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Psychometric properties of the Affordances in the Home Environment for Motor Development inventory for use with Iranian children aged 18–42 months

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ABSTRACT

Objective: The aim of this study was to translate the original English language version of the Affordances in the Home Environment for Motor Development (AHEMD) inventory and test its psychometric properties for use with Iranian children aged 18–42 months.
Methods: For this purpose, the tool was translated into Farsi (a Persian language) using the forward-backward translation method and some of its psychometric properties were examined. Multistage stratified-cluster sampling was used to study 1019 families having children aged 18–42 months from among the regional divisions of Tehran urban community health centers. The questionnaire evaluated five factors: outside space, inside space, variety of stimulation, fine motor toys and gross motor toys. Expert opinion was used for content-related validity evaluation and confirmatory factor analysis was used to determine construct validity. For test-retest reliability, parents completed identical questionnaires two weeks apart. Internal consistency was evaluated using inter-examiner reliability, Cronbach's alpha and construct reliability. Linear regression analysis was used to explain and predict the effects of toys on AHEMD total score.
Results: Results showed that content-related validity was 0.92. Data confirmatory factor analysis showed an acceptable fit to the original five factors. Reliability over time was 0.91 and internal consistency was 0.93. It was also found that fine- and gross-motor toys showed a significant 55% predictability of affordance provision in the home.
Conclusion: The Farsi translation of the AHEMD is acceptable for use with Iranian children aged 18–42 month.

1. Introduction

For many years, theorists have recognized the interactive role of heredity and the environment in the development processes of human being. That idea includes the understanding that specific requirements of a motor task can be influenced by individual (heredity and biological factors) or environmental factors. Furthermore, these systems have interactive characteristics with the task and the potential to modulate each other (Gallahue & Ozmun, 2006).

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In a growing child, motor behavior is formed by a combination of environmental, organismic, physiological and genetic factors; among these, the home environment is a primary influence for development (Caçola, Gabbard, Montebelo, & Santos, 2015; Miquelote, Santos, Caçola, Montebelo, & Gabbard, 2012; Zoghi, Shojaei, & Ghasemi, 2015). Research has shown conclusively that a desirable level of development occurs only with strong environmental support (Burton & Davis, 1992; Haydari et al., 2009; Lerner, 1996). This has been expanded to suggest that these factors have a significant impact on the first years of life (Bradley, Burchinal, & Casey, 2001; Miquelote et al., 2012; Piek et al., 2006).

There is much debate on whether rich environments generate rich brains and whether favorable growth requires strong support from underlying (environmental) conditions (Zoghi et al., 2015). The environment is viewed as having the ability to ease or delay the experiences of a child's motor skills. This concept is called affordance. When opportunities meet the needs of a child, they provide an optimal and positive growth context. Affordances are opportunities that provide the capacity of individuals to move, learn and develop a skill or parts of a biological system (Caçola, Gabbard, Santos, & Batistela, 2011; Freitas, Gabbard, Cacola, Montebelo, & Santos, 2013; Hirose, 2002).

Gibson's ecological view is a fundamental child development theory (Gibson, 1988, 2001). This theory propounds that the home provides affordances which can support motor development simulation (Rodrigues, Saraiva, & Gabbard, 2005). Because the child understands environmental data as an explorer with this information, environmental affordances challenge understanding and offer practice to children (Zoghi et al., 2015). The World Health Organization and international classifications of functioning frameworks, disability and health provide a model which explains the interaction between environmental factors and health conditions that effect the motor development of children (Schneidert, Hurst, Miller, & Üstün, 2003).

Motor development forms a significant structural relationship with opportunities in the home environment which should include a variety of stimuli (daily activities) and toys for children aged 18–42 months. This structure draws attention to the relationship between the quality of opportunities for movement in the home and growth of children (Caçola et al., 2015). Access or lack of access to affordances in the home environment is thus an important factor for motor development of children (Zoghi et al., 2015). The home as an affordance can foster the proper development of children (Rodrigues et al., 2005; Zoghi et al., 2015).

In the past half century, numerous attempts have been made to examine the relationship between the home environment and aspects of child development (Caçola et al., 2011). One of the most popular was the HOME questionnaire designed by Bradley et al., (1989). This questionnaire was used in several studies to assess the effects of the environment on cognition and social development. Interestingly, whereas toy availability and stimulation were not experimental variables, their availability was related to overall academic performance in later years (Adolph & Berger, 2006; Bober et al., 2001; Bradley et al., 2001; Rodrigues et al., 2005).

Overall, the literature indicates that there is minimal information about the multidimensional effects of the home on motor development. Abbott, Bartlett, Fanning, and Kramer (2000) found that although the home environment host of small that assist in a child's motor development, little scientific research on the subject has been reported. Furthermore, they found that reliable tools are needed to develop an understanding of the role of the home in stimulating motor development; such discoveries led to the creation of the internationally popular AHEMD parental self-report (AHEMD-SR) (Caçola et al., 2015; Rodrigues et al., 2005). This questionnaire was designed to assess the availability of affordances in the home environment for motor development of children aged 18–42 months and is based on ecological theory associated with affordances. The AHEMD is a valid and reliable questionnaire appropriate for use by researchers and practitioners to assess and in some cases create intervention strategies to improve the stimulating properties of the home. Reports note that its use by physical and occupational therapists (assessment and intervention) have been largely successful (Caçola et al., 2011; Caçola et al.,2015).

To date, the AHEMD has been translated from English into eight languages. Furthermore, and driving the intent of the present study, a translation and validation for use in Iran has not been reported. Therefore, the aim of the present study was to translate the original English language version to Farsi, and to test its psychometric properties for use with Iranian children aged 18–42 months. This study considered the multidimensional nature of and basic opportunities created in Iranian homes to provide motor affordances for children. The goal was to determine if the translated questionnaire meets appropriate and necessary standards for measurement of the quantity and quality of motor affordances in the home environment of Iranian children aged 18–42 months.

2. Methods

2.1. Participants

The participants were 1019 families from Tehran having children aged 18–42 months (498 females and 521 males). The inclusion criteria were: 1) being a resident of the metropolitan area of Tehran in Iran, 2) having a gestational age at birth of 37–44 weeks, 3) having a birth weight of 1880–4970 g (mean 3160.7 ± 470.2 g), and 4) agreeing to participate and the provision of a signed consent form by one parent. Our justification for using adequate birth weight as the only biological inclusion criteria was our objective of obtaining a homogeneous sample. Exclusion criteria was a child exhibiting a congenital malformation or neurological impairment.

Lack of accurate information about the actual size of the population meant that sample selection was based on purpose type research. The required sample in confirmatory factor analysis studies suggested that the questionnaire containing 20 questions required 10–15 participants per question and the questionnaire containing less than 20 questions required 15–20 participants per question. In factor analysis of, the following guideline was introduced for general evaluation of sample size adequacy: 50 = very low; 100 = low; 200 = fit; 300 = good; 500 = very good; 1000 = excellent (Meyers, Gamst, & Guarino, 2006).