

## Challenging Behavior Impact Factor: Validation of an Aggressive Behavior Screening Tool on Children

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**Abstract:** *The Challenging Behavior Impact Factor (CBIF) – developed as an informal behavior screening tool in 2009 – is used in training allied educators for learning and behavior support (AEDLBS) to identify children with aggressive behavior in mainstream primary schools in Singapore. As CBIF is also used by teachers and school counselors, the authors decided that it was time to validate the instrument. A correlational study involving 49 participating parents, whose children have been identified by school counselors as exhibiting aggressive behavior, was done in 2010. The findings suggested a significant Pearson product moment correlation reliability  $r$  ranging between .90 and .96 at  $p < .01$  between the CBIF and the Behavioral Rating Index for Children with which the CBIF results were compared.*

**Keywords:** aggressive behavior, challenging behavior, protective factors, risk factors

### INTRODUCTION

Challenging or aggressive behavior (to be used interchangeably throughout this paper) observed in children refers to any behavior perceived as threatening, provocative and stimulating all at the same time such that it affects them in several ways. It harms not only the perpetrators themselves but also their peers and the adults such as parents and teachers (Parke & Slaby, 1983). There are four categories of aggressive behavior (Chia, 2013) as shown in Figure 1.

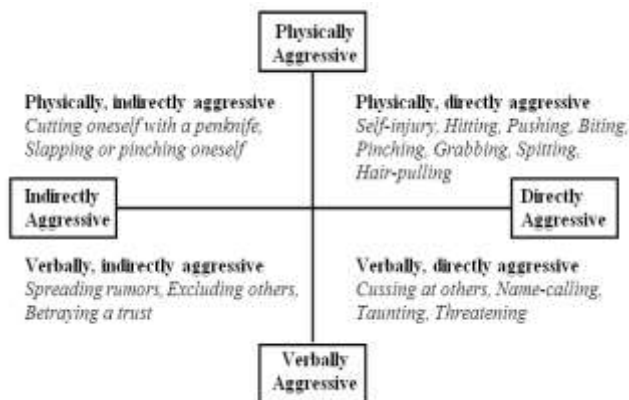


Figure 1: Categorization of Aggressive Behavior (Chia, 2013)

Generally, aggressive or challenging behavior can be either proactive or reactive. On the one hand, the proactive challenging behavior is common among young children who have yet to develop fluent speech to verbalize their needs or wants. These children are not angry or emotional but resort to such behavior to get what they want. The reactive challenging behavior, on the other hand, can occur suddenly on impulse in response to some frustration, provocation or perceived threat, resulting in causing hurt or injury to others. According to Vitaro et al. (2006), children with such aggressive behavior often display reactive temperament

and poor social skills, are disliked by their peers, and in many cases, live in a harsh environment.

Challenging behavior can put children at risk for probable future socio-emotional problems and academic failure in class/school, often resulting in one or more of the outcomes such as vandalism to properties, physical or mental harm to oneself and others, violation of social norms and expectations, and societal malice (e.g., defying authority and bullying).

### Developmental Phases of Aggressive Behavior in Children

Table 1 below summarizes the normal development of challenging behavior from early to late childhood. Children about the age of 24 months tend to exhibit aggressive and impulsive behavioral traits, especially if they are angry or are frustrated because they cannot get the things they want. During this phase, they are observed to be more keen in exercising control over what they want to do and the ownership of things they possess (Hay, 2005).

Table 1: Development of Aggressive Behavior in Young Children

Developmental Phase	Estimated Age (in Years)	Description of Aggressive Behavior
Early Childhood	1 year old	Begins to exhibit aggressive, impulsive behavior if he/she is angry or frustrated; the child is more interested in controlling his/her own activities and/or possessions (Hay, 2005).
	2 years old	Aggressive behaviors such as attacking others, biting another child, bullying, grabbing toys from others, pushing, pulling hair are observed (Holden, 2000).
	3-4 years old	As the language skills grow, a child may turn to verbal aggression. However, he/she also learns to modulate his/her feelings, understand others' perspectives (theories of mind), use assertive and pro-social strategies to communicate his/her needs and achieve goals (Dodge, Coie, & Lynam, 2006).
	5-6 years old	Able to delay gratification and decreasingly tolerant of other children's aggressive acts (Broidy et al., 2003); becomes relatively peaceful and tends to remain so.

By the time they turn two years old, they seem to become “cruel” such as biting another child, snatching toys from others, pulling the hair of another child, and many more aggressive acts. These behavioral traits form part of the normal child development characterized by mood changes, temper tantrums and the frequent uses of the word “No” to manipulate their parents’ reactions to them.

At about three to four years old, most children can utter more words and they use less of physical aggression and resort more toward using verbal aggression such as screaming and protesting aloud instead. They also learn to modulate their feelings and begin to develop a theory of mind (i.e., understand and see another child’s or adult’s point of view), use assertive and pro-social strategies to interact verbally with others to convey their needs and achieve their goals.

During the middle to late childhood, children with challenging behavior would feel alienated, bitter in their feelings, develop a hostile attributional bias when they are harshly treated or disciplined by adults in authority or rejected by their peers (Crick, Grotpeter, & Bigbee, 2002). Hence, they learn to protect or defend themselves by being hyper-vigilant as well as physically aggressive or verbally abusive (Dodge, 2006). Often because of their adverse life experiences, they lack the skills to process incoming information properly and see the world as being unfair, hostile or mean with the intention to hurt them (Dodge, 2006).

### Theories on Childhood Challenging Behavior

There are several theories on childhood challenging behaviors. One of them is the frustration-aggression theory. It explains that a child is frustrated when he cannot reach his goal (Dodge et al., 2006). Hence, the child starts to misbehave in order to get what he wants. Another one is the social learning theory proposed by Bandura (1977) is based on the principles of

conditioning and reinforcement to explain that children learn aggressive behavior from their environment. Adults are important role models for children to look up to and imitate. How these adults conduct themselves have direct or indirect impact on their children. A third one is the theory of early-onset, life-course persistent aggressive behavior (see Aguilar et al., 2000, for more detail), which holds that aggressive behavior is the result of the ongoing interaction among the child’s genes, experiences and socio-culture from the day he/she is born.

In the mind of children with challenging behavior, such inappropriate behavior is acceptable, especially if they grow up in an environment, where aggressive behavior is the norm (Brendgen et al., 2006; Vitaro et al., 2006). To them, such behavior can enhance their self-esteem as well as their social status in the eyes of their peers. Moreover, they are seen very lacking in their moral understanding and reasoning (Dodge et al., 2006).

Boulton (1994) has differentiated between what is and what is not aggressive behavior (see Table 2).

Table 2: Aggressive Behavior: What is and What is not

What is Aggressive Behavior	What is not Aggressive Behavior
<ul style="list-style-type: none"> <li>• Fight is rough and real involving frown, stare, grimace, scream and/or cry.</li> </ul>	<ul style="list-style-type: none"> <li>• Rough play rough and tumble seems like a fight but once over, it is all laugh and smile.</li> </ul>
<ul style="list-style-type: none"> <li>• Separate after the fight.</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to play after the rough play or so-called fight.</li> </ul>
<ul style="list-style-type: none"> <li>• Never let the weaker opponent catch or tackle him/her down.</li> </ul>	<ul style="list-style-type: none"> <li>• Let the weaker opponent catch or tackle him/her down.</li> </ul>
<ul style="list-style-type: none"> <li>• Fight hard with the intent to hurt or injure the opponent.</li> </ul>	<ul style="list-style-type: none"> <li>• Fight is relatively gentle and not out to hurt or injure the opponent.</li> </ul>
<ul style="list-style-type: none"> <li>• Fight is not play and does not alternate between individuals.</li> </ul>	<ul style="list-style-type: none"> <li>• Fight is play and can alternate between individuals (e.g., someone plays a good guy and the other plays a bad guy and vice versa).</li> </ul>
<ul style="list-style-type: none"> <li>• Serious fight often involves two individuals.</li> </ul>	<ul style="list-style-type: none"> <li>• Fight-like rough play often involves more than two individuals.</li> </ul>
<ul style="list-style-type: none"> <li>• Real serious fight attracts spectators.</li> </ul>	<ul style="list-style-type: none"> <li>• Spectators are not interested in play fighting.</li> </ul>

According to Broidy et al. (2003) and Côté et al. (2006), the prevalence of young children with aggressive behavior is estimated between 3 and 17 percent. Many of them, especially those with aggressive and anti-social behavior, are at a high risk of becoming delinquent adolescents and leading a criminal adulthood. This aggressive behavior has been termed as early-onset and life-course persistent (Campbell, 2002).

Aggressive behavior is best understood by examining the risk and protective factors. The former – either biological or environmental – refers to those elements that cause a child to behave in an anti-social way, act aggressively toward others and/or even harm him/herself. The latter refers to those elements that enable a child to avoid displaying aggressive or anti-social behavior.

The risk factors can be categorized under two types (Kaiser & Rasminsky, 2012): (1) Biological risk factors which include genetic influences, temperament, pregnancy complications, substance abuse during

pregnancy, neurological problems, and emotional-behavioral disorders; and (2) environmental risk factors that include parenting style, family background, peers, child care and school, poverty and the conditions surrounding it, exposure to violence, violent media, and turbulent times.

The protective factors are important to counter the negative impact of risk factors. They are also named as resilience (Werner, 2000) – a dynamic, developmental process which depends on a given context (Luthar, Cicchetti, & Becker, 2000) – that involves a strong sense of self-efficacy (i.e., a belief in self worth and abilities) and possesses an internal locus of control (i.e., an ascription to own efforts and abilities for success rather than sheer luck). According to Kaiser and Rasminsky (2012), “the more protective factors there are and the better they balance the risk factors, the more likely it is that a child will meet the challenges in his life and turn out to be a competent and caring individual” (p.43; also see Werner, 2000, for more detail).

There are three categories of protective factors (Kaiser & Rasminsky, 2012): (1) the individual factors such as an out-going temperament, a good sense of humor, a good regulation of emotions, an optimistic outlook for the future, and the list can go on; (2) the family factors include a high-quality parenting and a loving relationship that sets the foundation for a wide array of skills such as “well-modulated emotions, a sense of self-efficacy, academic achievement, mastery of motivation, and sociability with peers” (Kaiser & Rasminsky, 2012, p.46); and (3) the community factors such as churches and community clubs play an important role in fostering resilience, making a child feel loved and valued, and even compensate for a challenging familial situation (Kaiser & Rasminsky, 2012).

### Screening Tests on Aggressive Behavior

There are many formal behavioral assessments. One of them is the 34-item Aggression Questionnaire (Buss & Warren, 2008) that scored on physical aggression, verbal aggression, anger, hostility and indirect aggression. Another assessment is the most widely used 140-item Child Behavior Checklist (Achenbach, 1991) that is divided into two sections: (1) 20 competence items; and (2) 120 items on behavior or emotional problems during the past six months. This comprehensive instrument can either be self-administered or administered through an interview. It can also be used to measure a child’s change in behavior over time or following a treatment.

Perhaps the most user-friendly screening tool is the 13-item Behavior Rating Index for Children (BRIC) (Stillman et al., 1984), which can be administered very quickly. It is popular and most preferred screening tool for aggressive behavior among the school counselors. However, it has its own limitations. For example, although BRIC attempts to measure internalizing and externalizing behaviors, there were insufficient items to develop either internalizing or externalizing behavior

subscale. Another example of its limitations is that BRIC did not state clearly the risk or protective factors that influence the behavior.

The Challenging Behavior Impact Factor (CBIF), an informal screening tool developed by Chia (2009), serves to identify the risk factors that will predispose a child to act in an aggressive way and the protective factors that may enable him or her to avoid such behavior. The pre-service allied educators for learning and behavior support (AEDLBS) as well as in-service teachers and school counselors have been taught how to use CBIF, interpret its scores and what follow-up actions to be taken to address the aggressive behaviors.

This study is the authors’ attempt to validate CBIF by correlating its scores with the scores obtained from administration of BRIC done by a group of parents whose children have been identified to have aggressive behaviors and are currently undergoing treatments at various counseling centers and learning-and-behavior management clinics.

### The Method

#### Aim of the Study

The aim of the study is to validate the 26-item Challenging Behavior Impact Factor (CBIF) as a reliable screening tool used by allied educators, school counselors and teachers as well as parents in Singapore to identify the risk and protective factors that influence children with aggressive behaviors so that appropriate follow-up actions could be taken to address the various issues of concern.

#### Research Design

In order to validate CBIF as a reliable screening tool to identify Singapore children with aggressive behavior, the authors found the correlational research design most appropriate. The CBIF scores can be used to compare with the scores of another validated behavior screening tool to determine the reliability of CBIF.

#### Participating Subjects

The participating subjects were parents from higher income families and whose children had been identified as having aggressive/challenging behavior by school counselors, allied educators and/or teachers. At the time of the study, these children were undergoing certain behavior therapy and counseling at various private learning-and-behavior management clinics and counseling centers as well as home-based therapy.

Convenience sampling of participants was used in the study. Firstly, it allows the authors to select their subjects, who are readily available and also be willing to participate in the study (Creswell, 2012); and secondly, it allows the authors to collect the essential data in the shortest possible time.

Eighty-nine parents recruited for the study done in 2010 were from several workshops that the authors had conducted for various parent support groups. However,

they narrowed their target group to focus parents with children between the ages of 7 and 10 years old. In the end, 49 parents agreed to participate in the study. The authors do acknowledge that this sample group may not be representative of the entire population in Singapore. All the participating parents in the study were told of their entitlement to their privacy and were accorded their rights to anonymity and confidentiality.

### Procedure

The 49 participating parents were required to complete two simple tasks. The first task required the participants to complete the 13-item form from the Behavior Rating Index for Children (BRIC) (Stillman et al., 1984). Upon completion of the BRIC form, the second task required them to complete the two parts of the Challenging Behavior Impact Factor (CBIF) form: (1) 13-item Risk Factor yes/no checklist and (2) 13-item Protective Factor yes/no checklist. The authors' email addresses were given to the participating parents should they want to contact them for any clarification about the study or if they wanted to know the results of the two screening tests.

### Instrumentation

*Behavior Rating Index for Children (BRIC)*. This is a 13-item instrument designed to be used as a rating scale to measure the degree of children's behavioral problems. The measure is brief, easy to use, and can be used by multiple respondents to evaluate children of all ages. It can also be used in group and classroom settings.

BRIC is scored on a 5-point Likert-type scale (1 to 5), omitting items 1, 6 and 10, which are not problem-oriented items. The scores are transformed into a potential range of 1-100 by adding up all the item scores, subtracting from that figure the total number of items (out of 10) completed, multiplying that figure by 100, and dividing that result by the total number of items completed times 4. High scores indicate more severe behavioral problems.

BRIC has been compared with the popularly used 118-item Child Behavior Checklist (CBCL) (Achenbach, 1991) and the correlation between the two instruments was found to be .78. According to Corcoran and Fischer (2000), "BRIC has fair to good internal consistency, with alphas ranging from ... .60 to .70 for children" (p.473). Although BRIC is a fairly stable instrument when completed by adults (e.g., teachers and parents), with one- to four-week test-retest correlations ranging from .71 to .89, but only .50 for children (Corcoran & Fischer, 2000).

BRIC has good concurrent validity. The correlation between children's scores on the instrument completed by parents and children receiving as well as not receiving treatment for behavioral problems was .65 ( $p < .001$ ). According to Corcoran and Fischer (2000), there was a .76 ( $p < .001$ ) correlation between scores on BRIC and scores on CBCL. BRIC uses a score of 30 as an

estimated clinical cut-off point, with higher scores indicating more challenging behavioral problems (Hudson, 1982).

*Challenging Behavior Impact Factor (CBIF)*. This instrument was first developed by Chia (2009) and used in training allied educators for learning and behavior support (AEDLBS) to identify and help children with aggressive behavior in mainstream primary schools in Singapore. From the literature review on children with aggressive behaviors, the first author identified both the risk and the protective factors that influence the behavior development in children and selected key items for each of the two factors in the development of CBIF. Hence, the CBIF was designed to reflect the number of risk and protective factors used in predicting the probability of a child having aggressive or challenging behavior. The screening tool is divided into two scales: Risk Factor Scale (see Appendix 1A) and Protective Factor Scale (see Appendix 1B). Each scale consists of 13 items and there is a total of 26 items from both scales put together for the instrument.

The CBIF is scored by adding together the number of NO (+) items on the Risk Factor Scale (YES/NO checklist) and the number of YES (+) items on the Protective Factor Scale (YES/NO checklist). Using the following equation, the CBIF score is computed:

$$\frac{[(\text{Sub-total of NO items scored on the Risk Factor}) + (\text{Sub-total of YES items scored on the Protective Factor})]}{(\text{Total number of items on the Risk Factor Scale and the Protective Factor Scale altogether})}$$

For example, the sub-total of NO (+) items scored on the Risk Factor Scale is 3 and the sub-total of YES (+) items scored on the Protective Factor Scale is 5. The summation of the two sub-totals of both scales equals to 8. The sum of the sub-totals is then divided by the total number of items on the Risk Factor Scale and the Protective Factor Scale altogether, i.e.,  $8 \div 26 = 0.31$ . A CBIF score of 0.31 means there is evidence of severe challenging behavior. However, if a CBIF score is 1, there is no evidence of challenging behavior.

The lower the CBIF score is, the higher is the risk that a child has aggressive or challenging behavior. The CBIF scores can range between 0 and 1 (see Table 3).

Table 3: Classification of CBIF Scores and Descriptors of Severity

Range of CBIF Scores (0.00-1.00)	Descriptor of Severity (Challenging Behavior)
0.00-0.20	Profound
0.21-0.40	Severe
0.41-0.60	Moderate
0.61-0.80	Mild
0.81-1.00	Normal

### Data Analysis

The Behavior Rating Index for Children (BRIC) was used to compare the CBIF scores with its scores. For ease of interpretation of the CBIF scores (0.00 – 1.00), the CBIF sub-scale scores for Risk Factors (0.00-1.00)

and the CBIF subscale scores for Protective Factors (0.00-1.00) for comparison with the BRIC scores (0 to 100), they were first converted to scores ranging from 0 to 100 by multiplying the derived score by one hundred. The derived CBIF scores were then deducted from 100 so that higher CBIF scores would imply more serious behavioral challenges as higher BRIC scores implicate higher behavioral challenges.

The normality of the distribution of the BRIC and CBIF scores were examined by considering estimates of univariate normality of skewedness and kurtosis to test assumption of normality. As recommended by Kline (2005), the cut-offs of 3.0 and 8.0 for the absolute values of normalized estimated of skewedness and kurtosis respectively.

For determination of the internal consistency reliability of the BRIC and CBIF scales, all the items of each scale were computed using Cronbach’s (1951) coefficient alpha method. Bivariate analysis of the correlation between BRIC and CBIF was used to determine the validity of the CBIF scale in relation to the BRIC scale, a published and validated tool. As for the determination of whether the BRIC and CBIF scores will yield similar or significantly different scores, paired *t* test was used.

**RESULTS**

Both BRIC and CBIF scores were found to be normally distributed as all skewedness and kurtosis scores fell within acceptable values of ± 2.0. The reliability of BRIC (10 items of scale excluding items q1, q6 and q10) was found .98 (Cronbach’s alpha). The CBIF Risk Factor subscale reliability result is .75 (for 13 items), while the CBIF Protective Factor subscale reliability result is .77 (for 13 items) (see Table 4). The CBIF scale combining both Risk and Protective Factors reliability is .87.

Table 4: Reliability Results for BRIC and CBIF scales

Scale	Cronbach’s alpha
BRIC	.98 (for 10 items excluding q1, q6 and q10)
CBIF subscale for Risk Factors	.75 (for 13 items)
CBIF subscale for Protective Factors	.77 (for 13 items)
CBIF	.87 (for 26 items)

Note: n = 49

The correlation between BRIC scale and CBIF scale, the CBIF subscale for Risk Factors, and the CBIF subscale for Protective Factors were found to be highly significant (*p* <.01) and also highly correlated with Pearson product moment correlation (*r*) at .96, .90 and .91, respectively (see Table 5). Creswell (2012) remarked that correlations .86 and above are considered to have construct validity or test-retest reliability, implicating that BRIC and CBIF are actually measuring the same underlying trait and thus are highly equivalent.

Table 5: Correlation of CBIF scales with BRIC

	Pearson Product Moment Correlation <i>r</i>
BRIC (10 items) with CBIF (26 items)	.96**
CBIF for Risk Factors (13 items)	.90**
CBIF for Protective Factors (13 items)	.91**
CBIF for Risk Factors (13 items) with CBIF for Protective Factors (13 items)	.79**

Note: n = 49

\*\**p* < 0.01, two-tailed

The paired *t*-test reveals that even though BRIC and CBIF scores are highly and significantly correlated, they do not yield the same results. BRIC (M = 58.11, SD = 26.15) yields a significantly (*p* < .05) higher score than CBIF (M = 55.10, SD = 20.70) and the CBIF Protective Factors subscale (CBIF\_ProF: M = 52.28, SD = 24.12) (see Table 6), but with small effect size (all less than 2.0). However, the BRIC scores (M = 58.11, SD = 26.15) and the CBIF Risk Factors subscale scores (CBIF\_Risk: M = 57.92, SD = 19.62) are not significantly different. In addition, the correlation between the CBIF Risk factors and CBIF Protective factors subscale scores reveals that they are highly and significantly correlated (*r* =.79, *p* <.01).

Table 6: Paired *t* test of BRIC with CBIF scores

Variable	Mean	SD	<i>t</i>	95% Confidence level	Cohen’s <i>d</i>
BRIC	58.11	26.15	2.45*	.54, 5.48	.12
CBIF (26 items)	55.10	20.70			
BRIC	58.11	26.15	.11	-3.24, 3.61	.01
CBIF_Risk (13 items)	57.92	19.62			
BRIC	58.11	26.15	3.81**	2.76, 8.91	1.27
CBIF_ProF (13 items)	52.28	24.12			

Note: n = 49

\**p* < .05, two-tailed; \*\**p* < .01, two-tailed

**DISCUSSION**

There are some differences between BRIC and CBIF. BRIC has only one scale of 13 items and the measure is brief, easy to use and can be done quickly. However, CBIF has two subscales – Risk Factors and Protective Factors – each of 13 items. Hence, more time is needed to answer all the items. Another obvious difference is that the BRIC does not have an equivalent subscale like the CBIF Protective Factors subscale, whose all 13 items are positively worded. There are only three positively worded items q1, q6 and q10 in BRIC but they are omitted in the scoring. The other remaining 10 items in BRIC are included in the scoring and they are negatively worded like the items (except item q1) in the CBIF Risk Factors subscale. All the items in both CBIF subscales are included in their respective scoring.

According to the findings, the differences between the BRIC mean score and the CBIF mean score, the CBIF Risk Factor subscale mean score and the CBIF Protective Factors subscale mean score are 3.01, 0.19 and 5.83 respectively. The smallest mean difference is between the BRIC mean score (M = 58.11, SD = 26.15) and the CBIF Risk Factors subscale mean score (CBIF\_Risk: M = 57.92, SD = 19.62). This can be best explained by the fact that the key items in the BRIC and

the CBIF Risk Factors subscale are similar in the way their items have been negatively worded. The biggest is the mean difference between the BRIC mean score and the CBIF Protective Factors subscale mean score ( $M = 52.28$ ,  $SD = 24.12$ ). This can be explained by the fact that unlike the wording of the BRIC items, the items in the CBIF Protective Factors subscale are all positively worded.

As already mentioned earlier, all the correlations between the BRIC scores and the CBIF scores, the CBIF Risk Factors and Protective Factors subscale scores are found to be highly significant ( $p < .01$ ) and also highly correlated with Pearson product moment correlation ( $r$ ). However, the highest Pearson product moment correlation ( $r$ ) is between the BRIC scores and the CBIF scores at .96. This suggests that on the whole, CBIF is as reliable and valid as BRIC as a screening tool.

Finally, both BRIC and CBIF measure the degree of children's behavior problems. However, only CBIF provides additional information with its Protective Factors subscale that is absent in BRIC. The additional protective factors subscale raises the awareness in both the assessors and the respondents to consider the items that offer possible solutions to the behavioral problems identified as risk factors. According to Werner (2000), protective factors provide those positive qualities an individual possesses to cope with challenges in life. These qualities put together constitute what is termed as resilience. Resilience is the ability that associates with a series of protective or opportunity factors that help to cushion the impact of the risk factors a child encountered daily (Werner, 2000). The more positive qualities there are, the better the child balances the risk factors, the more likely the child will be able to cope in life and turn out to be a competent and caring individual (Werner, 2000).

Though BRIC provides an easy quick measure to identify children with challenging behaviors, it does not inform the assessors or respondents what factors they are to look out for that can protect children with challenging behavior from risk. Unlike BRIC, prevention and intervention came into the picture when CBIF is used in screening for challenging behavior because it provides three set of key protective factors, i.e., individual, family and community factors, that can help to deal with the risk factors.

## CONCLUSION

The primary aim of this study was to establish the CBIF as a reliable screening tool to identify children with aggressive behavior according to the number of risk and protective factors scored. The findings of this study showed that the CBIF is indeed a significantly reliable instrument when its scores were correlated with the BRIC scores with Pearson product moment correlation coefficient  $r$  ranging between .90 and .96 ( $p < .001$ ).

## Limitations of the Study

One of the major limitations in this study is that all the participating subjects are parents from higher socio-economic status (with an estimated average combined household income of SIN\$124,000) who could afford to send their children to private learning-and-behavior management clinics, counseling centers and home-based therapy. The findings might be very different if the participating parents in this study were to come from the low socio-economic status. Since the participants do not represent the general population of Singaporean parents with children with challenging behavior, the authors had to restrict the interpretation of their findings based on the inputs provided by the participating parents from higher socio-economic status.

Another limitation of this study is that, unfortunately, no systematic test-retest comparisons of BRIC and CBIF were carried out. Neither was the inter-rater reliability computed to determine if two different parent respondents, observing the same behavior, would report similar scores on CBIF. The authors could only assume that since the paired t-test shows that BRIC and CBIF scores are highly and significantly correlated with Pearson product moment correlation ( $r$ ) at .96 ( $p < .01$ ), scores obtained from the CBIF administration are considered as reliably good as those obtained from BRIC if it were to be administered.

## Recommendations

Finally, the authors recommend that two further studies be conducted on the use of CBIF. The first study may focus on the efficacy of CBIF as an indirect intervention tool that advises parents on appropriate follow-up actions for their children with aggressive/challenging behavior through two concurrent actions: reduction of the risk factors and promotion of protective factors listed on the CBIF Protective Factors subscale.

The second study can focus on parental resilience in coping with their children with challenging behavior. It is always interesting to find out about the responses of parents from low socio-economic status to the items on both CBIF subscales and then do a comparative analysis of their responses with the current set of results obtained from parents from high socio-economic status in this study. The authors could never be sure what surprising results await them to discover.

## References

- [1] Achenbach, T. M. (1991). *Manual for the child behavior checklist/4-18 and 1991 profile*. Burlington, TX: University of Vermont, Department of Psychiatry.
- [2] Aguilar, B., Sroufe, L. A., Egeland, S., & Carlson, E. (2000). Distinguishing the early-onset/persistent and adolescence-onset antisocial behavior types: From birth to 16 years. *Development and Psychopathology*, 12(2), 109-132.

- [3] Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- [4] Boulton, M. (1994). How to prevent and respond to bullying behavior in the junior/middle school playground. In S. Sharp & P. K. Smith (Eds.), *Tackling bullying in your school: A practical handbook for teachers* (pp.103-132). New York: Routledge.
- [5] Brendgen, M., Vitaro, F., Boivin, M., Dionne, G., & Pérusse, D. (2006). Examining genetic and environmental effects on reactive versus proactive aggression. *Developmental Psychology*, 42, 1299-1312.
- [6] Broidy, L. M., Tremblay, R. E., Brame, B., Fergusson, D., Horwood, J. L., & Laird, R. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology*, 39, 222-245.
- [7] Buss, A. H., & Warren, W. L. (2008). *Aggression questionnaire*. Torrance, CA: Western Psychological Services.
- [8] Campbell, S. B. (2002). *Behavior problems in preschool children: Clinical and developmental issues* (2nd ed.). New York: Guilford.
- [9] Chia, N. K. H. (2009). *Challenging behavior impact factor: An informal screening tool for aggressive behavior in children*. Singapore: The Author.
- [10] Chia, N. K. H. (2013, June). *Managing the challenging behaviors of children with special needs*. Plenary paper presented at the St. Andrew's Center for Early Childhood Education Seminar on Managing Children's Challenging Behaviors, St. Andrew's Junior College, Singapore.
- [11] Corcoran, K., & Fischer, J. (2000). *Measures for clinical practice: Volume 1: Couples, families, and children* (3rd ed.). New York: The Free Press.
- [12] Côté, S. M., Vaillancourt, T., LeBlanc, J. C., Nagin, D. S., & Tremblay, R. E. (2006). The development of physical aggression from toddlerhood to pre-adolescence: A nation-wide longitudinal study of Canadian children. *Journal of Abnormal Child Psychology*, 34, 71-85.
- [13] Creswell J. W. (2012). *Educational Research* (4th ed.). Boston, MA: Pearson Education.
- [14] Crick, N. R., Grotpeter, J. K., & Bigbee, M. S. (2002). Relationally and physically aggressive children's intent attributions and feelings of distress for relational and instrumental peer provocations. *Child Development*, 23, 1134-1142.
- [15] Cronbach, L. K. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-334.
- [16] Dodge, K. A. (2006). Translational science in action: Hostile attributional style and the development of aggressive behavior problems. *Development and Psychopathology*, 18, 791-814.
- [17] Dodge, K. A., Coie, J. D., & Lynam, D. (2006). Aggressive and antisocial behavior in youth. In W. Damon (Series Ed.), & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol.3. Social, emotional, and personality development* (6th ed., pp.719-788). New York: John Wiley and Sons.
- [18] Hay, D. E. (2005). The beginnings of aggression in infancy. In R.E. Tremblay, W. W. Hartup, & J. Archer (Eds.), *Developmental origins of aggression* (pp.107-132). New York: Guilford.
- [19] Hudson, W. W. (1982). *The clinical measurement package: A field manual*. Homewood, IL: Dorsey.
- [20] Kaiser, B., & Rasminsky, J. S. (2012). *Challenging behavior in young children: Understanding, preventing, and responding effectively* (3rd ed.). Upper Saddle River, NJ: Pearson Education.
- [21] Kline, R. B. (2005). *Principles and practices of structural equation modeling* (2nd ed.). New York: Guilford Press.
- [22] Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construction of resilience: A critical evaluation and guidelines for future work. *Child Development*, 71, 543-562.
- [23] Parke, R. D., & Slaby, R. G. (1983). The development of aggression. In P. Mussen & E. M. Hetherington (eds.), *Handbook of child psychology: Vol.4. Socialization, personality, and social development* (pp.547-641). New York: John Wiley and Sons.
- [24] Stillman, A. R., Orme, J. G., Evans, D. A., Feldman, R. A., & Keeney, P. A. (1984). A brief measure of children's behavior problems: The Behavior Rating Index for Children. *Measurement and Evaluation in Counseling and Development*, 16, 83-90.
- [25] Vitaro, F., Barker, E. D., Boivin, M., Brendgen, M., & Tremblay, R. E. (2006). Do early difficult temperament and harsh parenting differentially predict reactive and proactive aggression? *Journal of Abnormal Child Psychology*, 34, 685-695.
- [26] Werner, E. E. (2000). Protective factors and individual resilience. In J. P. Shonkoff & S. J. Meisels (Eds.), *Handbook of early childhood intervention* (2nd ed., pp.115-132). New York: Cambridge University Press.

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**APPENDIX 1A**

**Challenging Behavioral Impact Factor (CBIF)  
Risk Factor Scale**

No.	Items on the Risk Factor Scale (Not in order of importance)	Observed	
		Y S (-)	N O (+)
1	Gender of the child: Score Y (-) for Male and N (+) for Female		
2	Presence of any learning and/or developmental challenges (e.g., ADHD, learning disabilities, autism spectrum disorder)		
3	Traits of dysfunctional family background (e.g., marital conflict, single parent status, family member incarcerated)		
4	Negative socio-emotional expression most of the time (e.g., sad, frustrated, angry)		
5	Display of domineering, callous, daring, etc. personality		
6	Poor self-regulation, i.e., poor ability to inhibit or activate behavior in order to adapt to a situation		
7	Poor ability to focus and shift		

- attention voluntarily
- 8 Mother took alcohol, tobacco, nicotine and/or illicit drugs during pregnancy
- 9 Aggressive or violent parenting style
- 10 Strong preference to join anti-social or aggressive sub-cultural group or peers
- 11 Low socio-economic-status or low income familial background
- 12 Exposure to violence in the current living environment or neighborhood
- 13 Exposure to socially unacceptable or inappropriate, violent media

**Sub-total Score (+):**

*Note: Tally only the NO (+) items.*

**APPENDIX 1B**

**Challenging Behavioral Impact Factor (CBIF)  
Protective Factor Scale**

No.	Items on the Protective Factor Scale (Not in order of importance)	Observed	
		YES (+)	NO (-)
1	Ability to elicit predominantly positive responses from the environment or any daily encounter (hostile or not)		
2	Ability to communicate or engage with peers and other people in a positive manner		
3	Display of an outgoing temperament with a good sense of humor		
4	Being a person who has a pleasant personality and is easily approachable		
5	Average or above average performance in academic studies		
6	Ability to pay attention, plan, think critically and creatively, and evaluate consequences of their behavior		
7	Display a flexible and empathetic attitude (e.g., having an open mindedness)		
8	Ability to regulate social emotions and behave appropriately and/or effectively		
9	Ability to recover quickly from negative events and feelings		
10	Display a sense of self-		



efficacy (e.g., believe in one's own worth and abilities)

- 11 Observance of some form of spiritual devotion (e.g., praying, reading religious literature, fasting, listening to religious radio programs)
- 12 Good parental support at home
- 13 Good community support (e.g., church, mosque, community centers, boys' and/or girls' clubs)

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**Sub-total Score (+):**

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*Note: Tally only the YES (+) items.*