

Resilience: A Dynamic Perspective

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Identifying characteristics that distinguish youth who achieve adaptive outcomes in the face of adversity from those who do not has furthered our understanding of developmental psychopathology. However, accumulating evidence indicates that particular characteristics rarely serve exclusively risk or protective functions, that individuals who seem resilient on one index often do not seem so on other indices, and that individuals often are not equally resilient across contexts. These findings call for a dynamic conceptualisation of resiliency that can account for why the ways children cope with stressors vary across domain, development, and context. We organise resiliency research into a framework based on a recently proposed dynamic conceptualisation of personality (Mischel & Shoda, 1995). This framework assumes that understanding why some children show resilience in the face of adversity whereas others show difficulties requires identifying: (a) the content of and relational structure among relevant psychological mediators such as competencies, expectancies, values, and goals; and (b) the relation between these psychological mediators and relevant features of the environment. To illustrate the potential of this approach to further our understanding of resiliency, we examine and reconsider the link between IQ and conduct problems.

Growing up, Clayton faced a constellation of risks ubiquitous to economically disadvantaged inner-city neighbourhoods like his. Somewhat surprisingly, at age 6 he took a verbal IQ test and received a score of 130, significantly above the mean among his classmates. Years later, Clayton's teachers reported that he stood out due to his ability to quickly master the material he learned. As a

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This research was supported by grants from the National Institute of Mental Health (R29-MH51113) and the Harry Frank Guggenheim Foundation and by a W.T. Grant Faculty Scholar Award to Geraldine Downey. We thank Ozlem Ayduk, Sheri Levy, Walter Mischel, and two anonymous reviewers for helpful comments on earlier drafts of this paper.

teenager, Clayton had no criminal record, was in the honours' programme at school, and had plans to go to college. Rudy, Clayton's downstairs neighbour, happened to earn a similarly high verbal IQ score at age 6. In junior high school, however, Rudy did well in some classes but poorly in others. He began skipping school. At age 13, he was caught writing graffiti on a subway car. By age 16, Rudy had dropped out of school and was arrested for selling drugs.

Because they grew up in a socially disadvantaged environment, Clayton and Rudy faced heightened risk of negative developmental outcomes such as conduct problems (Dumas & Wahler, 1983; Farrington, 1978; Offord, Alder, & Boyle, 1986; Patterson, Kupersmidt, & Vaden, 1990; Rutter, 1981). Socioeconomic disadvantage has been shown to exert its influence on conduct problem aetiology through such proximal contextual mediators as parental discipline, mother's social support, cognitive stimulation, and exposure to violence (Dodge, Pettit, & Bates, 1994). Explaining why individuals such as Clayton manage to achieve positive outcomes in spite of such adversity can potentially inform intervention efforts designed to foster adaptive coping and thus has been the focus of considerable research (e.g. Cicchetti & Garmezy, 1993; Garmezy, 1990; Radke-Yarrow & Brown, 1993; Rutter, 1987; Werner & Smith, 1989).

An appropriate first step in such research is to delineate the characteristics of individuals who have managed to achieve adaptive outcomes in the face of stress. Noting, for example, Clayton's high IQ, one could posit that Clayton's cognitive abilities helped him navigate his tough environment. Thus, identifying personal or social characteristics as "protective" factors in relation to maladaptive outcomes has been a major focus of resiliency research. Using 30-year longitudinal data from a multi-ethnic cohort, for example, Werner and Smith (1989, 1992) identified several characteristics distinguishing low socioeconomic status (SES) youth who functioned well from those who did not. Radke-Yarrow and Sherman (1990), employing a case study method to examine children at risk for developing psychopathology due to a parent's affective illness, also identified several characteristics unique to children able to achieve adaptive outcomes.

Studies such as these and many others (e.g. Conrad & Hammen, 1993; Fergusson & Lynskey, 1996; Wyman, Cowan, Work, & Kerley, 1993) have identified a set of characteristics—both personal (i.e. high intelligence, social skills, physical attractiveness), and environmental (i.e. having a responsible caregiver)—that appear to protect children from some of the ill effects of their dangerous environments. These protective characteristics are hypothesised to exert their beneficial influences in either of two ways. First, a protective factor can have an equally beneficial effect across individuals, irrespective of each individual's risk status (e.g. Garmezy, Masten, & Tellegen, 1984; Masten et al., 1988). This type of effect is indicated by a

negative main effect of the protective factor (e.g. intelligence) on the maladaptive outcome of interest (e.g. aggression). Alternatively, the protective factor can have a particularly beneficial effect on high-risk individuals relative to low-risk individuals. This type of effect is indicated by an interaction between the protective factor and a risk factor (e.g. Brook, Nomura, & Cohen, 1989; Cowan & Work, 1988; Zimmerman & Arunkumar, 1994).

However, accumulating evidence indicates that particular factors rarely serve exclusively risk or protective functions. Thompson and Calkins (1996), for example, argue that the ability to regulate one's emotions can serve either an ameliorative or a debilitating function for children raised in risk-laden environments. Children in abusive homes, for example, can avoid further abuse by learning to control the emotional outbursts that could attract negative attention and lead to further abuse (for a review, see Cicchetti, Ganiban, & Barnett, 1991). On the other hand, an observational study of preschool children and their mothers (half of whom were depressed and half well) showed that the children best able to modulate their emotions in response to mothers acting sad also were independently rated as highest in anxiety and were more likely to have depressed mothers (Radke-Yarrow, Zahn-Waxler, Richardson, Susman, & Martinez, 1994). This study suggests that children who tend to overly regulate their emotions, perhaps in the normatively adaptive service of establishing a warm attachment with a caregiver, may also be more likely to experience anxiety when these efforts prove unsuccessful with an affectively ill parent.

Moreover, children deemed resilient in one domain may not be so deemed in other domains. Luthar and her colleagues have shown that at-risk children who seem resilient on one index often do not seem so on other indices or on the same index at a different point in time (Luthar, 1991, 1993). Luthar, Doernberger, & Zigler (1993), for example, showed that 85% of the inner-city children who seemed resilient based on one domain of social competency also showed significant signs of impairment on one or more domains six months later. In our hypothetical example, for instance, Rudy scored above average on IQ at age 6, at which time he was doing well in school, but later evidenced both minor and serious conduct problems.

A DYNAMIC-ORGANISATIONAL APPROACH

Explaining Clayton's and Rudy's outcomes—and the resiliency data they are intended to symbolise—requires a model of resiliency that can account for the ways children facing similar levels of adversity vary across domain, development, and context. One means of understanding such diverse outcomes is to examine processes through which particular protective factors can interact with other variables to predict adaptive or maladaptive

outcomes. Indeed, consonant with previous calls for a “process” approach to the study of coping and resilience (e.g. Cicchetti & Schneider-Rosen, 1986; Coyne & Downey, 1991; Garnezy, 1991; Rutter, 1987), researchers have increasingly recognised the value of understanding the interactional processes influencing individuals’ behaviour as they cope with environmental stressors. Egeland, Carlson, and Sroufe (1993), for example, advocated the importance of elucidating how individuals’ behaviours can be organised into patterns predictive of adaptive or maladaptive outcomes. We further advocate examining the organisational structure of the individual’s psychological mediating units and gauging the relation between such organisation and the individual’s coping efforts, in the context of specific environmental contexts. Specifically, we examine how a recently proposed dynamic conceptualisation of personality (Mischel & Shoda, 1995; in press) can advance understandings of processes underlying resilient and nonresilient outcomes.

The CAPS Model

Mischel and Shoda’s cognitive-affective personality system (CAPS) theory was formulated to reconcile recurrent findings that although individuals differ from one another on trait dimensions, low cross-situational consistency within individuals on these dimensions belies the traits’ presumed stability (e.g. Hartshorne & May, 1928; Mischel, 1968, 1973; Mischel & Peake, 1982; Peterson, 1968). Mischel and Shoda’s work suggests that the stability and coherence of personality lies within the distinctive “*if . . . then . . .*” contingencies guiding individuals’ behaviour and giving rise to their predictably varying behaviour patterns across situations (Shoda, Mischel, & Wright, 1993; Wright & Mischel, 1987). Thus, whereas a child may not show equal achievement across psychologically dissimilar situations (e.g. when under the tutelage of a stern teacher vs. when under the tutelage of a more flexible teacher), the child may display similar achievement levels in psychologically similar situations (e.g. when the math teacher is perceived to be flexible vs. when the science teacher is perceived to be flexible). Thus, rather than as a bundle of traits, personality is construed as a coherent signature of behaviours that vary reliably across psychological situations.

Incorporating advances in social cognition (e.g. Bandura, 1986; Cantor & Kihlstrom, 1987; Dodge, 1986; Higgins & Bargh, 1987), and building on previous social learning research and theorising (Kelly, 1955; Rotter, 1954), Mischel and Shoda’s theory posits that: (a) personality is expressed via an individual’s psychological mediating units (i.e. encodings, expectancies, affects, goals, and competencies) that respond differentially but reliably to

distinct environmental features; and that (b) these units are linked by activation pathways forming distinct networks. Consequently, specific environmental features (e.g. a teacher's behaviour) excite or inhibit particular of an individual's mediating units (e.g. expectations of rejection), and these units, in turn, excite or inhibit other particular units within the system (e.g. goals for relating to a teacher), ultimately determining how a child will use his/her competencies to generate behaviour (e.g. whether the child will use his/her cognitive competency in the service of academic achievement or in the service of thinking of ways to test the teacher's patience). The individual's behaviour will then affect the environment, altering the stimulus the individual receives. This model thus predicts that resilient outcomes are a product of psychological mediating units interacting with both (a) features of the environment, and (b) other mediating units (which themselves reflect prior interplay between experience and predisposition), thus forming a stable processing structure that promotes adaptive functioning in the face of challenge.

The CAPS framework bears a number of implications for resiliency research. First, a particular competency of the individual (e.g. verbal facility) cannot be deemed to serve a protective or risk function without knowing its relation to features of the environment. Thus, demonstrating verbal facility may prove more beneficial in the service of completing English homework than when used to devise clever verbal taunts that instigate physical altercations. Although this general point has been previously raised (Egeland et al., 1993; Rutter, 1987), it is not yet typically reflected in empirical research on resiliency. Instead, the emphasis of empirical studies has been on identifying generalisable protective or compensatory factors (for reviews, see Basic Science Behavioral Task Force, 1996; Werner, 1995; for a notable exception, see Luthar et al., 1993).

Second, the CAPS framework distinguishes among a number of different types or classes of psychological mediating units that are important to consider when developing a process model of coping outcomes. These include expectancies/beliefs, biases, goals, values, affects, and competencies. Research on resilience has traditionally emphasised individual competencies or assets and paid less attention to how relevant expectancies, biases, goals, and values shape how one's competencies get used. Yet, research that examines the role of some of these types of social cognitive mediators (e.g. encoding biases) in accounting for individual differences in children's adjustment has yielded important insights (for reviews, see Crick & Dodge, 1996; Downey, Feldman, Khouri, & Friedman, 1994). This is also true of research on stress and coping in adulthood (Coyne & Downey, 1991). However, within a resiliency framework, a number of these mediators have not yet been extensively investigated, such as children's expectancies and goals and values.

Third, rather than positing that an assortment of discrete traits contribute to a developing individual's ability to cope with stress, the CAPS approach assumes that it is the distinctive organisation of activating pathways linking psychological mediating units, as well as the availability of the units themselves, that will influence an individual's coping capability (see also Cicchetti, 1990; Sroufe, 1979). Thus, when considering the interactions between a youth's competencies (e.g. intelligence), expectancies (e.g. "selling drugs earns money that is otherwise very scarce"), and goals (e.g. "have nice clothes") it is possible to begin to develop a coherent psychological profile of the youth and to understand how such a youth might negotiate decisions arising in particular developmental context. Moreover, we can begin to understand the youth's phenomenological experience of the coping process, for example, how the youth's goals and motivations give meaning to and drive his/her behaviour. One benefit of such a focus is that it necessitates the examination of the psychological processes underlying the youth's apparently successful or unsuccessful coping efforts. In our hypothetical example, for instance, Rudy evidenced high intellectual capacity but later sold drugs and dropped out of school. Understanding his case requires considering how his goals and expectancies, for example, could have affected the manner in which he expressed his cognitive competencies. Rudy may have not expected that his academic efforts would have been as well rewarded as would efforts to earn cash and achieve status with peers through delinquent behaviour such as selling drugs. Thus, Rudy may have decided to direct his cognitive competencies toward becoming a skilled drug dealer.

In summary, the CAPS approach provides a way of integrating three essential components of a process approach to resilience that have been previously identified as warranting attention: (a) context (e.g. Rutter, 1987); (b) psychological mediating units (e.g. Crick & Dodge, 1996; Downey & Walker, 1989; Downey, Khouri, & Feldman, 1997); (c) a focus on how psychological mediators are organised in relation to one another and to relevant features of the context (Cicchetti, 1990; Sroufe, 1979).

Within the CAPS framework, then, the task for resiliency research becomes identifying the relevant psychological mediating units likely to be accessible to a particular at-risk sample and examining how they are organised in relation to one another and to the environment, in order to bring to light processes through which such youth are able to achieve a specific adaptive or maladaptive outcome. This task requires careful analyses of the coping challenges that youth face in specific environments and of the psychological mediating units that are likely to be particularly relevant in such environments.

In the remainder of this paper we discuss how one much-studied

population of children at heightened risk for delinquency—boys¹ of lower SES (Dumas & Wahler, 1983; Farrington, 1978; Offord et al., 1986; Patterson et al., 1990; Rutter, 1981)—are able or not to avert this outcome. Focusing especially on the much-studied relation between IQ and delinquency, we attempt to understand under what conditions and how one's current cognitive competencies, as expressed in one's IQ test score, could affect processes leading to delinquent or nondelinquent behaviours among boys in high-risk environments. Such an approach requires that we first delineate some psychological mediating units likely to be accessible in disadvantaged environments and relevant to how one's cognitive competencies will affect one's delinquency status. Clearly, this set of mediating units that we have selected to discuss is not exhaustive but rather is provided as an example of the types of units that can be used to construct an organisational structure through which to understand developing individuals facing high-risk environments.

Expectancies

According to Bowlby (1969, 1973, 1980), children whose emotional needs are not met will develop insecure working models of their social worlds, founded on expectations of future interpersonal rejection. Indeed, Downey and her colleagues (e.g. Bonica & Downey, 1997; Downey et al., 1997; Feldman & Downey, 1994) have shown that early experiences of rejection can lead children to become *rejection-sensitive*, that is, to anxiously expect and to readily perceive rejection in social interactions and to respond to perceived rejection with hostility. Poor children encounter increased amounts of societal rejection, in the form of less positive and more negative attention from teachers, for example (Gouldner, 1978; McLoyd, 1990). Thus, in a process analogous to that proposed by Bowlby, children encountering such societal rejection could be predicted to form insecure working models of their interactions with the larger society, leading them to feel insecure about their relation to societal agents such as schoolteachers.

Accordingly, if Rudy happened to encounter teachers that manifested such a prejudice against poor children, he may have come to feel sensitive to the rejection of other teachers. This could have led to his hostile encoding of their behaviour (Dodge, 1986) and to his subsequently antagonistic stance toward them, leading to his increasing dissociation from school. In contrast, if Clayton did not encounter this environmental feature (a teacher biased against poor children) he may have looked on his teachers with greater

¹The vast majority of extant literature on delinquency examines boys in relation to this outcome. We anticipate accumulating research on girls' aggressive behaviour (Grotperger & Crick, 1996).

equanimity, leading to his increased involvement in school where his cognitive competencies could be rewarded and further developed, leading to further rewards.

Moreover, children's expectations about the rewards associated with different types of behaviour are likely to affect which behaviours the children enact. Herzberger and Hall (1993), for example, showed that children's expectations about whether or not their aggressive actions would be rewarded predicted their enactment of such actions. Observational support for this role of expectancies is provided by Snyder and Patterson's (1995) finding that the more often boys' coercive acts during conflicts with their mothers were rewarded by conflict termination, the more often the boys later tended to be more aggressive with their peers. In a similar fashion, the degree to which a child perceives that delinquent behaviours are likely to be rewarded will help determine whether or not they are enacted. Rudy, for example, after observing other boys sporting new sneakers and clothes as a result of dealing drugs, may have come to expect that his drug-selling efforts also would be equally rewarded. And because children of lower SES, especially ethnic minorities (Huston, McLoyd, & Garcia Coll, 1994), tend to live in areas with high concentrations of unemployment (Fagan, 1993; Shapiro, 1981; Wilson, 1987), their expectations of obtaining more conventional rewards may be pretty low. Observing the disappointment of their parents and older siblings, they may come to expect that whatever efforts they make toward societally conventional success will be unlikely to be rewarded (Wilson, 1995). This can operate to lower one's expectations of being able to earn conventional rewards (Bandura, 1982). Thus, Rudy or Clayton's particular expectations about which rewards are relatively more likely to be attained (reflecting their particular social learning histories) would have affected the ways in which they chose to use their cognitive competencies.

Values and Goals

It is important to consider whether the values of the youth's peer group differ significantly from those promulgated by societal and educational institutions. In cases where there is no substantial discrepancy between peer and societal values, fewer competing values will vie for the child's endorsement and the child will be more likely to pursue the predominant goal. In contrast, if there is a marked discrepancy between peer and societally sanctioned values, the child will need to choose which of the values to endorse. In a classic sociological life history of a juvenile delinquent from a Chicago ghetto (Shaw, 1930/1966), for example, a youth traces how the prison values he learned (i.e. that "snitches" deserve being stabbed) guided his later behaviour. In this case, there was little competition from

larger society, and the youth adopted the predominant values available in his prison environment.

In areas of concentrated poverty where conventional means of achieving self-worth (e.g. productive employment, quality education) are mostly absent, achieving the respect of others, often through violence or intimidation, is widely valued by adolescents (Anderson, 1994). Thus, the goal of not being disrespected may be more likely to be peer sanctioned in economically disadvantaged areas; however, family and societal institutions such as schools may promote incongruent goals such as to go to college. In this case, then, to some extent, the child must choose between the goals of his peers and those of larger society. This choice will depend on the accessibility and organisation of the child's psychological mediating units. In our example, for instance, Rudy's expectancies of teacher rejection may have led him to more strongly favour peer- than school-endorsed values and goals. Clayton, alternatively, may not have been well liked by his peers and may have thus favoured school-endorsed values by default. Consequently, the distinct goals that these children pursued may have facilitated their markedly different means of manifesting their cognitive competencies.

Self-Regulatory Competencies

Self-regulatory competencies often have been proposed to underlie or mediate the production of antisocial behaviour (for a review, see Gottfredson & Hirschi, 1990), and several studies have documented negative correlations between adolescents' ability to self-regulate and their enactment of aggressive behaviour (e.g. Cicchetti, Rogosch, Lynch, & Holt, 1993; Pfefferbaum & Wood, 1994; Tremblay, Bouerice, Arseneault, & Niscale, 1995). Brownfield and Sorenson (1993), for example, showed that adolescents' self-reported impulsivity scores, in conjunction with their beliefs about delinquency and with their peers' levels of delinquency, predicted their official delinquency reports.

Thus, as the Brownfield and Sorenson study indicates, self-regulatory competencies can be expected to most precisely predict important outcomes only when their organisational relations to other psychological mediating units (e.g. expectancies) are considered. Further, self-regulatory behaviours themselves are influenced by environmental features as well as by other psychological mediating units within the individual. In one rigorous programme of experimental research, Mischel and his colleagues have shown how environmental features (e.g. the ethnicity and gender of the experimenter and the availability of an adult model) and cognitive processes (e.g. attention allocation strategies and cognitive restructuring of the reward) will help determine the duration of time that children will forsake a smaller reward for a delayed but more desirable one (see e.g. Mischel,

Shoda, & Rodriguez, 1989; Rodriguez, Mischel, & Shoda, 1989. For a review, see Mischel, Cantor, & Feldman, 1996). For example, on a Caribbean island colonised by the British, Caribbean children opted to receive a small immediate reward rather than to wait for a more valuable reward promised by a white male experimenter to be delivered the next day; however, these same children chose the more valuable, delayed reward when it was offered by a black female (Mischel, 1961). It seems that the children held greater trust that the black female would deliver on her promise and thus were more willing to await it. Indeed, converging evidence indicates that the degree to which one expects to receive an awaited reward will determine the extent of time that one will await it (e.g. Loewenstein, 1992; Rachlin, 1995).

When considered in relation to adolescents' other psychological mediating units and experiences, the general principles derived from this basic research indicate processes likely to affect the degree to which adolescents will self-regulate. For example, if Rudy had only very rarely received rewards from teachers, he may have expected that future efforts toward receiving such recompense would go unrewarded. Thus, he may have been less inclined to self-regulate in the service of obtaining long-term, school-related rewards. Similar to individuals whose expectations of receiving long-term rewards are experimentally manipulated to be pessimistic, Rudy may have striven for those rewards that seemed most easily obtainable.

APPLYING THE CAPS APPROACH

As the preceding sections indicate, the cognitive-affective personality system (CAPS) approach to understanding resilience advocates gauging the character of an individual's psychological mediating units (i.e. expectancies, encodings, competencies, affects, and goals) and, more importantly, understanding how the units are organised to influence one another and to interact with environmental features to affect the coping process. We anticipate that such fine-grained analyses will allow more accurate predictions about how a particular mediating unit or feature of the environment will affect the coping process. For example, knowing what values a youth endorses will afford more certainty in predicting how his cognitive competencies will affect his/her efforts at coping with challenge.

The approach that has more commonly guided empirical studies of resilience is to attempt to examine the independent predictive utility of presumed ameliorative personal or environmental factors. This approach has as its ideal the laboratory experiment where the use of random assignment and experimental manipulation allow the identification of unambiguous causal effects. However, as the literature on stress and coping in adulthood has revealed, efforts to grapple with the basic interdependence

of person and context have raised questions about the suitability of the ANOVA-based experimental design as a metaphor for understanding how resilience occurs in the face of risk (Coyne & Downey, 1991). To illustrate some of the methodological and theoretical challenges that arise when one instead adopts the CAPS approach of explaining how psychological mediating units and features of the environment are organised to predict outcomes, we next review several studies that employ the alternative approach of gauging the unique predictive utility of a single variable on an outcome. Specifically, we consider research examining whether children's cognitive competencies, as reflected in their verbal IQ scores, protect them from enacting antisocial behaviour. This question has been the focus of considerable research.

IQ AND DELINQUENCY

Much research has shown that children able to overcome great odds frequently score higher on IQ tests than at-risk youth who fare less well (e.g. Fergusson & Lynskey, 1996; Herronkohl, Herronkohl, & Egolf, 1994; Masten et al., 1987; Radke-Yarrow & Sherman, 1990). In particular, negative correlations between verbal IQ and official and self-reported delinquency have been frequently noted (for reviews, see Brier, 1995; Hinshaw, 1992; Hirschi & Hindelag, 1977; Moffitt, 1993a, b; Zeidner, 1995). Some authors interpret this relation as evidence that verbal IQ protects against the development of delinquency (e.g. Hirschi & Hindelag, 1977; Moffitt, 1993b). Supporting such a hypothesis requires demonstrating a significant relation between IQ and delinquency, which does not decrease substantially when controlling for potentially confounding variables such as SES and self-regulatory competencies.

Lynam, Moffitt, and Stouthamer-Loeber (1993) sought to test this hypothesis in that study that was exemplary in its attention to identifying key alternative explanations for the association between IQ and delinquency and for its use of a large representative sample. The authors concluded that there was a direct negative relation between IQ and delinquency, when controlling for such competing variables as SES. To explain why Rudy and Clayton, who show similar levels of IQ and of social adversity, differ in delinquency, these authors might potentially look for other relevant variables on which the boys differ, such as self-regulatory competencies.

How would the CAPS approach outlined above approach the task of understanding the relationship between IQ and delinquency? Rather than attempting to rule out the effect of variables such as SES, self-regulatory competencies, and expectancies on the relation between IQ and delinquency, the emphasis would be on examining the processes linking these variables with IQ and with delinquency. Such a process approach bears

both conceptual and methodological implications. First, attempts to control the effects of a SES, for example, on the relation between IQ and delinquency versus attempts to elucidate processes interrelating SES with these variables are likely to lead to differing operationalisations of SES. And, as discussed later, conflicting findings regarding the influence of SES on the relation between IQ and delinquency illustrate how differing operationalisations of this variable can affect not only whether or not processes are revealed but also the predictive utility of this variable. Second, a study discussed later illustrates how research from a CAPS approach examining how the organisational structure of mediating units (self-regulatory and cognitive competencies) becomes linked with antisocial outcomes yields conclusions differing from studies examining the unique predictive utility of cognitive versus self-regulatory competencies. Third, as exemplified lastly in a study of factors affecting female prisoners' recidivism rates, a CAPS framework would explicitly distinguish whether competencies are available from whether and how they are used in particular contexts.

Socioeconomic Status (SES)

Lynam et al. (1993) report that the effect of IQ on delinquency remained robust after controlling for SES. Indeed, in contrast to most research showing a negative relation between SES and delinquency (see Hinshaw, 1992, for a review), Lynam et al. reported no correlation between delinquency and SES in their sample. In this case, SES was assessed with the Hollingshead Scale (1979), a measure of the child's caregiver's occupational position and educational attainment. In a large prospective sample, Farrington (1995) also reported that SES (defined in terms of parents' occupational status) did not predict juvenile delinquency conviction. However, Farrington's data shows that, in this same sample, delinquency was predicted by the children's household incomes, a potentially influential component of SES if one considers likely mechanisms through which it can exert influence on important outcomes such as delinquency.

Two other studies also indicate that the criteria used to assess SES will predict whether or not it can help explain the association between IQ and delinquency. Moffitt, Gabrieli, Mednick, and Schulsinger (1981) presented data from two longitudinal samples documenting a significant relationship between IQ and official records of delinquency, independent of SES (measured in this case as the prestige of father's occupation). In contrast, Stattin and Klackenber-Larsson (1993) assessed children's IQ scores and a more elaborate measure of their SES (including mother's and father's education levels and occupational prestige, source of family revenue, and

quality of the dwelling) at multiple ages and showed that, whether assessed at ages 5, 8, 11, 14, or 17, IQ predicted no significant variance in official delinquency independent of that predicted by SES (IQ at age 3 did show a significant correlation, $r = -.16$). More consistent with Moffitt et al.'s (1981) findings, however, Stattin and Klackenborg-Larsson report that if father's occupational prestige is used as the sole measure of SES, then the relationship between IQ and delinquency remains significant when controlling for SES not only at age 3, but also at ages 14 and 17.

Thus, measures of SES that do not include indices of household income may not account for important risk factors that grow from economic disadvantage and that can promote delinquency. For example, Farrington's (1995) data show that although his measure of SES (occupational prestige of breadwinner) failed to differentiate future delinquents from nondelinquents, the future delinquents were not only significantly poorer, they also tended to be (p. 939): "from larger-size families, living in poor houses with neglected interiors, and supported by social agencies". These findings underscore the importance of using measures that validly capture the components of SES that reliably predict important outcomes such as delinquency. This need has been previously noted, and alternative strategies of assessing SES have been recommended (Entwisle & Astone, 1994; Hauser, 1994).

These observations suggest that approaching research problems with the goal of trying to understand *how* predictors (e.g. SES) are meaningfully linked with outcomes (e.g. delinquency) may hold greater potential not only to delineate such processes, but also to examine more adequately the more basic question of whether the variables are meaningfully related. For example, as the reviewed studies suggest, attempts at "ruling out" SES do not require the development of specific process models to account for how SES might function to influence delinquency. Such approaches require only the use of one or another established measure of SES, to rule it out as an alternative hypothesis. However, the discrepant findings we have reviewed also suggest that, by not attempting to delineate psychological processes, some of this research may have operationalised SES in ways not most conducive to signalling its influence on the relation between IQ and delinquency. For example, if one hypothesised that low SES could predict delinquency through mechanisms precipitated by phenomena such as children valuing but not being able to afford nice clothes and parents being unable to afford to provide activities (e.g. summer camp) to occupy their children's free time, then the amount of income a family receives would become an important component of SES likely to predict delinquency and thus essential to take into account when examining whether and how SES affects the relationship between IQ and delinquency.

Understanding How the Organisation of Psychological Mediating Units predicts Antisocial Behaviour

As indicated earlier, another important implication of the CAPS approach is that the organisational relationships among psychological mediating units (e.g. between self-regulatory and cognitive competencies) should be examined when attempting to determine how a variable such as IQ level predicts an outcome such as delinquency. Noting a frequently observed negative relationship between self-regulation and delinquency (e.g. Gottfredson & Hirschi, 1990), for example, we would ask: How will one's competency at self-regulating influence the relation between one's intellectual competencies and delinquency? Lynam et al. (1993) also took account of the important variable of self-control, again treating it as a variable competing with the hypothesis that IQ has a unique effect on delinquency. These authors assessed self-control by combining the results of several widely varying measures, including a computer game procedure and paper-and-pencil, teacher, mother, and self-reports of impulsivity, and reported that the relation between IQ and delinquency remained intact after controlling for this aggregate.

Rodriguez, Shoda, Mischel, and Wright (1998) also examined whether self-control and IQ predicted antisocial behaviour, but these researchers' aim of understanding how the two variables could interact to predict aggression, rather than of gauging the independent effects of one over the other, required a different kind of study. Building on the work of Mischel and his colleagues (see Mischel et al., 1996, for a review) that delineated some processes underlying successful self-regulation, Rodriguez et al. first assessed the boys' attention allocation strategies (e.g. whether they distracted themselves—an adaptive strategy—or focused on an available reward—a maladaptive strategy) during a self-imposed delay-of-gratification task. Rodriguez et al. next examined how the boys' attention-allocation competencies would combine with the boys' verbal IQ scores to predict their observed aggression. In a camp setting to which low-SES boys were referred for conduct problems, each boy's verbally and physically aggressive behaviours were recorded over 167 hours by counsellors.

Rodriguez et al.'s results are intriguing. The interaction between verbal IQ and attentional strategies accounted for the greatest portion of variance in aggression. Boys with low verbal IQ scores evidenced average amounts of aggression, regardless of their attentional strategies score. Thus, it was among high-verbal IQ boys that attentional strategies exerted influence. Predictably, boys who demonstrated high IQs and high attentional strategy competencies showed the least amount of aggression. In contrast, although verbal IQ was not significantly correlated with aggression in this sample ($r =$

-.13), boys with high IQs and low attentional strategies were most aggressive.

Rodriguez et al.'s findings highlight the value of approaching risk and resiliency research from a process perspective. Their work examined aggression in a specific context, rather than over an extended period of time (as with self-report measures) or across isolated incidents (as with official reports of delinquency). And this context suggests a process leading the high-IQ, low-attentional-strategy boys to be at the greatest risk of enacting aggression. In their camp environment, the boys were under constant surveillance by adults. Thus, to behave excessively aggressively in this setting while also avoiding being excluded by counsellors from the camp activities presumably required some manoeuvring that would have been aided by cognitive competencies. Additionally, some portion of the high-IQ boys' aggressive behaviours probably represented manifestations of their superior verbal facilities in the service of teasing. Among such high-IQ boys, however, superior attentional strategies buffered against enacting such verbal aggression.

Thus, in this study, some boys knew how and were able to allocate their attention away from a desired reward in the self-regulatory service of waiting to receive a more desired reward; and these same youngsters appeared to know how and demonstrate their ability to distract themselves from saying the insults that occurred to them, in the self-regulatory service of avoiding punishment by the counsellors. Most interestingly, this competency did not affect whether children of lower IQ behaved aggressively in this environment. Rodriguez et al.'s findings thus demonstrate that a factor can be assigned a risk or ameliorative function only after specifying its relation to other psychological mediating units and to features of the environment. The study shows, for example, how, in interaction with specific environmental features (i.e. when observed by counsellors) and with other psychological mediating units (i.e. low self-regulatory competencies), even such a ubiquitously cited "protective" factor as verbal intelligence can paradoxically increase an individual's risk of behaving aggressively.

Distinguishing the Availability of Competencies from their Application

Another important variable often considered as an alternative explanation for the relation between IQ scores and important outcomes is that of motivation (e.g. Larson, Saccuzzo, & Brown, 1994; Lynam et al., 1993). Thus, an individual's motivation to minimise effort on an IQ test could reflect a more general motivation to reject school values in favour of peer-sanctioned, delinquent values. This hypothesis implicitly recognises that the test-taking situation may fail to activate the goal of doing well, and in

fact may have the opposite effect, on some children to a greater extent than on others. Thus, a process approach would attempt to distinguish explicitly whether competencies are available from whether and how competencies are used.

A recent study of recidivism in incarcerated women illustrates this point (Bedell, 1997). From a review of the literature, Bedell identified a set of personal qualities characteristic of resilient people. She then asked women who did and who did not return to prison following the end of their incarceration to indicate which of the qualities applied to them. Surprisingly, both groups of women endorsed equally high levels of social and cognitive competencies. What was particularly noteworthy about the study, moreover, was that many of the personal strengths (e.g. intelligence) identified as characterising resilient people were identified by recidivists as aiding them in their criminal activities. What may have distinguished recidivists from women who stayed out were the goals that their resources were used to serve. These results suggest that apparently unsuccessful coping is not necessarily an indication of limited personal resources. Rather, unsuccessful coping implicated the use of personal resources toward other goals, in this case criminal goals, which in turn reflect adaptation to the daily realities of life at the margins of society. Thus, the organisation of the individual's psychological mediating units and features of her environment determined the protective or risk function of her competencies.

FUTURE DIRECTIONS

Several implications emerge from this review. First, we suggest that investigating how variables are organised to predict outcomes may promote operationalising them in ways more sensitive to their dynamic capabilities. For example, several studies demonstrated that different measures of SES not intended to help illuminate specific processes linking this variable with IQ and with delinquency yielded inconsistent findings. Future research employing more process-oriented measures of SES can test explanations (such as that offered earlier) of these seemingly discrepant data. Similarly fine-grained analyses of outcome measures can also advance our understanding of the processes underlying them. For example, although not yet discussed in this paper, the distinction between (more hostile) reactive and (more instrumental) proactive aggression, articulated by Dodge and his colleagues (e.g. Dodge, Lochman, Harnish, Bates, & Pettit, 1996), forces more precise process models of aggressive behaviour generation that ultimately foster more precise predictions. Dodge and Coie (1987), for instance, showed that reactively aggressive boys, but not proactively aggressive boys, tend to make characteristic hostile attribution biases for the causes of others' behaviour, and Crick and Dodge (1996) recently showed

that expectancies about likely rewards versus punishments were found to predict proactive but not reactive aggression.

Consequently, such process-driven operationalisations of predictor variables (e.g. components of SES, self-regulatory competencies) and of outcomes (e.g. proactive vs. reactive aggression) should advance efforts to delineate the mechanisms underlying adaptive and maladaptive outcomes in the face of challenge. For example, the contribution of Rodriguez et al.'s (1998) study could be enhanced by coding the boys' aggression as reactive or proactive. Thus, because distinct processes underlie each type of aggression, we could test distinct process models leading to each type. For example, as discussed earlier, Downey and her colleagues have shown that children who angrily expect rejection tend to interpret others' ambiguously intentioned behaviour as intentional rejection (e.g. Downey et al., 1997). It would be interesting to test whether children's rejection expectations would interact with their self-regulatory competencies to predict reactive, but not proactive, aggression. We would further posit that a child's ability to self-regulate could impede the translation of angry psychological reactions to rejection into reactively aggressive behaviour. Mendoza-Denton and Freitas (1997) have found preliminary support for this hypothesis.

Next, it has become clear that how one particular factor (e.g. intelligence) will influence a developing individual's coping efforts depends on its relation to other psychological mediating units and to features of the environment. This implication is consistent with emerging models of adult coping processes that emphasise understanding the meaning individuals ascribe to stressors as well as the relation of environmental stressors to other environmental variables and to psychological mediating units within the individual (Brown, 1993; Coyne & Gottlieb, 1996). Thus, we suggest that one useful endeavour of future research on risk and resilience will be to test models of how contextually relevant psychological mediating units interrelate to predict adaptive or maladaptive outcomes. We have suggested, for example, several relevant mediators that can be considered when examining how cognitive competencies could affect processes leading at-risk youth, such as Clayton and Rudy, to generate antisocial behaviour. The mediators that we identified were intended to illustrate the importance of a fine-grained analysis of the contextual demands and affordances faced by the child.

For example, we posited above that the disparity between peer- and school-sanctioned values regarding delinquency may be an important environmental feature to consider when examining precipitants of delinquency in children like Rudy and Clayton who live in adverse social circumstances. In turn, psychological mediators, such as Clayton's and Rudy's expectancies about the relative rewards of delinquent versus nondelinquent behaviours, will be expected to interact with the beliefs of

their peers to predict socialised aggression. Thus, if Rudy expected to achieve more valuable rewards through delinquent than through nondelinquent behaviours, then we could expect him to use his cognitive competencies toward these ultimately maladaptive ends. If, however, Clayton expected greater rewards through nondelinquent behaviour, then we would predict that his cognitive competencies would give him an advantage over other children holding similar beliefs but demonstrating less impressive cognitive competency. Prospective measures of children's cognitive competencies, the gulf between their peers' and societal beliefs about delinquency, and their subjective expectancies for the rewards of delinquent versus nondelinquent behaviour can be used to test whether processes such as these operate to influence how IQ and delinquency become linked.

CONCLUSION

In sum, risk and resiliency research has taken important steps in delineating the characteristics that differentiate individuals who achieve positive outcomes in the face of stress from those who meet with more negative outcomes. Building on these findings, researchers have increasingly advocated understanding the processes through which such characteristics impact coping efforts (e.g. Cicchetti, 1990; Coyne & Gottlieb, 1996; Egeland et al., 1993; Rutter, 1987). In this paper, we suggest how a CAPS approach can contribute to these efforts and can help understand phenomena such as why two children facing similar levels of social adversity and demonstrating similar levels of a competency can show markedly different developmental trajectories.

Manuscript received August 1997

Revised manuscript received December 1997

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