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Abstract

Previous research on Adaptive Behavior of children with Down syndrome have used scales such as Adaptive Behavior Scale – School, Second Edition (ABS – S:2), Adaptive Behavior Assessment System – Second Edition (ABAS-II), Scales of Independent Behavior – Revised (SIB-R) and Vineland Adaptive Behavior Scales – Second Edition (Vineland II) with various results. The current study was devised to explore adaptive behavior of 50 children with Down syndrome in Hue, Vietnam by using Vietnamese version of Vineland II. Research results showed the mild deficiency in Adaptive Behavior Composite and two domains of Daily living skills and Socialization, the moderate deficiency in domain of Communication, and the moderately low adaptation in the domain of Motor skills. There are no gender difference in all adaptive behavior composite, domains and sub-domains while only one domain of Motor skills seem to improve with age. Some limitations of the Vietnamese version of Vineland II are also discussed.

Keywords: Adaptive behavior, Down syndrome, Vineland II, Vietnam

Introduction

The Down syndrome was described by a British physician: John Langdon Down, in 1866, as “Mongolism”. In 1959, French pediatrician/geneticist professor Jerome Lejeune discovered that individuals with Down syndrome have an extra chromosome. National Association for Down Syndrome (NADS) of America defines “Down syndrome is a genetic condition that causes delays in physical and intellectual development. Individuals with Down syndrome have 47 chromosomes instead of the usual 46” (NADS website, 2013). Until now, Down syndrome is the best known of the clinical conditions associated with moderate and severe mental retardation (Butcher, Mineka & Hooley, 2007) with 80% of them having moderate level (Roberts et al., 2007). Therefore, research on Down syndrome have not only focused on clinical and biological issues but also explored psychological elements. One of them is research on adaptive behavior.

The American Association on Intellectual and Developmental Disabilities (AAIDD) defines adaptive behavior as “the conceptual, social, and practical skills that people have learned to be able to function in their everyday lives”. Significant limitations in adaptive behavior impact a person's daily life and affect the ability to respond to a particular situation or to the environment (AAIDD, 2008). Adaptive behavior can also be considered as the effectiveness with which individuals meet the standards of personal independence and social responsibility expected of individuals of their age and cultural group (AAMR, 1992). In recent years, some instruments for diagnosing adaptive behavior have been developed. So far, four scales below have been used widely and popularly in America and other countries with local adaptive versions.

Adaptive Behavior Scale – School, Second Edition (ABS – S:2)
The ABS-S:2 is the 1993 revision of the 1969 and 1974 AAMD Adaptive Behavior Scale (Lambert, Nihira, & Leland, 1993). This scale was designed to evaluate the adaptive and maladaptive behavior of
children aged between 3 and 21 years. It is divided into two parts. Part One, which evaluates adaptive behaviors considered important to personal responsibility and dependent living, includes 9 behavior domains: Independent Functioning, Physical Development, Economic Activity, Language Development, Numbers and Time, Prevocational/Vocational Activity, Self-Direction, Responsibility and Socialization. Part Two, which assesses social adaptations and maladaptive behavior, includes 5 domains: Social Behavior, Conformity, Trustworthiness, Stereotyped and Hyperactive Behavior, Self-Abusive Behavior, Social Engagement and Disturbing Interpersonal Behavior. In addition, the ABAS-S:2 provides aggregated scores for 5 adaptive behavior factors: Personal Self-Sufficiency, Community Self-Sufficiency, Personal-Social Responsibility, Social Adjustment and Personal Adjustment. Though the scale has not been officially adapted into Vietnamese settings, Tran’s (2005) Vietnamese version has shown to be a reliable measure for assessing adaptive behavior in children with disabilities (Nguyen & Nguyen, 2013). It was used to study adaptive behavior of 57 intellectual disabled children in Hanoi (Tran, 2005) and 30 children with Down syndrome in Hue (Nguyen, & Tran, 2009). In addition, this scale has been used widely in special schools in Vietnam.

Adaptive Behavior Assessment System – Second Edition (ABAS-II)

The ABAS-II is a revision of the ABAS was first published in 2000 (Harrison & Oakland, 2003). It was designed to assess adaptive behavior of individuals from birth to 89 years old. There are 5 forms in ABAS-II: parent/caregiver forms for children ages 0–5 years and 5–21 years; teacher forms for children ages 2–5 years and 5–21 years; and an adult form for individuals assessed who are 16–89 years of age. The adult form can be completed by another respondent, such as a parent, or can be completed as a self-report form by individuals themselves. Each of the scales provides standard score for general adaptive composite and three domains (conceptual, social and practical). The ABAS-II reports good psychometric properties (Burns, 2005) (cited by Tasse’ et al., 2012). Until now, there has not been any published research on adaptive behavior of Vietnamese people by ABAS-II.

Scales of Independent Behavior – Revised (SIB-R)

The SIB-R (Bruininks, Woodcock, Weatherman & Hill, 1996) is a revision of an earlier version of the SIB in 1984 (cited by Wells, et al., 2009). It is a comprehensive, norm-referenced assessment of adaptive and maladaptive behavior of individuals from 3 months to 80 years old. There are three forms of the scales: Early Development (3 months–8 years old), Comprehensive Form (3 months–80 years old) and Short Form. The SIB-R contains two sections: adaptive behavior items and problem behavior items. The adaptive behavior items are organized into 4 domains (Social Interaction and Communication, Personal Living, Community Living, and Motor Skills) and the problem behavior items are grouped into 8 types (Hurtful to Self, Hurtful to Others, Destructive to Property, Disruptive Behavior, Unusual or Repetitive Habits, Socially Offensive Behavior, Withdrawal or Inattentive Behavior, Uncooperative Behavior). Although the reliability and validity for the comprehensive form are adequate, the psychometric properties of the Short Form and Developmental Form are questionable (Maccow, 2001) (cited by Tasse’ (2009). This scale has never been used to diagnose adaptive behavior in Vietnam.


The Vineland Adaptive Behavior Scales, Second Edition (Vineland II) is a substantial revision of the Vineland Adaptive Behavior Scales (VABS; Sparrow, Cicchetti, & Balla,
1984). It is an individually administered measure of adaptive behavior for ages from birth through 90 (Sparrow, Cicchetti, & Balla, 2005). The scales are available in three versions: (1) Survey forms include the Survey Interview Form and the Parent/Caregiver Rating Form, assess adaptive behavior in four broad domains of Communication, Daily Living Skills, Socialization and Motor Skills (under 7 years old and over 50 years old), and include Maladaptive Behavior Domain that assesses problem behaviors; (2) The Expanded Interview Form offers a more comprehensive assessment of adaptive behavior within the four domains and provides a systematic basis for preparing individual educational, rehabilitation and treatment program; and (3) The Teacher Rating Form provides assessment of behaviors in four domains but focuses on readily observable behaviors exhibited in a classroom setting and includes items related to basic academic functioning.

The 1984 version of VABS was translated and adapted to form the Vietnamese version by Goldberg et al. (2009). The scale was administered to 120 Vietnamese non-disabled preschool-age children enrolled in kindergarten programs and 31 ones with intellectual disabilities who were enrolled in an early intervention program in Hue City. It was found that the Vietnamese version of the scale has acceptable levels of internal consistency reliability and construct validity, and successfully differentiate between Vietnamese children with intellectual disabilities from those of typical development (Goldberg, Dill, Shin, & Nguyen, 2009).

The Vineland II was translated into Vietnamese and used to diagnose adaptive behavior level of 80 children from 3 to 6 years old who were chosen from kindergartens in Hanoi. The reliability of the scales and four domains was high with Cronbach’s alpha coefficient of over .90 (Nguyen, 2012)

In summary, among 4 scales mentioned above, only ABS-S:2 and VABS (1984, 2005) were used in Vietnam but mainly for assessing adaptive behavior of typical and intellectual disabled children. However, ABS-S:2 and VABS 1984 were developed many years ago; therefore, some items and norms have not been fit to situations in the modern life. In this year 2013, the AAIDD’s new Diagnostic Adaptive Behavior Scale (DABS) which provides a comprehensive standardized assessment of adaptive behavior, is published. Nonetheless, so far this new scale has hardly been known in Vietnam and not translated into Vietnamese. Taking this fact into account, the Nguyen’s Vietnamese version of Vineland II is the good choice to diagnose and assess adaptive behavior of children with Down syndrome in this study. Besides laying an important foundation for proposing effective adaptive behavior interventions for children with Down syndrome, the research results contribute to confirm the reliability and validity of the Vineland II in Vietnam.

**Method**

**Participants**

Fifty children with Down syndrome from special education schools in Hue City, Vietnam were selected to participate in the study. All of them lived with their families and went to school full–time from Monday to Friday. The sample consisted of 33 males and 17 females aged between 6 and 18 years (mean = 11.9; SD = 3.74). They were divided into two groups, the first group included 27 children aged 6 to 12 and the second one included 23 children aged 13 to 18. In addition, 50 children’s parents or caregivers participated in the study to answer the survey.

**Measures**

The Nguyen’s Vietnamese version of Vineland II Survey Interview Form were used in this study. This scale provided standard scores, levels and age equivalents for the adaptive behavior composite, four
domains, and eleven sub-domains of each child. In the present study, the scale’s reliability was demonstrated with high internal consistency, determined by Cronbach’s alpha coefficient of .867.

**Statistical analysis**

Descriptive statistics were used to perform minimum, maximum, means, and standard deviations of adaptive behavior composite, domains, and sub-domains. Mann – Whitney independent sample nonparametric test were calculated to assess age group and gender differences in adaptive behavior of 50 children with Down syndrome.

### Results

**General Levels of Adaptive Behavior in Children with Down Syndrome**

In order to assess the level of independence achieved for given adaptive skills in children with Down syndrome, some descriptive statistical data were necessarily used. Means, standard deviations and ratings for the composite, 4 domains, and 11 sub-domains of adaptive behavior of children with Down syndrome by the Vineland II were computed and are presented in Table 1.

<table>
<thead>
<tr>
<th>Domains/Sub-domains/Composite</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>36.0</td>
<td>72.0</td>
<td>52.14</td>
<td>9.55</td>
<td>Moderate deficit</td>
</tr>
<tr>
<td>Receptive</td>
<td>2.0</td>
<td>13.0</td>
<td>8.00</td>
<td>2.49</td>
<td>Low</td>
</tr>
<tr>
<td>Expressive</td>
<td>1.0</td>
<td>10.0</td>
<td>5.02</td>
<td>2.72</td>
<td>Low</td>
</tr>
<tr>
<td>Written</td>
<td>4.0</td>
<td>9.0</td>
<td>5.78</td>
<td>1.21</td>
<td>Low</td>
</tr>
<tr>
<td>Daily living skills</td>
<td>28.0</td>
<td>81.0</td>
<td>58.58</td>
<td>11.28</td>
<td>Mild deficit</td>
</tr>
<tr>
<td>Personal</td>
<td>1.0</td>
<td>13.0</td>
<td>7.56</td>
<td>2.38</td>
<td>Low</td>
</tr>
<tr>
<td>Domestic</td>
<td>2.0</td>
<td>15.0</td>
<td>8.98</td>
<td>3.04</td>
<td>Low</td>
</tr>
<tr>
<td>Community</td>
<td>1.0</td>
<td>12.0</td>
<td>5.68</td>
<td>2.47</td>
<td>Low</td>
</tr>
<tr>
<td>Socialization</td>
<td>40.0</td>
<td>89.0</td>
<td>61.06</td>
<td>11.17</td>
<td>Mild deficit</td>
</tr>
<tr>
<td>Interpersonal relationships</td>
<td>2.0</td>
<td>12.0</td>
<td>7.42</td>
<td>2.25</td>
<td>Low</td>
</tr>
<tr>
<td>Play and leisure time</td>
<td>3.0</td>
<td>15.0</td>
<td>7.94</td>
<td>2.95</td>
<td>Low</td>
</tr>
<tr>
<td>Coping skills</td>
<td>5.0</td>
<td>13.0</td>
<td>7.84</td>
<td>1.89</td>
<td>Low</td>
</tr>
<tr>
<td>Motor skills</td>
<td>31.0</td>
<td>134.0</td>
<td>78.78</td>
<td>24.28</td>
<td>Moderately Low</td>
</tr>
<tr>
<td>Gross</td>
<td>4.0</td>
<td>19.0</td>
<td>11.74</td>
<td>3.45</td>
<td>Moderately Low</td>
</tr>
<tr>
<td>Fine</td>
<td>3.0</td>
<td>22.0</td>
<td>10.48</td>
<td>4.69</td>
<td>Moderately Low</td>
</tr>
<tr>
<td>Adaptive Behavior Composite</td>
<td>34.0</td>
<td>78.0</td>
<td>56.54</td>
<td>9.42</td>
<td>Mild deficit</td>
</tr>
</tbody>
</table>

As can be seen from Table 1, only domain of Motor skills and its two sub-domains of Gross and Fine motor skills reached the adaptive standard but were at moderately low level. Adaptive Behavior Composite and 2 domains of Daily living skills, and Socialization were deficient at mild level. Domain of Communication was in moderate deficit. Besides, the domain of Communication were strong positively correlated with two domains of Daily living skills ($r = .758; p < .01$), and Socialization ($r = .812; p < .01$). It seemed that the communicational and linguistic deficits caused difficulties in social interaction and daily activities of children with Down syndrome.

Nine sub-domains belonging to three mentioned mildly and moderately deficient domains also were at low levels. Out of these sub-domains, the sub-domains of Expressive, Written, and Community had the lowest scores (all below 6.0). Thus, the disadvantage of adaptive behavior of children with Down syndrome is difficulties in expressive and writing (includes letters...
and numbers) skills and lack of independence in community activities by research sample.

**Age-related changes in adaptive behavior of children with Down syndrome**

To compare the performance level of adaptive skills of 6 – 12 year old group and 13 – 18 year old group, Mann – Whitney independent sample nonparametric tests were calculated. Of adaptive behavior composite, 4 domains and 11 sub-domains given, Mann – Whitney test revealed significant age differences in only one domain and two sub-domains (as in Table 2). Children aged from 13 to 18 scored significantly higher than children between the age of 6 - 12 years in the motor skills domains and two belonging sub-domains of Gross motor and Fine motor.

### Table 2. The Vineland II Domain and Sub-domain Age – Equivalent Scores

<table>
<thead>
<tr>
<th>Domains/Sub-domains</th>
<th>Age Group 1 (6-12years)</th>
<th>Age Group 2 (13-18years)</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Motor skills</td>
<td>71.40</td>
<td>21.63</td>
<td>87.43</td>
</tr>
<tr>
<td>Gross</td>
<td>10.59</td>
<td>2.99</td>
<td>13.08</td>
</tr>
<tr>
<td>Fine</td>
<td>8.77</td>
<td>3.60</td>
<td>12.47</td>
</tr>
</tbody>
</table>

*Note:* ** p<.01; * p < .05

**Gender Differences in Adaptive Behavior of Children with Down Syndrome**

In order to examine gender differences in adaptive behavior of children with Down syndrome, Mann – Whitney independent sample nonparametric tests were also performed. The Mann – Whitney test did not show any differences between males and females with Down syndrome in adaptive behavior composite, domains and sub-domains.

**Discussion**

Adaptive behavior is very important collection of skills for individuals’ life. It is composed of a number of coping skills that, when combined, allow an individual to achieve community integration (Lambert et al., 1993). Mental retardation status and adaptive behavior deficiencies prevent children with Down syndrome meeting effectively daily demands from community. Therefore, the adaptive behavior measurement for children with Down syndrome have been very essential for not only contributing to clarify adaptive behavior features of these children but also providing critical information for the building up of individual education plans.

Along with the previous studies, this study aimed to assess the general level of adaptive behavior of children with Down syndrome. Firstly, it showed that adaptive behavior of these children had mild deficit when comparing with the same chronological aged norms. This result was consistent with several previous findings. In a longitudinal study, Carr concluded that children with Down syndrome acquired adaptive skills in the same order as non-disabled children but more slowly and in some cases incompletely (Carr, 2000). The research result on 984 Dutch children with Down syndrome by VABS Dutch version of van Duijn et al. also suggested that children with Down syndrome acquired their adaptive skills at a slower pace and at a substantially lower level than a reference group of typically developing children (van Duijn et al., 2010).

Secondly, this study explored that children with Down syndrome have the most deficiency in communicational language, especially in Expressive and Written. This finding was supported by other previous research (Owens, 2010; Abbeduto et al., 2007; Roberts et al., 2007). As the given
information in introduction, children with Down syndrome have intellectual disabilities with 80% of the Down syndrome population having moderate level. Owens (2010) suggested that individuals with moderate ID have an intelligence quotient (IQ) between 36 and 51 and demonstrate deficits with cognition and receptive and expressive language skills (cited by Colleen, 2012). The cognitive deficits in children with Down syndrome can negatively affect both language learning and language use, because the cognitive abilities are the foundation for certain linguistic success (Abbeduto et al., 2007). In addition, this finding was confirmed by Roberts et al. (2007) that most individuals with Down syndrome have mental retardation and speech and language deficits, particularly in language production and syntax and poor speech intelligibility.

One more deficiency of children with Down syndrome in this study was daily skills in community. This deficiency seemed to be caused by slow language development discussed above. Language, among the most impaired domains of functioning in Down syndrome, is also the greatest barrier to independent meaningful inclusion in the community (Abbeduto et al., 2007). In this study, the Pearson coefficient correlations also showed that there was a very close relationship between the three sub-domains of Receptive, Expressive, Written and the sub-domains of Community with $r = .608$, $r = .692$ and $r = .550$ ($p < .01$) respectively. Research results on 30 children with Down syndrome by ABS-S:2 of Nguyen & Nguyen (2013) also showed the deficit in the domain of Language Development and there was a significant correlation between this domain and the factor of Community Self-Sufficiency with $r = .394$ ($p < .05$).

As regards the age – related changes, with little evidence was found beside the domain of Motor skill, this present study seemed to support the findings of Loveland and Kelley and a part of findings of Dykens et al. In their research in 1988 and 1991, Loveland and Kelley did not find an association between adaptive behavior standard scores and chronological age among preschoolers and adolescents with Down syndrome (cited by Dykens, et al., 2006). Research results of Dykens, et al. (2006) demonstrated that one to 6-year-old children showed significant age-related gains in adaptive functioning, but older subjects showed no relation between age and adaptive behavior.

There has been limited research on the motor development and motor skills of children and adults with Down syndrome. However, the research studies indicate that the pattern of motor skills development for individuals with Down syndrome is largely one of delay rather than difference and eventually several teenagers and adults with Down syndrome reach the same levels of skills as typically developing individuals (Sacks & Buckley, 2003). This information could explain the reasons why the domain of Motor skills was not deficient in this study and the older group scored more than the younger group in motor skills domain and two sub-domains of Gross and Fine motor.

In terms of the gender differences in adaptive behavior, the results of this study did not show any significant evidence supporting the possibility of gender changes in adaptive behavior profiles for children with Down syndrome. Research of Nguyen, & Nguyen (2013) also showed the difference between boys and girls with Down syndrome in only one domain of Social Engagement out of 16 domains and 5 factors which was calculated. The nature and sex division of habitual tasks could be explained by this finding. This finding possibly confirm the results of the studies by Prasher, Chung, and Haque (1998) and Taylor (2008) in which males and females did not differ on the percentile rank scores of the adaptive behavior composite.

In conclusion, this is the first research using Vineland II to assess adaptive behavior of children with Down syndrome, which have been published in Vietnam. Though these
were the basic findings, which were based on a rather small sample size, the present study has contributed to provide some significant information for the building up of more effective individual education plans for children with Down syndrome. In addition, it has also contributed to confirm the applicability of Vineland II in Vietnam. However, some limitations to this Vietnamese version of Vineland II must be noted. Some items have not been appropriate to Vietnamese language, culture and education. For examples, in the domain of Communication, because of the differences between English and Vietnamese grammar such as the present/past tenses or active/passive voice..., Vietnamese children could not reach some expressive language norms. In Vietnam, children learn reading and writing at 6 years old when they go to primary school while the reading and writing norms in this scale is at age 3. The Vietnamese version of Vineland II need to officially adapt with a larger sample size include disabled and non-disabled participants. Thereby, the reliability and validity of the Vietnamese version will be improved.

References


