

Maternal evaluations of young children's developmental status: A comparison of clinic- and non-clinic-groups

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Abstract

The question whether parents' reports on their children's development provide reliable information is a subject of controversial debate. While parental rating scales and parental interviews are widely used in clinical practice, empirical findings have shown that parents cannot assess their children well. Previous research has illustrated that most parents tend to overestimate the developmental status and cognitive performance of their children. If the child displays behavior problems, the accuracy of mothers' appraisals decreases substantially. The aim of this study was (1) to examine whether mothers who are concerned about their children's development still overestimate the developmental status and (2) whether maternal beliefs about developmental norms influence the accuracy of evaluation. The sample consisted of 14 mother-child-dyads who were clients of two outpatient clinics in Vienna and had concerns about the child's development, 16 mother-child-dyads without concerns who sought advice because of their children's potential high abilities, and 30 mother-child-dyads without concerns and no clinic referral. While the children were tested using the *Wiener Entwicklungstest* (Viennese Developmental Test, *WET*, Kastner-Koller & Deimann, 2002), a developmental test for children 3 to 6 years old, mothers were asked to estimate which items of the *WET* (1) their own child and (2) a normal peer would be able to solve. Mothers with concerns had limited knowledge of what a child of a certain age can achieve and they expected too much. Though they realized that their own developmentally delayed child did not fulfill these high expectations, they were not able to appraise his/her performance accurately. Mothers whose children were normally developed or even above average were able to evaluate their own children much more precisely. Moreover, these mothers estimated developmental norms more accurately. Both mothers of gifted children and of developmentally delayed children perceived a gap in their beliefs about their own children's achievement compared to their beliefs about developmental norms. This discrepancy might lead them to seek advice at an outpatient clinic.

Key words: maternal evaluation, developmental assessment, preschool age

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1. Research goals

It is common practice in psychological assessment of children to include parents' reports on their children's development (Deimann & Kastner-Koller, 1995). Recently there has been an increasing tendency to replace psychological testing of young children with parental interviews on child development and developmental problems. Compared to time-consuming individual testing, interviewing is a more economical approach, meeting a frequently verbalized demand (e.g. Grimm & Doil, 2000). Moreover, interviews may allow the assessment of social and communicative skills, domains of behavior that are difficult to explore in a standardized test setting. These advantages, however, only exist if parents are able to provide reliable and valid information on their children's development. Empirical studies concerning the reliability of parents' reports diverge in content, method, and results. One can find evidence of complete lack of accuracy (e.g. Lugt-Tappeser, 1994), as well as findings showing that parents can assess their children better than tests (e.g. Federer, Stüber, Margraf, Schneider, & Herrle, 2001). If parents are asked about retrospective information, they remember special events such as birth weight and first steps quite accurately (Bodnarchuk & Eaton, 2004). Age ratings of gradually developing milestones such as the onset of talking are less reliable (e.g. Kliman & Vukelich, 1985; Vukelich & Kliman, 1985; Rennen-Allhoff, 1991; Glascoe & Dworkin, 1995). Parents can evaluate their children's development or intelligence with varying accuracy. Empirical studies yield medium to high intercorrelations between parental estimations and actual test results of children. In general, parents are able to provide a quite adequate ranking of their children compared to peers, but they overestimate the competence level of their own children (Rennen-Allhoff, 1991; Deimann, Kastner-Koller, Benka, Kainz, & Schmidt, 2005).

Parents can only assess their children well if they have standards of comparison, e.g. school grades. Consequently, social, emotional, and motivational aspects are not estimated as well as cognitive aspects (Helmke & Schrader, 1989; Rennen-Allhoff, 1991).

Studies on parental estimates as well as normative samples of parents' questionnaires use population-representative samples and give equal weight to parental evaluations of children with and without developmental problems – an approach which is highly questionable.

If parents were surveyed on their children's behavioral problems, the given information was in low agreement with other sources (e.g. the children themselves or teachers) (Rennen-Allhoff, 1991; Thiels & Schmitz, 2008). Moreover, expansive behavioral problems are more accurately evaluated than internalizing disorders as they are accessible to direct observation (Lugt-Tappeser, 1994; Federer et al., 2001; Thiels & Schmitz, 2008).

Parental estimates are influenced by interview techniques. Parents are able to give adequate evaluations if they are asked for global ratings or have to compare their own child with other children (Glascoe & Sandler, 1995; Glascoe, 2000; Chen, Lin, Wen & Wu, 2007).

Glascoc (2000, 2003, 2010) devised the *Parents' Evaluation of Developmental Status (PEDS)*, a screening technique which systematically elicits parental concerns. These concerns are valid predictors of developmental problems as far as they pertain to language, motor, cognitive, or global development, but not conduct behavior.

Being interviewed in detail, parents tend to overestimate their children's developmental competences. Willinger and Eisenwort (2005) examined 55 kindergarten children with disorders of language development aged between 3 and 6 years with respect to their active vocabulary and motor skills by using standardized developmental tests. Mothers were asked to evaluate, item by item, whether their child would be able to solve the item. A comparison of maternal estimates and children's test performance showed that mothers highly overestimated their children's vocabulary and significantly overestimated gross motor skills.

Our own research (Deimann et al., 2005) yielded similar results. We compared 40 children aged 3 to 6 years with behaviour problems and 40 children without such problems. The children's development was assessed using the *Wiener Entwicklungstest (WET)*, Viennese Developmental Test; Kastner-Koller & Deimann, 2002). Mothers assessed their child's development by judging whether their children would be able to solve each item of the *WET*. Children with and without behaviour problems achieved significantly different developmental profiles, with developmental deficits in the domains of socio-emotional, motor, verbal, and cognitive development in the behaviour-problem group.

Irrespective of level of global development, mothers generally overestimated the competences of their children with respect to global development as well as different domains of development. This tendency towards overestimation, known as presidential syndrome, may have beneficial effects on development. Children seem to benefit from their caregivers' belief in their competence and achievement potential (e.g. Glascoe & Dworkin, 1995). Moreover, there is evidence that mothers who overestimate their child experience less stress (Willinger & Eisenwort, 2003), so that a protective influence of slight overestimation can be assumed for the mothers as well as for the children.

Yet, more detailed analysis showed that the amount of overestimation correlates with the children's problem behaviour. While mothers of the non-problem group tended to slightly over- and underestimate their children, only the problem group produced distinct overestimations of more than one SD. None of these children had been in psychological treatment because of the problem behaviour, but kindergarten teachers had been concerned about the children's behaviour for more than six months (for sample details, see Deimann et al., 2005).

These results suggest that mothers tend to overestimate their children, even to ignore overt problems for some time and keep believing that their children are normally developed. We wondered whether this explicit overestimation would change into a more realistic view of the child if parents sought advice because of the behavioural and developmental problems.

Several studies indicate that parents only have limited knowledge of normal child development. Their appraisals are mainly based on observations of and comparisons with peers of their child (Glascoe & McLean, 1990). Generally, they tend to have inaccurate expectations regarding the age-appropriate behaviour of normally developed children. Research has yielded overestimations as well as underestimations of developmental norms (Rickard, Graziano, & Forehand, 1984; Dichtelmiller et al., 1992; Bornstein & Cote, 2004; Reich, 2005; Ertem et al., 2007). Only few studies have examined how parental theories of normal development influence the development of their children.

Rickard et al. (1984) compared clients of an outpatient center with non-clients. The parents of these children were queried about their knowledge, attitudes, and beliefs about child development and child rearing. Subsequently, mother-child interactions were assessed during home observations. Individual differences in parental knowledge and expectation about child development could discriminate between clinic-referred and non-clinic mother-child pairs. Parents with an appropriate knowledge of development displayed more positive attention to their children and had more cooperative children (Rickard et al., 1984).

Dichtelmiller et al. (1992) examined the relationship between parental knowledge and the development of infants with extremely low birth weight. Parents of well-developing preterm infants had more accurate knowledge of developmental milestones in infancy. The infants of more knowledgeable mothers scored approximately one standard deviation higher on the mental and the psychomotor scale of the Bailey Scales than did the infants of mothers with less than average knowledge.

In summary, there are three types of studies dealing with parental appraisals: 1) studies on the accuracy of parental estimations, 2) studies on the evaluation of problem behavior and developmental deficits, and 3) studies on parental knowledge of development. In our study, we were interested in the complex relationship between a child's development, maternal knowledge about developmental norms, and the mother's evaluation of her child's development.

This study considers the following research questions in detail:

- 1) Do children who were referred to counseling at an outpatient clinic differ in their development from children without clinic referral?
- 2) Do mothers of children with a clinic referral evaluate the development of their children differently compared to mothers of children without clinic referral?
- 3) Do mothers of children with a clinic referral differ from mothers of children without clinic referral with respect to their knowledge of developmental norms?
- 4) What is the relationship between children's competences, mothers' knowledge of developmental norms, and maternal evaluations of a child's development when children with and without clinic referral are compared?

2. Method

2.1 Sample

The sample comprised 60 Viennese children, aged 3 to 6 years, and their mothers³. The group with clinic referral (Clinic Group – CG) consisted of 30 mother-child dyads who were clients of two outpatient clinics in Vienna. The clinics were selected from different backgrounds to allow a wider socio-economic range within the sample. One was a university counseling center attracting a larger proportion of well-educated families, the other was a low-threshold institution run by the local authorities.

When the application of a developmental test turned out to be necessary in the course of the assessment process, mothers were informed about the research study and were asked to participate. All mothers who were addressed consented. Their assessment took place during the psychological testing of their child. Two thirds of the children were boys, a gender distribution which is typical for the clients of outpatient clinics (cf. Deimann & Kastner-Koller, 1992).

Motives for clinical referral concerned different aspects of development such as potentially high abilities (30 %) and concerns about developmental delay (27 %). 20 % of the mothers called on the clinic because of emotional and behavioural problems of their children. 23 % were interested in their children's developmental status, but had no special concerns. Therefore, the clinic group (CG) was divided into two subgroups: CG1 comprised children who were referred because of their mothers' worries about their children's development (referral because of concerns, $n = 14$), CG2 consisted of children whose mothers had no worries; children with potentially high abilities were included in this group (referral because of interest, $n = 16$). Controls (Non-Clinic-Group NG) were 30 mother-child dyads without clinical referral, matched to CG by age and gender of the children and socio-economic background of the parents. All children of NG were attending public kindergarten; none was in psychological treatment. This last condition of participation should guarantee that the controls were children with a basically normal development.

2.2 Procedure

The children of the Clinic Group completed the developmental test *WET* (Kastner-Koller & Deimann, 2002) at the outpatient clinic. Meanwhile, the mothers were assessed by a second examiner. While administration of the *WET* to the children was accomplished according to the test manual, mothers worked on 11 of the 13 subscales of the *WET*. Two subscales (*Grammar comprehension* and *Vocabulary*) measuring receptive language and vocabulary were omitted because they had proved to be unclear for the mothers in a pilot

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study. The remaining subscales measure motor, perceptual, cognitive, socio-emotional, and memory development (see Table 1). For every item, mothers had to evaluate whether their own children would be able to solve the given item. This gave detailed insight into maternal evaluations of the child's development. For instance, in the subscale *Hand skills* (measuring fine motor skills), mothers had to state whether they thought their child would be able to tie a bow; in the verbal-cognitive subscale *Quiz* (measuring information

Table 1:
Viennese Developmental Test (WET): Areas of development, subscales and reliability coefficients

Area of development	Subscale	Number of items	Abilities	Split-half reliability
Motor development	Gross motor skills	10	Gross motor skills	.84
	Hand skills	4	Fine motor skills	.72
Visual development/ Visual-motor coordination	Drawing	10	Drawing abilities	.84
	Visuospatial perception	24	Spatial perception	.89
Memory	Object memory	6	Short-term memory-visual processing	.76
	Digit span	10	Short-term memory-verbal processing	.67
Cognitive development	Block design	10	Analyzing patterns	.86
	Coloured matrices	10	Inductive reasoning	.91
	Analogies	15	Verbal reasoning by analogy	.84
	Quiz	11	Information and knowledge	.77
Language development	Vocabulary	10	Vocabulary, semantic development	.80
	Grammar comprehension	13	Receptive language, syntactic development	.81
Psychosocial development	Emotions	9	Interpreting emotional expressions, empathy	.81
	Parents Questionnaire	22	Autonomy, self-control	.90

An overall developmental score (WET-total score) can also be computed (split-half reliability: .83).

and knowledge), they had to evaluate if their child knew why to fasten the seatbelt in the car.

Since the items of the *WET* are dichotomous, the maternal appraisals were also scored dichotomously. Raw scores were computed for these estimations and transformed into C-scores using the age-norm tables of the *WET*-manual. This scoring procedure made it possible to directly compare the children's test scores with their mothers' estimation scores. Moreover, these estimation C-scores provided information about mothers' expectations with regard to children's achievement in each subscale.

Subsequently, the same procedure was used to survey maternal evaluations of developmental norms. Mothers had to judge whether a normally developed child of the same age as their own child would be able to solve each individual item of the *WET*. The assessment of the control group was conducted in the same way in a quiet room of the child's kindergarten.

This assessment procedure yielded the following measures:

- 1) Children's test results: Age-related C-scores for each of the 13 subscales and for the total score.
- 2) Mothers' appraisals of their own children: Age-related C-scores for 11 subscales and for the total score.
- 3) Maternal appraisals of a "normal" peer: Age-related C-scores for 11 subscales and for the total score.

This ensured that not only accuracy of maternal evaluations with respect to the child's development, but also maternal developmental norms could be examined.

3. Results

3.1. Children's test results

For each of the three groups, developmental profiles were determined by using the subscale means. The two clinic groups and the control group differed significantly in the levels of test performance (see Figure 1). Children who were referred because of developmental problems (CG1) performed below average on the *WET*, while the non-clinic group achieved average results. Significant differences resulted in the domain of motor development, visual perception and visual motor coordination (subscales *Visuospatial perception*, *Hand skills*, *Drawing* and *Block design*) but also for memory, verbal reasoning by analogy, and psycho-social development (subscales *Digit span*, *Analogies* and *Emotions*). The CG2-children, whose mothers had no worries, but were interested in their children's development, performed best. For the most part, these children showed advanced cognitive development.

C-scores (group means)

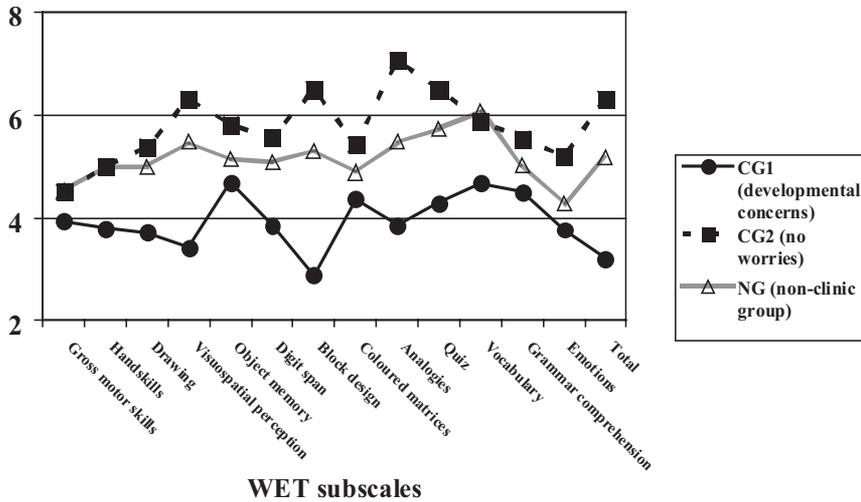


Figure 1:
WET: Children’s Results

These group differences appeared most distinctly when analyzing the *WET* total score. Children of the control group (NG) achieved a mean total score of 5.17, the mean total score of the clinic group with referral because of interest (CG2) was 6.31, and children with concerned mothers (CG1) achieved a mean total score of 3.21, indicating developmental delay. Group differences were significant ($F = 15.31, df = 2, p = .00$).

3.2. Mothers’ appraisals of their own children

In contrast to the profiles of the children, mothers’ estimations of their children’s test performances did not differ significantly between groups (see Figure 2). The developmental profiles of the three groups were all within the normal C-score range of 4 to 6. Compared to the performance level of the children, mothers with developmental worries overestimated the development of their children and even rated their performance above average in some domains such as drawing abilities and interpreting emotional expressions (subscales *Drawing* and *Emotions*). Mothers of the two other groups showed over- as well as underestimations of a much smaller extent. Though the estimated total scores reflected the ranking of the children’s test performances, they did not differ significantly (mothers’ estimation of mean total score: NG: 5.33; CG1: 4.79; CG2: 6.19).

C-scores (group means)

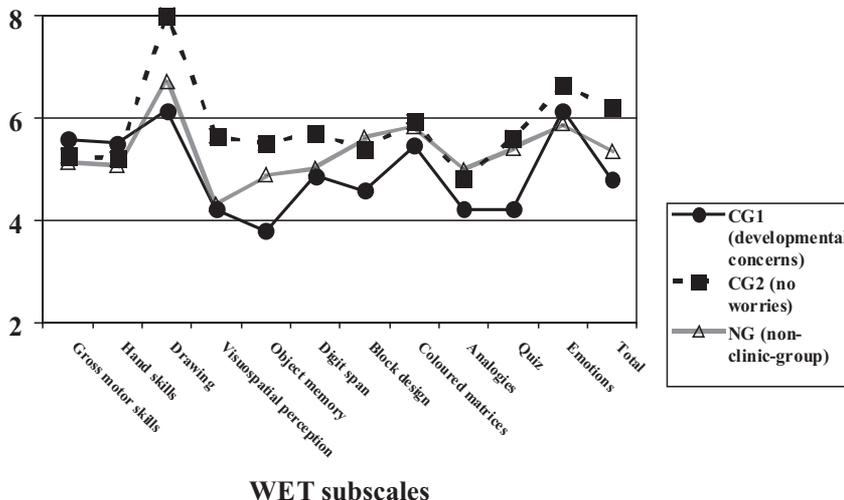


Figure 2:
WET: Maternal appraisals (own child)

3.3. Mothers' knowledge of developmental norms

Mothers' estimations regarding the test performance of a normally developed peer were even more similar among the three groups (see Figure 3). However, overestimation was not found among mothers with highly performing children (CG 2) but in CG 1, which comprised children with developmental problems and mothers who were worried about their children's development and behavior. These mothers evaluated the drawing abilities and psycho-social competence of peers above average (subscale *Drawing*: estimation C-score: 7.79; *Emotions*: estimation C-score: 7.07). Developmental norms of mothers in the control group and in CG 2 were more realistic, which is shown by the mean total scores for peer appraisal in the three groups. Mothers of CG 1 yielded the highest mean total score (5.93), mothers of the non-clinic group had a mean total score of 5.47, and mothers of CG2 a mean score of 4.87. The group means of the total score did not differ significantly.

3.4 Relationship between children's competences, mothers' knowledge of developmental norms, and maternal evaluations of their children's development

We investigated the relationship between maternal evaluations and expectations concerning development and the children's test performance with respect to the need of clinical referral of the child. Results of a repeated measures design are illustrated in Figure 4.

C-scores (group means)

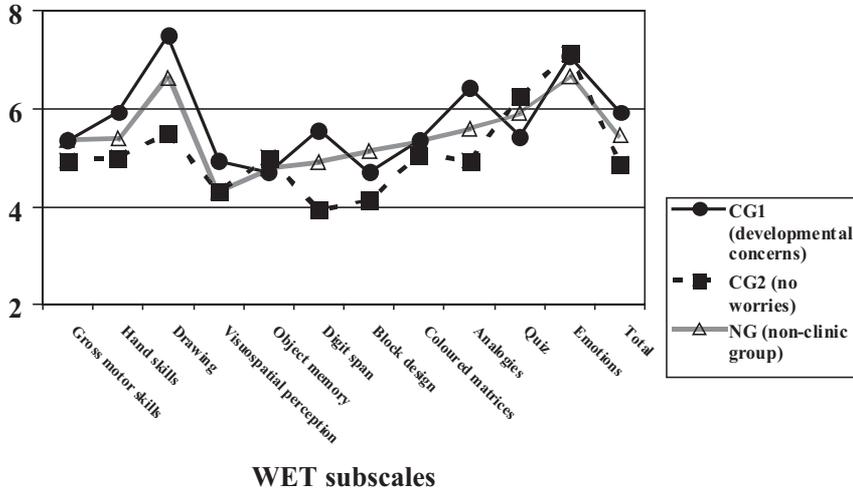


Figure 3:
WET: Maternal appraisals (“normal” peer)

Total C-score (WET)

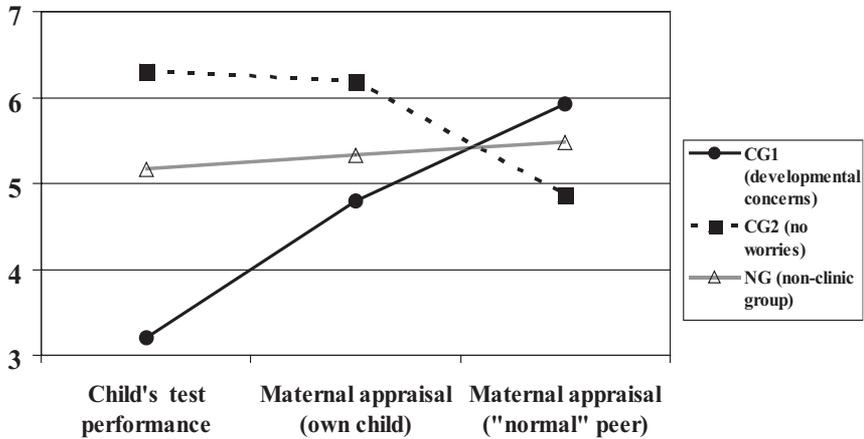


Figure 4:
Comparison of maternal appraisals and children's test performance

The *WET* total scores of the children and the total scores of the mothers' appraisals of their own children as well as of "normal" peers were treated as repeated measures. Clinical referral (CG1: referral because of concerns; CG2: referral because of interest; NG: no referral) served as the independent variable. The analysis of variance was significant with a significant main effect of clinical referral and a significant interaction between clinical referral and the repeated measures ($F = 5.43$, $df = 4$, $p < .001$). Children of the non-clinic group (NG) were normally developed and were appraised by their mothers quite accurately, who also adequately estimated a "normal" peer's development. Accurate appraisals were also found among mothers of CG2, who had no worries, but were interested in their children's (high) abilities. The *WET* total score of the children and the maternal estimates were above average. Although their own children performed strongly on the *WET*, mothers of CG2 did not overestimate a "normal" peer's development. A noticeable finding was that mothers who had developmental concerns (CG1) evaluated their own children within the average range of the *WET*, although their children performed below average on most of the *WET* subscales. The difference between the child's test performance and the mother's evaluation was almost 1 *SD*. These mothers' appraisals of the performance of normally developed peers were above average and substantially exceeded the test performance of their own children. The developmental norms of these mothers and the developmental competences of their children as assessed by the *WET* differed more than 1 *SD*.

4. Discussion

The accuracy of parental estimations of their children's development has been under detailed scrutiny. Findings are controversial, yielding results of significant overestimations as well as highly accurate evaluations. While mothers concerned about overall development or specific developmental domains (e.g. language or motor development) are able to detect developmental deficits with high sensitivity (see Glascoe, 2000, 2003, 2010), it is difficult for mothers to specify their children's verbal or motor competences in detail (see Deimann et al., 2005; Willinger & Eisenwort, 2005).

These findings seem to apply mainly to mothers of developmentally impaired children. Although their children yielded test results below average in standardized developmental tests, mothers assigned developmental competences to their children that would meet the standards of a normal or even above average developmental status. Deimann et al. (2005), testing a sample of children with and without conduct problems, found that these overestimations were more distinct, the more deviant the child's development was. The kindergarten teachers had been aware of the children's conduct disorders for some months, yet the parents did not seek advice. In the sample of Willinger and Eisenwort (2005), mothers called on an outpatient center for disorders of language development because of their children's verbal deficits. Even so, they estimated their children's verbal competencies as being normal.

The aim of the present study was to look into this discrepancy. We analyzed whether mothers of children with and without clinic referral differ with respect to their accuracy of estimation and their knowledge of developmental norms. An interesting finding was

that children with clinic referral did not form a homogenous group but were split into two subgroups: children with developmental deficits on the one hand and children with above average developmental competences on the other hand. These two groups had significantly different developmental profiles and also differed significantly from the normally developed children without clinic referral. Even though the children's developmental profiles were different, mothers' estimations of their children's development were rather similar. Nevertheless, group ranks of the competence levels were maintained. As far as the total score of development was concerned, mothers without clinic referral slightly overestimated the normal development of their children. Mothers of highly performing children evaluated their children's development as being above average, a finding which is in line with Buch, Sparfeldt and Rost (2006), whereas mothers with developmental concerns overestimated their children's retarded development, attributing age-appropriate competences to their children. In accordance with the findings of Deimann et al. (2005), the test scores of these children and the maternal estimates differed by one standard deviation. To conclude, these mothers were concerned enough about their children's development to seek advice at an outpatient clinic, but at the same time they perceived age-appropriate skills of their children in relevant developmental domains.

Mothers' knowledge about developmental norms was surveyed in order to explain this inconsistency. Yet maternal expectations of the competences of a normally developed peer are even more similar than the evaluations of their own children. Group ranks, however, are inverted. The highest expectations of normal development were found among mothers with concerns about their children's development, whereas mothers without clinic referral and mothers of highly performing children had adequate knowledge about developmental norms. Relating these results to the estimations of their own child and the children's test scores, distinctive features of mothers who were concerned about their children and sought advice emerged: These mothers not only evaluated their children's development deficiently, they also lacked adequate knowledge of age-appropriate competences. They overestimated their own children, but they overestimated developmental norms applying to children of the same age even more strongly. Thus, in this group, there was a difference of almost two standard deviations between maternal developmental norms and children's actual test performance. In contrast, mothers without clinic referral were able to evaluate the normal development of their own child as well as developmental age norms quite accurately. Interested mothers, on the other hand, whose children performed above average, realized this advance adequately, but at the same time were well aware of age appropriate developmental norms. In this group, maternal evaluations did not differ from the children's test performance but were one standard deviation above the estimated developmental norms. Evidently, need for clinic referral arises when mothers perceive a gap between their children's competences and their own ideas about normal development. This result explains why maternal concerns are a useful device for screening developmental deficits (see Glascoe, 2000; 2003; Chen et al., 2007) even though mothers of developmentally retarded children are not able to evaluate their children's competence level adequately. Moreover, these results imply a caveat: assessing development using parental questionnaires may lead to significantly biased information. Regardless of their children's developmental status, mothers tend to ascribe at least average developmental competences to their own children.

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