Psychiatry Research 210 (2013) 294–301

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Correction of distortions in distressed mothers' ratings of their preschool children's psychopathology

Jörg M. Müller*, Tilman Furniss

Department of Child and Adolescent Psychiatry, University Hospital Münster, Schmeddingstrasse 50, 48149 Münster, Germany

ARTICLE INFO

Article history:
Received 9 May 2012
Received in revised form
21 March 2013
Accepted 23 March 2013

Keywords:
Preschool children
Child psychopathology
Cross-informant
Distortion
Parental psychopathology

ABSTRACT

The often-reported low informant agreement about child psychopathology between multiple informants has lead to various suggestions about how to address discrepant ratings. Among the factors that may lower agreement that have been discussed is informant credibility, reliability, or psychopathology, which is of interest in this paper. We tested three different models, namely, the *accuracy*, the *distortion*, and an integrated so-called *combined* model, that conceptualize parental ratings to assess child psychopathology. The data comprise ratings of child psychopathology from multiple informants (mother, therapist and kindergarten teacher) and ratings of maternal psychopathology. The children were patients in a preschool psychiatry unit ($N=247$). The results from structural equation modeling show that maternal ratings of child psychopathology were biased by maternal psychopathology (*distortion* model). Based on this statistical background, we suggest a method to adjust biased maternal ratings. We illustrate the maternal bias by comparing the ratings of mother to expert ratings (combined kindergarten teacher and therapist ratings) and show that the correction equation increases the agreement between maternal and expert ratings. We conclude that this approach may help to reduce misclassification of preschool children as 'clinical' on the basis of biased maternal ratings.

1. Introduction

1.1. How to integrate different informants in child psychopathology assessment?

The assessment of child psychopathology and associated risk factors is important to achieve an understanding of emotional and behavioral problems in children (Goodman and Gotlib, 1999); however, this assessment also presents a methodological challenge because the validity of child psychopathology ratings from informants is controversial (Richters, 1992; Gartstein et al., 2009). Currently, there are diverse recommendations for guiding clinicians in dealing with differing ratings from multiple informants in a single case (Smith, 2007; Carlson and Youngstrom, 2011). Among these recommendations, three approaches seem to be particularly noteworthy. In the first approach, researchers consider each informant as a source of valid (and full) information, and consequently search for an algorithm to combine all ratings to improve predictability or to decide which informant's rating should be preferred in practice (e.g., Fitzmaurice et al., 1995; Shemmassian and Lee, 2012). This approach includes the assumption that the validity of rating may depend on the specific situation (Rettew et al., 2011) or the specific disorder (Carlson and Blader, 2011).

The second approach basically puts the validity of informants in question and uses additionally collected information about an informant's characteristics, for example, their credibility (Youngstrom et al., 2011) or interviewers' impressions of the reliability of informants (De Los Reyes et al., 2011). Consequently, this approach aims to select a proportion of valid informants.

The third, and possibly most radical, approach is to dismiss the ideal of integrating differing informants' ratings and conceptualize the main criteria of child psychiatric disorders as situation- and informant-specific phenomena (Offord et al., 1996). With this approach, the widely shared basic assumption that psychiatric disorders are, to some extent, situation- and observer-independent diagnostic categories is given up. In other words, this approach no longer aims to achieve a shared understanding of child psychopathology and is therefore at risk for interpreting all facets of an assessment as phenomena-related true and valid information.

From a conceptual viewpoint, the presented approaches do not aim to incorporate different ratings into *one* situation-independent measure of child psychopathology because they do not integrate informants into one measurement model (such models are presented in paragraph 1.3). Instead, the approaches prefer to select a part of the data or use them as multiple criteria to hold the assumption of valid informants. This practice renders study results difficult to compare. Moreover, the three approaches cannot be concurrently evaluated

* Corresponding author. Tel.: +49 251 83 56454.
E-mail address: Joergmichael.Mueller@uni-muenster.de (J.M. Müller).

0165-1781/$ - see front matter © 2013 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.psychres.2013.03.025

because there are no shared golden criteria (i.e., an informant-independent measure of child psychopathology).

However, considered from a statistical viewpoint, the second approach may be particularly interesting, as it introduces moderator variables that can be used to weight the association between parental rating and child psychopathology by informant characteristics. This approach can be formalized in a structural equation model and allows the simultaneous inclusion of several informant characteristics to clarify whether, for example, the credibility, reliability, and parental psychopathology of informants are uncorrelated constructs. The structural equation model offers the opportunity to attribute variance to different causes. Parental psychopathology may make an especially large contribution to explaining disagreements in ratings of child psychopathology. Therefore, we will take a closer look at this issue before presenting our own approach, which is in essence a measurement model approach that includes parental psychopathology as a moderator variable.

1.2. Parental psychopathology and child psychopathology

The main body of research in the field of the association between parental and child psychopathology considers parental ratings to be a valid source that may help to understand causal relationships and especially the mechanism of transmission of psychopathology (Goodman and Gotlib, 1999). An impressive number of studies ($N=134$) covering 60,000 parent–child dyads (aged 2 to 18 years) were considered in a meta-analysis by Connell and Goodman (2002) that focused on the influence of informants on the observed association between maternal and child psychopathology with the two indicators of internalizing and externalizing problems. The weighted correlations were lower than one would expect with an $r=0.18$ for child internalizing and $r=0.17$ for child externalizing problems. When teachers rated child psychopathology, the associations with the mothers' psychopathology were only $r=0.01$ for internalizing and $r=0.14$ for externalizing. Connell and Goodman interpreted the observed differences between therapists and parental ratings as "consistent with several explanations, including the possibilities that the presence of parental psychopathology may lead to biased reporting by parents" (p. 763).

Actually, there is considerable evidence that depressed adults show specific cognitive, perceptual, and affective biases that may cause parents to overestimate their child's emotional and behavioral problems. In child psychiatric research, this assumption is known as the depression–distortion hypothesis (De Los Reyes and Kazdin, 2005). A recent review of adult depression research (Matthews and MacLeod, 2005) described such biases in several emotional disorders, including depression. Therefore, some authors have changed the focus from depression to the more general term psychopathology (see Connell and Goodman, 2002; De Los Reyes and Kazdin, 2005).

1.3. Three structural equation models

It is important to understand that any informant-related bias can exist independent from, and in addition to, a potential causal relationship between maternal psychopathology and child psychopathology. From a more methodological viewpoint, there are at least three different models that conceptualize parental ratings to assess child psychopathology. The first model, known as the *accuracy* model (Richters, 1992), assumes that parental ratings of child psychopathology are basically valid. In this model, a correlation between parent and child psychopathology represents a "true" association. The second model, known as the *distortion* model (Richters, 1992), assumes that parent ratings of child psychopathology can be biased by parent psychopathology and is known as the depression–distortion hypothesis. As already mentioned, the second model does not exclude the first model. Both models are integrated in a so-called *combined* model (Fergusson et al., 1993). The combined model integrates both conceptualizations, suggesting that any empirical congruence between parent and child psychopathology may result from a causal association *and* distortion of parental ratings. All three models can be simultaneously tested against each other, to decide which model fits the data best (Müller et al., 2011; see below). Such complex data are ideally analyzed with statistical methods that allow for an estimation of different sources of variance. This approach was pioneered by Fergusson et al. (1993) with a latent variable model in structural equation modeling (SEM). Fergusson's approach fulfilled a set of necessary criteria posed by Richters (1992) to study potential distortions in maternal ratings (Goodman et al., 2011), and the final model confirmed a distortion in maternal ratings (see also Gartstein et al., 2009). In our SEM study (Müller et al., 2011), we concurrently compared the *distortion*, *accuracy*, and *combined* models (Fig. 1) in a clinical sample of preschool-age children ($M=3.94$, S.D.$=1.63$ years, $N=124$). The sample showed a necessary balanced variation in maternal psychopathology and a balanced variation in child psychopathology.

In the *combined* model, we observed a substantial path between the latent construct of child psychopathology and maternal ratings ($b=0.47$), which means that maternal ratings contributed to measuring child psychopathology. Second, we identified a bias in maternal ratings of child psychopathology that was due to the mothers' psychopathologies ($a=0.38$). Third, the analysis revealed only a non-significant and small path between the latent constructs of maternal and child psychopathology ($c=0.06$). The c path can therefore be omitted in the final structural equation, which represents the *distortion* model. Although not directly comparable, the reported paths by Müller et al. (2011) are of similar magnitude as those reported by Fergusson et al. (1993) and Gartstein et al. (2009).

1.4. Aim of the paper

To date, the possibility of a correction for the Child Behavior Checklist 1.5–5 (CBCL/1.5–5; Achenbach and Rescorla, 2000) *T*-scores obtained from potentially biased ratings has not been considered in the discussion of the distortion hypothesis, although empirically based correction procedures might be helpful tools for researchers and clinicians. We intend to adjust maternal ratings with a correction equation to increase agreement with other informants. Basically, the structural equation builds the rational background to develop our correction equation. As clinicians may not be familiar with the technical details of SEM methodology, we present an approach based on regression analysis, which is technically identical to SEM.

2. Methods

2.1. Procedure

The Family Day Hospital, which is the official health care supplier for a region with approximately 740,000 habitants, treats preschool children between zero and six years old and their parents. Between 2001 and 2011, 247 preschool-age patients attended the Family Day Hospital accompanied by a parent; this represents a relatively comprehensive clinical sample of preschool age children. To avoid confounding effects, only one child per family was included in this analysis. There were no further exclusion criteria.

The average treatment duration was 22.6 weeks (S.D.$=13.3$). All children were rated by their parents using the Child Behavior Checklist 1.5–5 and by their therapists and kindergarten teachers using the Caregiver–Teacher Report Form within the first three weeks as part of the standardized routine assessment procedure. Therefore, the therapists and the mothers rated the children's behavior in similar contexts that included situations such as playing with peers and adults in small groups of up to 15 persons, structured interactions with the mother, and meal time, all accompanied by a therapist.