Child Peer Abuse and Perceptions of Executive-Functioning Competencies

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Executive functioning (EF) research has been extended during the past decade to include self-reported estimates of perceived competency in completing routine behaviors associated with these neurological functions. Self-report measures such as the Executive Functioning Index (EFI) and Behavior Rating Inventory of Executive Function (BRIEF-A) have been found to be useful in focusing attention on potential areas of EF deficiency. Prior research has focused disproportionately on genetic and biological, rather than developmental, origins of EF. Retrospective accounts of childhood bullying were linked to adult EFI and BRIEF-A subscale scores in three independent samples in this report. Level of perceived competency in organizational skills was linked to childhood bullying experiences in all three samples. Effect sizes for these respective associations ranged from .50 to .74. Childhood bullying was not associated with deficits on any of the Continuous Performance Test subscales. Being bullied during development may alter self-perceptions of strengths and weaknesses in selected areas of EF. Systematic investigation of broader samples and testing tasks may reveal complex connections between childhood bullying and the acquisition of skills associated with EF.

Key words: executive functioning, peer bullying, relational aggression

Executive functioning (EF) refers to the cognitive, emotional, and behavioral processes required in the planning and execution of complex, goal-oriented behavior (Duke & Kaszniak, 2000). EF is composed of abilities necessary to attain and sustain a problem-solving set that includes processes such as planning, organizational skills, inhibitory control, selective attention, and optimal cognitive-set maintenance (Morgan & Lilienfeld, 2000). Working memory serves as an important contributing EF process because it permits flexible efforts to assess progress while implementing problem-solving strategies, to perceive and correct errors, and to accommodate new information and feedback while separating and discarding irrelevant data (Seguin, Nagin, Assaad, & Tremblay, 2004). Capable language acquisition and production processes are also reflected in EF capabilities (Luria, 1973). Systematic efforts have been extended by neuropsychologists to advance current understanding of structural and biochemical factors that differentially affect the acquisition and maintenance of specific EF competencies (Chang et al., 2010; Scott & Schoenberg, 2011).
Anterior (sustained attentional processes), dorsolateral (cognitive functions), and ventral medial (inhibitory and emotional processes) frontal systems have been proposed as mediators of specific EF competencies (Stuss & Levine, 2002).

**EF Measurement Considerations**

Major progress has been made in neuropsychology over the years in conceptually differentiating and measuring selected EF skills and abilities. Although inherent overlap in EF skill domains remains, available testing tasks have been shown to load differentially on selective EF competencies such as sustained selective attention (Continuous Performance Task [CPT-II]; Conners, 2000), mental shifting and perseveration (Wisconsin Card-Sorting Test [WCST]; Nelson, 1976), planning (Tower of London; Shallice, 1982), verbal inhibition (Stroop Test; Cohen, Dunbar, & McClelland, 1990), working memory (Greenwich Test; Burgess, Veitch, Costello, & Shallice, 2000), and many others (Chan, Shum, Toulopoulou, & Chen, 2008).

In recent years, EF assessment research has been extended to include self-report screening data from respondents regarding routine behaviors that have been linked to specific EF skills deficits. Self-report inventories such as the Executive Function Index (EFI; Spinella, 2005) and Behavior Rating Inventory of Executive Function (BRIEF-A; Roth, Isquith, & Gioia, 2005, 2014) have been found to be useful in alerting and directing clinicians toward self-identified areas of presumed EF strength or weakness (subscale dimensions shown in Tables 1 and 2). Responses to these items (e.g., “When doing several things in a row, I mix up the sequence.”) convey information about possible behavioral sequelae of EF dysfunction as well as individual assessments of self-perceived strengths and weaknesses in various skill sets. Self-report instruments such as the BRIEF-A and EFI are often referred to as indirect—as opposed to performance-based—measures of EF.

**Child Maltreatment and EF Development**

In a recent review, Hughes (2011) identified a range of potential factors that may alter, favorably or unfavorably, the course of EF development. Genetic and biological factors have drawn disproportionate attention to date with environmental factors largely neglected. Hughes emphasized the need for systematic assessment of potentially important environmental influences such as nurturing parent–child relationships and hostile family environments on EF development. For example, Augusti and Melinder (2013) found deficits in spatial working memory, but not global EF deficits, among maltreated 8- to 12-year-olds in their recent pilot sample. Schroeder and Kelley (2010) found positive relationships between EF and family organization during the ages of 5 to 12 years old. International child adoptees have shown relative and persistent lags in the acquisition of EF skills and attention maintenance (Jacobs, Miller, & Tirella, 2010), particularly when subjected to early-life deprivation. The combination of neglect and physical

### Table 1

<table>
<thead>
<tr>
<th>Executive Function Index</th>
<th>Total Sample</th>
<th>Peer Abuse</th>
<th>Group Contrasts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>M</strong></td>
<td><strong>SD</strong></td>
<td><strong>r</strong></td>
</tr>
<tr>
<td>College Sample</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivational Drive</td>
<td>15.82</td>
<td>2.35</td>
<td>-.37</td>
</tr>
<tr>
<td>Organization</td>
<td>17.30</td>
<td>2.78</td>
<td>-.27</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td>24.77</td>
<td>3.09</td>
<td>-.12</td>
</tr>
<tr>
<td>Impulse Control</td>
<td>15.93</td>
<td>2.99</td>
<td>-.12</td>
</tr>
<tr>
<td>Empathy</td>
<td>24.00</td>
<td>2.97</td>
<td>.02</td>
</tr>
<tr>
<td>Total</td>
<td>97.82</td>
<td>7.40</td>
<td>-.30</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Sample</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivational Drive</td>
<td>13.95</td>
<td>3.07</td>
<td>-.10</td>
</tr>
<tr>
<td>Organization</td>
<td>18.61</td>
<td>3.80</td>
<td>-.17</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td>24.29</td>
<td>4.32</td>
<td>-.06</td>
</tr>
<tr>
<td>Impulse Control</td>
<td>18.56</td>
<td>4.17</td>
<td>-.06</td>
</tr>
<tr>
<td>Empathy</td>
<td>23.32</td>
<td>4.46</td>
<td>-.01</td>
</tr>
<tr>
<td>Total</td>
<td>98.99</td>
<td>13.46</td>
<td>-.10</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>243</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The bullied group is defined by scores that exceed 12 (i.e., index event reported), on average, every 4 weeks for 12 years for a cumulative count exceeding 144 incidents. The control group was composed of the sample remainder. Significant probabilities are in bold. VEQ-R = Violent Experiences Questionnaire; EFI = Executive Functioning Index.
Table 2
VEQ-R Peer Abuse Index Predictors of BRIEF-A and CPT-II Scores in a College Sample

<table>
<thead>
<tr>
<th>Criterion Measure</th>
<th>M</th>
<th>SD</th>
<th>r</th>
<th>p</th>
<th>Bullied Control</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Executive Composite</td>
<td>53.95</td>
<td>15.74</td>
<td>.34</td>
<td>.001</td>
<td>62.63</td>
<td>51.81</td>
<td>.007</td>
</tr>
<tr>
<td>Inhibit</td>
<td>55.19</td>
<td>14.88</td>
<td>.25</td>
<td>.01</td>
<td>61.16</td>
<td>53.71</td>
<td>.05</td>
</tr>
<tr>
<td>Shift</td>
<td>53.69</td>
<td>12.44</td>
<td>.27</td>
<td>.007</td>
<td>60.21</td>
<td>52.08</td>
<td>.01</td>
</tr>
<tr>
<td>Emotional Control</td>
<td>51.78</td>
<td>13.08</td>
<td>.36</td>
<td>&lt;.001</td>
<td>59.68</td>
<td>49.83</td>
<td>.003</td>
</tr>
<tr>
<td>Self-Monitor</td>
<td>53.22</td>
<td>14.70</td>
<td>.25</td>
<td>.02</td>
<td>58.53</td>
<td>51.91</td>
<td>.08</td>
</tr>
<tr>
<td>Initiate</td>
<td>52.17</td>
<td>12.75</td>
<td>.35</td>
<td>.001</td>
<td>57.95</td>
<td>50.74</td>
<td>.03</td>
</tr>
<tr>
<td>Working Memory</td>
<td>55.64</td>
<td>14.16</td>
<td>.23</td>
<td>.02</td>
<td>61.16</td>
<td>54.27</td>
<td>.06</td>
</tr>
<tr>
<td>Planning/Organization</td>
<td>53.79</td>
<td>13.88</td>
<td>.33</td>
<td>.001</td>
<td>60.32</td>
<td>52.18</td>
<td>.02</td>
</tr>
<tr>
<td>Task Monitor</td>
<td>55.02</td>
<td>14.89</td>
<td>.36</td>
<td>&lt;.001</td>
<td>63.84</td>
<td>52.84</td>
<td>.003</td>
</tr>
<tr>
<td>Material Organization</td>
<td>50.65</td>
<td>12.19</td>
<td>.28</td>
<td>.006</td>
<td>57.11</td>
<td>49.05</td>
<td>.009</td>
</tr>
<tr>
<td>Behavioralal Regulation Index</td>
<td>53.92</td>
<td>14.52</td>
<td>.34</td>
<td>.001</td>
<td>62.05</td>
<td>51.91</td>
<td>.006</td>
</tr>
<tr>
<td>Metacognition Index</td>
<td>54.50</td>
<td>14.89</td>
<td>.33</td>
<td>.001</td>
<td>62.89</td>
<td>52.43</td>
<td>.005</td>
</tr>
</tbody>
</table>

Note. The Bullied group (n = 19) is defined by scores exceeding 12. The control group (n = 77) is represented by the remainder of the sample. Significant probabilities are in bold. VEQ-R = Violent Experiences Questionnaire; BRIEF-A = Behavior Rating Inventory of Executive Function; CPT-II = Conners’s Continuous Performance Test-II.

Abuse has been associated with childhood (ages 6 to 12 years) deficits in auditory attention, visual-motor integration, problem solving, abstraction, and planning (Nolin & Ethier, 2007). A higher rate of WCST perseverative errors has been found among neglected and abused adolescents (Spann et al., 2012). Deater-Deckard and Wang (2012) found that mothers with EF deficits showed tendencies toward harsher parenting, which could pose both genetic and environmental risks to offspring. Earlier brain injuries, especially those that occur before age 2 years, also seem to leave developing children at special risk in their EF development (Anderson et al., 2010; Coleman, 2010). Indeed, current evidence suggests that EF deficits are most likely to arise as an interaction between a biological diatheses (e.g., genetic predisposition, traumatic brain injury, etc.) and psychosocial adversity (Asbury, Dunn, Pike, & Plomin, 2003; Asbury, Wachs, & Plomin, 2005). An environmentally based interaction has been found in the form of magnified adverse effects of exposure to media violence on CPT-II scores among adolescents diagnosed with disruptive behavior disorders (Kronenberger et al., 2005). EF deficits have been most closely linked to negative affectivity, impulse control problems, and behavior self-regulation lapses that often culminate in aggression, criminality, and even sociopathy. The symmetry of these negative adult outcomes with peer bullying and/or relational aggression warrant closer attention.

Bullying and Relational Aggression

Internalized emotional distress is often associated with victimization or perpetration of childhood bullying (Reijntjes, Kamphuis, Prinzie, & Telch, 2010). A subset of bullying victims also showed increased risk for externalized features such as violent and antisocial pendants as well (Reijntjes, Kamphuis, Prinzie, Boelen, & Telch, 2011). Peer teasing can trigger similar or even more extreme internalized symptoms of distress (e.g., low self-esteem, acute loneliness, depression, even suicidality) than those found among bullying victims (Fite, Stoppelbein, Greening, & Preddy, 2011; Prinstein, Boergers, & Vernberg, 2001). One recent analysis (Verlinden et al., 2014) with relevance to the current study relied on a parent version of the BRIEF to assess the executive functions of 1,377 young children (preschool to second grade). Children receiving lower parent ratings of inhibition showed a higher risk for being bullied in this sample suggesting that associations between peer maltreatment and EF deficits may well be bidirectional.
Although the potential emotional sequelae of bullying seem evident, the extent to which those events portend perceived or real deficits in specific aspects of EF remains essentially unexamined in the available literature.

Objectives and Hypotheses
The present study examined associations between retrospective accounts of peer bullying or teasing during upbringing with adult self-reports of perceived EF strengths and weaknesses.

The two most widely researched measures of self-reported EF-related behavior will be examined in both a college sample and a national sample. Childhood bullying is expected to be associated with self-reported behavioral indicators of EF deficits as reflected in the EFI and BRIEF-A subscales. Peer bullying during childhood development is also expected to be associated with observed deficits in sustained attention and response inhibition as reflected in CPT-II performance. The CPT-II was selected as a test of actual—as opposed to self-perceived—deficits in one important EF domain.

STUDY 1

Materials
Executive Functioning Index

The EFI (Spinella, 2005) provides an index of global EF functioning that was developed in a community sample for use in both the clinical and general populations. The EFI is composed of 27 items scaled on a 5-point metric distributed across the five factor domains of: Emotionally Focused (EM), Strategic Planning (SP), Organization (ORG), Impulse Control (IC), and Motivational Drive (MD). A total EFI score can be derived as well, and higher scores on all of the EFI subscales suggest better developed and more adaptive EF. Factorial validity and internal consistency reliabilities ($\alpha = .76, .70, .75, .69$, and $.70$, respectively) were found in the normative samples. Spinella (2005) did find that EFI scores were correlated positively with education level. This finding, along with the factor structure of the inventory, was later replicated in a Dutch college sample (Janssen, Demey, & Egger, 2009). EFI concurrent validity evidence has been derived primarily from score associations with a range of clinical measures that have been validated as high-risk indicators of neuropsychological dysfunction (Spinella, 2005). Scores have been linked to some forms of psychological distress as well (Carlson, 2008; Wain & Spinella, 2007). While EFI subscale scores appear to directly reflect self-perceived strengths and weaknesses in the respective behavioral skill sets, the extent to which low subscale scores predict actual neuropsychological dysfunction among respondents from nonclinical samples remains open to some question.

Violent Experiences Questionnaire
The Violent Experiences Questionnaire (VEQ-R; King, 2012, 2014; Walter & King, 2013) provides retrospective, self-report screening indexes for 15 different forms of child and adolescent maltreatment. The Peer Bullying (PBUL) and Peer Teasing (VBUL) subscales were examined in this study. PBUL scores represent the number of days per year during which an act in the index group (“Acts by Bullies: How often were you physically taunted or bullied by peers during or after school?”) occurred during a 12-year recording period (ages 5–16 years). VBUL scores have been interpreted as an example of relational aggression victimization (“Acts by Bullies: How often were you called names or verbally teased by peers during or after school?”). Preliminary analyses found high correlations of VBUL and PBUL subscale scores within our three samples ($r = .81, .72$, and $.64$). All reported analyses subsequently relied upon their combined average as a “Bullied” index.

VEQ and VEQ-R subscale scores have been linked previously to lab-provoked aggression (Moe, King, & Bailly, 2004), best friendship qualities (Green & King, 2008; Mugge, King, & Klophaus, 2009), multiple Minnesota Multiphasic Personality Inventory (King, Tuhy, & Harris, 1989) and Minnesota Multiphasic Personality Inventory-Second Edition (Moe & King, 2006) dimensions, and mindfulness skill deficits (Walter & King, 2013). King (2014) found that various VEQ-R subscales (Physical, Sibling, Exposure to Domestic Violence, and Corporal Punishment) predicted increased risks (threefold to ninefold) for past physical fighting, violence-related trouble, infliction of violent injury, and making threats to kill someone. The relative risk for a past suicide attempt was 2.5 times higher among bullied participants in this sample.

Extreme group assignments. Prior VEQ-R studies have identified significant linear relationships between subscale and criterion variables with interpretive caution of those findings warranted by the inherent skew found in childhood abuse distributions. Correlation data have optimally been supplemented by extreme group contrasts and relative risk analyses when meaningful criterion thresholds can be established. “High” VEQ-R subscale scores have been typically defined as the top 20% of the distribution. In the three analyses described in this article, a bullied threshold of 12 (one index event recalled monthly during the 12-year recording period for
a cumulative count exceeding 144 incidents) was found to closely approximate the top 20% of each distribution. The remaining sample served as comparison groups in all of these contrasts.

Participants and Procedure

Study 1 relied upon EFI and VEQ-R data collection from separate college (N = 56) and national (N = 243) samples. The college (convenience) sample was composed of male undergraduate psychology students who were being screened for possible participation in a different experimental study. Data collection was completed for extra course credit through the department participant pool using a Qualtrics survey. No exclusion criteria were applied. Age ranged from 18 to 34 years (M = 20.42, SD = 3.14). Ethnic representation (78.6% Caucasian; 3.6% Native American; 3.6% Hispanic; 5.4% African American; 1.8% Other) varied in the sample.

The national sample was generated via Mechanical Turk (using a similar Qualtrics survey) for financial compensation ($0.25) with completion time averaging about 25 min. Age (older than 18 years) and nationality (United States) were used as inclusion criteria. A total of 20 respondents were excluded from the final sample due to a failed validity check (discrepant responses to similar developmental history questions embedded in the Qualtrics survey). Both women (56.4%) and men (43.6%) were represented similarly with age ranging from 18 to 72 years (M = 36.24, SD = 13.37). Ethnic representation (75.3% Caucasian; 1.2% Native American; 4.9% Hispanic; 7.4% African American; 5.3% Asian; 3.3% Biracial; 2.5% Other) varied in the sample.

Results

EFI subscale score distributions (see Table 1) were similar to the EFI normative data (Mtotal = 93.8; SDtotal = 11.9) provided by Spinella (2005). Bullied scores ranged from 0 (16% of the sample) to 52 (M = 7.60, SD = 13.49) in the college sample. Bullied scores ranged from 0 (22.6% of the sample) to 104 (M = 14.05, SD = 26.05) in the national sample.

EFI total scores were inversely related to the Bullied index among the college students (see Table 1). Bullying was also associated with perceptions of lower competence in the skills of organization and motivational drive. Group differences were found as well for these three variables. The largest effect size (d = 0.91) was found regarding perceptions of organizational competence.

Participants within the national sample replicated the finding in the college sample that organization skills were lower among bullied participants (d = 0.60). This larger national sample also provided an opportunity to examine sex differences in EFI associations with child bullying. While men scored lower in SP (d = 0.32), IC (d = 0.37), EM (d = 0.61), and total EFI (d = 0.48) scores, none of the Gender × Group interactions approached significance. Gender differences were not found for ORG or MD.

STUDY 2

Materials

Behavior Rating Inventory of Executive Function

The BRIEF-A (Roth et al., 2005) is composed of 75 items distributed among nine clinical scales: Inhibit (ability to resist impulses and inappropriate behavior), Self-Monitor (ability to assess behavior and impact on others), Plan/Organize (ability to control and plan for current and future task demands), Shift (ability to shift from one situation or circumstance to another), Initiate (ability to start a task or generate ideas or problem-solving strategies), Task Monitor (ability to monitor successes or failures while problem solving), Emotional Control (ability to adapt in changing emotional responses), Working Memory (ability to hold information while completing a task or response), and Organization of Materials (ability to organize materials in the respondent’s typical environment). These clinical scales are summarized in Global Executive Composite (GEC) T scores (M = 50, SD = 10) with elevations (T > 65) providing evidence of clinical impairment as shown within attention-deficit hyperactivity disorder (ADHD), Alzheimer’s disease, multiple sclerosis, epilepsy, traumatic brain injury, and mild cognitive impairment in clinical samples. T scores in excess of 100 have been found to indicate invalid testing secondary to partial test completion, random responding, or misunderstood directions (Straus, Sherman, & Spreen, 2006).

The BRIEF-A has been used in nonclinical samples as well to assess perceived behavioral competence in completing tasks known to require intact executive neurological functions. In one recent study, Chinese college students exposed to multiple forms of juvenile trauma were found to generate higher scores on the Inhibit, Shift, Emotional Control, Initiate, and Working Memory subscales (Li et al., 2013). The subscale scores in this sample were not significantly correlated, however, with any of the subscale scores on the Cambridge Neuropsychological Testing Automated Battery (Sahakian et al., 1988).

Indeed, associations between EF survey ratings and performance-based measures have not been found consistently in either clinical or nonclinical samples (Anderson, Anderson, Northam, Jacobs, & Mikiewicz,
A meta-analysis of 20 EF studies with samples varying in age (13 child, 7 adult) and setting (7 clinical, 2 nonclinical, 11 combined) provided a more definitive conclusion (Toplak, West, & Stanovich, 2013). Only around 24% of the reported indirect and performance-based EF correlations were statistically significant ($r_{Mdn} = .19$). Behavioral self-ratings of EF-related abilities should not be expected to correspond closely to performance measures generated from standardized and highly structured task challenges. A suggestion has even been offered (Li et al., 2013) that structured neuropsychological tests may be relatively insensitive and lack “ecological validity” in the identification of relevant skill deficits that are likely to occur in the naturalistic environment.

**Conners’s Continuous Performance Test**

The CPT-II (Conners, 2000) is a computerized vigilance task of sustained attention and response inhibition where individuals are presented with a series of letters with the instruction to hit the spacebar after each one with the exception of $X$. The rates at which the letters appear on the screen vary (1-s, 2-s, or 4-s intervals), and responses to this task can be quantified in terms of Omissions (failure to respond to target letters), Commissions (response to inappropriate target letter), Detectability (target–nontarget discrimination success), Perseverations (anticipatory, inattentive, rapid responses), Response Style (level of cautiousness in responding), Hit Reaction Time (recorded to nearest millisecond), and Hit Reaction Time SE and Variability indexes (consistency of response times).

The CPT-II has been used in hundreds of studies primarily involving the assessment and diagnosis of ADHD where validity support has been found (Nichols & Waschbusch, 2004).

**Participants and Procedure**

Study 2 involved data collection (BRIEF-A, VEQ-R, and CPT-II) from a sample of undergraduate psychology students. Survey data were collected initially in a single 30-min classroom session followed by the scheduling of laboratory appointments to complete the CPT-II. An effort was made to ensure that the final sample was represented equally by participants scoring above as well as below the standardized GEC mean of 50 (i.e., assignments balanced to ensure an equal number above and below that threshold). CPT-II testing was subsequently completed in a psychology department laboratory by a trained graduate student. Four participants were subsequently excluded from the final sample due to Omissions $T$ scores that exceeded 100. The final sample ($N = 96$) was composed of young-adult ($M_{age} = 20$ years, $SD = 3.0$ years) women (53.1%) and men (46.9%) with limited ethnic diversity (85% Caucasian).

**Results**

Bullied scores ranged from 0 (33.3% of the sample) to 104 ($M = 8.06$, $SD = 17.58$). BRIEF-A total scores were inversely associated with levels of childhood bullying for the college students in this independent sample (see Table 2). Higher bullying was also associated with perceptions of lower competence in all nine of the skill domain areas as well as the Behavioral Regulation and Metacognition indexes. Group differences were found as well for all but two subscales. Effect sizes ranged from 0.50 to 0.75 standard deviations. Participants in this independent college sample further replicated the Study 1 finding of lower perceived organization skills among bullied participants ($d = 0.59$).

With one exception, Bullied scores were not associated significantly with CPT-II subscale indexes of inattentiveness or impulsivity. The one exception involved fewer Omission errors among the bullied participants ($d = 0.58$).

**DISCUSSION**

The EFI distributions for both the college and national samples seemed consistent with normative data provided by Spinella (2005) for more than 700 community respondents. As might be expected, the total and subscale means in our college and MTurk samples were a bit higher than those found in the community. Older and educated respondents in the community sample tended to score higher on most of the EFI scales. BRIEF-A scores were standardized in the college sample, but the effort to expand the range of scores did reduce kurtosis, which could have elevated correlation strengths. Consistency in the direction of the BRIEF-A findings and the associated group differences provided reassurance in this regard.

Peer bullying during upbringing in these analyses was associated with a wide range of self-described daily behaviors that have been previously linked to actual EF testing deficits. The Bullying Severity Index in this college sample was correlated significantly with every one of the BRIEF-A subscales. The directional consistency and effect sizes (ranging from .50 to .74) of these relationships seemed noteworthy. The EFI was found to be less sensitive to bullying effects with only the behaviors associated with organization and motivational drive being relatively elevated among victimized participants. A significant link between childhood bullying...
and adult self-assessments of organizational skills was found in all three independent samples.

Self-report and performance-based measures of EF appear to estimate related, but differentiated, competencies and skill sets (Toplak et al., 2013). Survey instruments such as the EFI and BRIEF-A appear to reflect the self-efficacy of the respondent in regard to coping behaviors in the naturalistic environment. Standardized performance measures appear to sample more specialized skills that require requisite uncompromised neurological substrates. In this regard, deficits on the EFI or BRIEF-A may present even more meaningful causes for neuropsychological concern given growing evidence of their importance in everyday behavioral functioning (Li et al., 2013).

This article will hopefully focus additional attention on the sensitivity of self-report measures of EF-related behaviors to various forms of childhood adversity. Childhood maltreatment may disrupt the normal development of executive functions and associated self-perceptions of strengths and weaknesses in various skill areas. It is also important to note that children with selected (particularly inhibitory control) EF deficiencies may also be at elevated risk for being bullied by their peers during upbringing (Verlinden et al., 2014). Systematic investigation of EF developmental trajectories in broader samples with diverse testing challenges may reveal particularly complex and bidirectional connections.

The potential impact of early peer maltreatment on organizational skill development warrants special attention given the consistency of the present findings. Organization as described through the BRIEF-A reflects respondent perceptions that he or she has the ability to grasp the main ideas and concepts provided in novel information and use it for problem-solving purposes. Spinella (2005) described the EFI ORG subscale as measuring self-assessed capacity to use information in an organized and sequenced manner when engaged in goal pursuit. The relative self-efficacy of bullied adults appeared in these three samples to be reduced. The mechanisms by which complex developmental experiences such as bullying would detract from skill development in any particular EF domain remain open to speculation at this time.

Study Limitations

Interpretative caution is warranted regarding the results generated from these three studies. BRIEF-A subscale correlations with childhood bullying were found exclusively within one of our two college samples. Mediocre EFI subscale alphas may diminish the replicability of these findings. Results from the two college samples may not generalize to general or clinical populations.

Only a third of the EFI dimensions were linked significantly to childhood bullying, and only ORG subscale scores were associated with bullying in the national sample. Group contrasts for the various BRIEF-A subscales represented “relative” differences because even bullied respondents typically scored lower than the recommended T score cutoff of 65 for the identification of “clinically significant impairment.” Bivariate correlation strengths and bullying effect sizes were all modest and accounted for less than 14% of the variance in the respective EF indicator. The childhood bullying correlates found in these three samples should not be construed as evidence that those developmental experiences themselves compromised normal EF development. The range of potential latent contributors to these relationships would be considerable, with candidates including differing forms of co-occurring maltreatment, head injuries and other neurological insults, maladaptive personality traits, negative emotional qualities, general self-esteem, and countless others factors not examined in this article.

Summary

Data generated from three independent samples in this article suggest that childhood experiences of bullying or teasing may be involved in the acquisition and expression of the cognitive, behavioral, and emotional response tendencies collectively referred to as EF. Level of perceived competency in organized goal pursuit seemed most consistently linked in these three samples to childhood bullying experiences. Although relative differences in BRIEF-A and EFI subscale scores may reflect perceived rather than real performance deficits, these connections still seem to warrant further systematic examination.

REFERENCES


