) identify both unique and common effects of various stressors in relation to various outcomes; 5) include moderators, such as child characteristics and environmental context, as well as mediators, such as cognitions and coping, in the examination of specificity; 6) use a relational approach, examining the relations between stressors and outcomes within a particular population; 7) use multiple methods of assessment to reduce reporter bias and generate more confidence in the findings; and 8) conduct longitudinal studies to examine the dynamic relations between stressors and outcomes across time.

In sum, methodological discrepancies and the lack of theory-driven research have limited the degree to which the specificity hypothesis has been tested. Although the results of the present review provide little evidence of specificity effects, examination of full specificity models (using maximally effective methodology) is needed to fully test hypotheses related to equifinality, multifinality, and specificity in the relation between stress and psychological symptoms in children and adolescents. Results of such research may, in fact, provide evidence that integrates these theories (i.e., through discovery that specific relations between particular stressors and particular outcomes occur only in the context of specific moderators and/or specific mediating processes). Such research provides an ideal method for examining the individual patterns of adaptive and maladaptive outcomes across development (Cicchetti & Rogosch, 1996) and, thus, furthering the goals of developmental psychopathology.

Correspondence to

Susan D. McMahon, Department of Psychology, DePaul University, 2219 N. Kenmore, Chicago, IL, 60614, USA; Tel: 773-325-2039; Email: smcmahon@depaul.edu

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