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The Toddler Language and Motor Questionnaire: A mother-report measure of language and motor development



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ABSTRACT

This study empirically evaluates the psychometric properties of a new mother-answered developmental instrument for toddlers, the Toddler Language and Motor Questionnaire (TLMQ). Mothers of 1132 15- to 38-month-old children filled out a 144-item instrument, tapping the toddlers' competences in five language and motor subtests. Concurrent validity was investigated in an independent sample by administering the McCarthy Scales of Children's Abilities (MSCA) individually to 47 children and the TLMQ to their mothers. A two-factor solution emerged in principal axis factor analyses with a promax rotation, with motor subtests loading high on one of the factors and the language subtests on the other. Toddlers' genders significantly affected outcome on all of the five subtests. Divergent and convergent correlations emerged between the TLMQ's motor composite and scales of the MSCA. Partially convergent and divergent correlations emerged between the TLMQ's language composite and scales of the MSCA. The findings show that young children's motor and language development can be reliably and validly assessed by using a psychometrically constructed questionnaire completed by mothers.

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1. Introduction

Parental involvement in the assessment of developmental delays and disabilities in early childhood has clear benefits. Parents are willing informants about their children's competencies, and their involvement may facilitate discussion of discouraging assessment or test data that must be reported to them. Moreover, when professional administration of a developmental test is not feasible for some reason—and indeed sometimes it is not—parental developmental inventory, in this case mothers', is an easily administered, non-intrusive, addition or alternative (Gudmundsson, 1994; Gudmundsson & Gretarsson, 2013).

Parental-report measures on development are most commonly used in screening settings (Glascoe, 1995; Rydz, Shevell, Majnemer, & Oskoui, 2005). A potentially valuable extension of their use is to include a valid and psychometrically constructed parental report measure in the assessment of developmental delays and disabilities. The main advantage of such an approach is that parents become active participants in the assessment process and their concerns about their children's development are set into the same context as results from individually administered tests. However, only a few

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multi-domain parental-report (or mother-report) measures exist to assess preschool children's (e.g. Gudmundsson & Gretarsson, 1993, 1997) and toddlers' (e.g. Ireton, 1992) language and motor skills.

1.1. Parents as informants about development

Parental informants have not always been considered useful. Early and more recent research findings show that parents' retrospective reports on their children's development are inaccurate. For example, Robbins (1963) found that both mothers and fathers tended to recall the age when their child first stood alone as having occurred later than it did and walking as having started earlier. Majnemer and Rosenblatt (1994) found a considerable discrepancy between the assessment of a neurologist at 1, 3 and 5 years and parents' recall of their children's first meaningful word at 3 and 5 years. Their results show poor correlations at 3 and 5 years ($r = .27$ and $r = -.11$, respectively). On the other hand, parents (particularly mothers) are able to provide both reliable and valid information about their children's current functioning (e.g. Dale, 1991; Gudmundsson & Gretarsson, 1994a). Most studies suggest that mothers concurrent estimates of cognitive abilities are fairly accurate, but that when they do err, overestimations of ability are more frequent than underestimations of ability (Miller, 1988).

More recently, Mondschein, Adolph, and Tamis-LeMonda (2000) found mothers to inaccurately estimate their infants' motor performance on novel tasks in the laboratory. Mothers of girls underestimated their performance but overestimated boys performance. These findings are in contrast to many studies that have reported accurate, reliable and valid parents' (particularly mothers') concurrent developmental reports based on their everyday experience with their children (e.g. Gudmundsson & Gretarsson, 2013; Johnson et al., 2004; Johnson, Wolke, & Marlow, 2008; Law & Roy, 2008). The discrepancies in results might stem from the fact that different methods are used in different studies to obtain information from parents. Psychometrically constructed parent developmental questionnaires have generally resulted in more accurate developmental estimates than other methods used (e.g. global assessments, item-by-item matches, novel tasks) to collect data from parents (Gudmundsson, 1994).

In most studies, mothers' and fathers' (and/or other caregivers') developmental ratings have generally been treated as equivalent although it is contestable whether or not they are. Gudmundsson and Grétarsson (2009) compared mothers' and fathers' ratings regarding their children's concurrent language and motor abilities on a psychometrically constructed 190 item multi-domain developmental inventory. The findings in this study suggest that fathers might underestimate their children (both boys and girls) within the language and motor domains. Mothers' ratings of daughters' development were higher than fathers' on four out of eight subtests (Fine Motor, Language Expression, Achievement and Self Help) and on six out of eight when rating their sons (Gross Motor, Fine Motor, Language Expression, Language Comprehension, Information and Self Help).

In other studies moderate to high concordance has been found between parents (Cepanec, Lice, & Simlesa, 2012; De Houwer, Bornstein, & Leach, 2005; Gray, Tonge, Sweeney, & Einfeld, 2008; Koyama, Inokuchi, Kuroda, & Kamio, 2011; Matson, Hess, Kozłowski, & Neal, 2011). In the absence of separate norms for mothers and fathers in psychometric developmental rating scales a cautious way forward is to focus on one parent at a time. For this reason the current study draws on information from mothers only.

1.1.1. Parent-report measures of language and motor development

A number of parent-answered developmental questionnaires have been described in the developmental assessment and clinical literature. Notable screening instruments based on parent reports are the Ages and Stages Questionnaire (ASQ; Squires & Bricker, 2009), the Parents Evaluation of Developmental Status (PEDS; Glascoe, 1997), and the Child Development Inventory (CDI; Ireton, 1992). These screening instruments have what is generally considered an acceptable sensitivity (70–90%) and specificity (70–91%) in clinical settings (e.g. Glascoe, 2005; but see Sonnander, 2000).

A few instruments have been described that are based on parents' (or mothers' only) concurrent information about child language and/or motor development but are not primarily intended for developmental screening. These instruments can be narrow in scope, focusing primarily on one developmental domain (e.g. MacArthur-Bates Communicative Development Inventories [CDI], Fenson et al., 1993; Early Motor Questionnaire [EMQ], Libertus & Landa, 2013), or broad multi-domain measures of development (e.g. Preschool Child Development Inventory [PCDI], Gudmundsson & Gretarsson, 1993, 1997; Vineland Adaptive Behavior Scales, Second Edition [Vineland-II], Sparrow, Cicchetti, & Balla, 2005, 2006, 2008). These instruments are designed for a range of ages: infant and toddler development (e.g. Fenson et al., 1993), infant only (e.g. Libertus & Landa, 2013), preschooler only (Gudmundsson & Gretarsson, 1997), infant, children and adult from birth to 90 years (Sparrow et al., 2005, 2006, 2008).

1.1.2. Gender differences and developmental norms

Separate norms for boys and girls are not used in most standardized child development measures. This is appropriate when gender differences are not present in a particular developmental domain, or those items that contribute to gender differences are removed from an instrument prior to standardization. However, differences exist in several areas. For example, in the second through fifth years girls outperform boys on various language measures (Bornstein, Hahn, & Haynes, 2004). Similar results have been reported for children younger than two years (Bauer, Goldfield, & Reznick, 2002). In the motor domain boys and girls do not differ in motor development until after the infancy period (Mondschein et al., 2000). Thus, separate norms for girls and boys are justified for toddlers and preschoolers and may contribute to more valid,

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