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Making 'what works' work: A meta-analytic study of the effect of treatment integrity on outcomes of evidence-based interventions for juveniles with antisocial behavior

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ABSTRACT

This study meta-analytically examined the effect of treatment integrity on client outcomes of evidence-based interventions for juveniles with antisocial behavior. A total of 17 studies, from which 91 effect sizes could be retrieved, were included in the present 3-level meta-analysis. All included studies, to a certain level, adequately implemented procedures to establish, assess, evaluate and report the level of treatment integrity. A moderator analysis revealed that a medium-to-large effect of evidence-based interventions was found when the level of treatment integrity was high ($d = 0.633$, $p < 0.001$), whereas no significant effect was found when integrity was low ($d = 0.143$, ns). Treatment integrity was significantly associated with effect size even when adjusted for other significant moderators, indicating the specific contribution of high levels of treatment integrity to positive client outcomes. This implies that delivering interventions with high treatment integrity to youth with antisocial behavior is vital.

1. Introduction

It takes about seven years to develop and implement an evidence-based intervention in a community setting, around 17.000 dollar to provide it to a single juvenile, and on average, juveniles in youth care are exposed to an intervention for a 12-month period (Aos, Miller, & Drake, 2006; Kalidien, de Heer-de Lange, & van Rosmalen, 2010). Without assuring the proper delivery of interventions, there is a chance that interventions might not produce the desired effects and leave many youths with significant problems underserved or unserved (Fulda, Lykens, Bae, & Singh, 2009; Kataoka, Zhang, & Wells, 2002; McLeod, Southam-Gerow, Tully, Rodriguez, & Smith, 2013; Perepletchikova & Kazdin, 2005), which can have serious negative consequences for both these youngsters and their social environment. The community can be confronted with criminal offenses, which impose substantial psychological costs (e.g., victimization) and financial costs on society (e.g., the expenses of imprisonment are on average 700 dollar a person a day), especially when this behavior turns into persistent delinquent behavior (Algemene Rekenkamer, 2012; Cohen, Piquero, & Jennings, 2010). For that reason, it is important to effectively prevent or decrease juvenile antisocial behavior. This meta-analysis is the first to examine the effect of treatment integrity (i.e., delivery of the intervention as intended) on the effectiveness of evidence-based interventions for juveniles with antisocial behavior, while taking the operationalization of treatment integrity into account.

1.1. Treatment integrity and client outcomes

There is a growing number of intervention studies examining the effect of treatment integrity on client outcomes. These studies have found mixed effects. Several studies showed that higher levels of treatment integrity were associated with greater reduction of adolescent's antisocial behavior, whereas other studies did not find such an association. Interestingly, one study examining the effects of individual drug counseling in adult patients, found support for a curvilinear relation between treatment integrity and outcomes, with both low and high levels of integrity showing worse outcomes, and intermediate levels showing the best outcomes (Barber et al., 2006). Barber et al. (2006) argued that very high levels of treatment integrity might reflect a lack of flexibility on the part of the therapist in responding to the client's needs, whereas very low levels of treatment integrity might reflect an inability to

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translate a therapeutic model or theory into practice as prescribed, which may lead to unsatisfying outcomes. In addition to this explanation, Weisz, Ugueto, Cheron, and Herren (2013) have pointed out that community clinic youths have high rates of comorbidity, which may require a shift of focus during treatment in order to be able to target the most pressing problems, resulting in intermediate levels of treatment integrity. In their review of research on the influence of implementation on program outcomes in prevention and health promotion programs for children and adolescents, Durlak and DuPre (2008) found the maximum level of treatment integrity in outcome studies to be around 80%, and they estimated that positive client outcomes can be expected when levels of treatment integrity are over 60%.

Given that previous research has revealed somewhat inconsistent findings on the association between treatment integrity and client outcomes, a meta-analysis could provide insight into the overall effect of treatment integrity. Previous meta-analyses on the effects of interventions for juveniles with antisocial behavior have suggested that delivering an intervention with high integrity is associated with positive client outcomes. Based on 548 independent study samples, Lipsey (2009) demonstrated that higher quality implementation of interventions targeting juvenile delinquency, such as surveillance, deterrence, discipline, restorative programs, counseling, and skill building programs, was associated with a reduction in recidivism of offending juveniles. Based on 30 independent study samples, Tennyson (2009) concluded that individual, family, group, or multisystemic therapies, as well as correctional programs, parent training, interventions focusing on peer influences, or restitution programs that were delivered with the highest level of treatment integrity produced the greatest reduction in recidivism of juvenile offenders. Thus, based on this research it can be concluded that higher levels of treatment integrity are related to more positive outcomes, which is specifically true for the reduction of recidivism. However, these previous meta-analyses did not take the quality of treatment integrity procedures of the included studies into account, while the validity of treatment integrity measurement likely has consequences for the interpretation of findings.

1.2. Measurements of treatment integrity

Measuring treatment implementation is needed to determine whether an intervention failed due to the failure of the intervention or its components, or due to the insufficient or inadequate application of the intervention (Schoenwald et al., 2011). Treatment integrity encompasses two aspects: 1) therapist adherence and 2) therapist competence (Perepletchikova, Treat, & Kazdin, 2007; see for a thorough discussion, Goense, Boendermaker, & van Yperen, submitted for publication, Goense, Boendermaker, van Yperen, Stams, & van Laar, 2014). Therapist adherence can be described as the degree to which the therapist delivers the prescribed components of a specific intervention (i.e., the delivery of an intervention is consistent with the intervention manual). Therapist competence refers to the level of the therapist's technical skills and judgment (timing and appropriateness) in delivering the components of the intervention (Barber, Sharpless, Klostermann, & McCarthy, 2007; Barber, Triffleman, & Marmar, 2007; Barber et al., 2006; Perepletchikova et al., 2007). As for therapist competence, McLeod et al. (2013) divided competence into a) technical competence, pertaining to specific components of the intervention, such as the delivery of behavioral cognitive elements in interventions for youth with aggression problems and b) common competence, pertaining to common (non-specific) elements of treatment (e.g., alliance and creating positive expectancies).

Therapists might also be experienced in delivering particular treatment methods acquired in previous therapeutic work that are not part of the specific intervention under study (McLeod et al., 2013). The degree to which the therapists deliver these other treatment methods and consequently deviate from the planned intervention is referred to as treatment differentiation (Kazdin, 1994). Some researchers have suggested that measuring treatment differentiation is not necessary, because the assessment of treatment adherence is considered to preserve intervention purity (e.g., Perepletchikova et al., 2007; Waltz, Addis, Koerner, & Jacobson, 1993). However, McLeod et al. (2013) argued that without measuring treatment differentiation, examining additional treatment methods that may decrease or increase treatment effects is not possible.

The meta-analyses from Lipsey (2009) and Tennyson (2009) on the effects of interventions for juveniles with antisocial behavior examined if treatment integrity increased treatment efficacy. Lipsey (2009) considered level of involvement of the researcher in treatment implementation as a proxy for the extent to which attention was given to implementing the intervention as intended. Tennyson (2009) examined whether a specific treatment was manualized, if training was provided to practitioners, therapists received supervision, and/or were engaged in adherence checks. Tennyson (2009) grouped these four measures together as a novel means of assessing treatment integrity. Considering the construct of treatment integrity, it is highly questionable whether the operationalization of treatment integrity used by Tennyson (2009) and Lipsey (2009) was valid and comprehensive enough to assess the delivery of the intervention as intended in the studies that were included. These meta-analyses (Lipsey, 2009; Tennyson, 2009) did not actually measure delivery of the intervention in terms of adherence and/or competence, and therefore the assessment of treatment integrity was compromised because of construct underrepresentation.

It can be argued that meta-analyses on this topic have not operationalized treatment integrity in such a way that delivery as intended can be determined in the primary studies that were included. Therefore, a new meta-analytic study that focuses on studies that have incorporated an adequate (sufficiently comprehensive) operationalization of treatment integrity procedures, is needed. With the upcoming focus on treatment integrity, and the growing resources to measure this construct, the demands on the measurement and reporting of treatment integrity in clinical trials are increasing (Fixsen & Ogden, 2014). This enables to conduct a meta-analytic study that takes an adequate (sufficiently comprehensive) operationalization of treatment integrity procedures in the primary studies into account.

1.3. The present meta-analysis

The aim of this study is to determine the impact of treatment integrity on client outcomes of evidence-based interventions for juveniles with antisocial behavior. This study differs from previous meta-analyses of Lipsey (2009) and Tennyson (2009) in how treatment integrity procedures are operationalized. In the present meta-analysis, a more valid and comprehensive operationalization of treatment integrity procedures has been used as a selection criterion for the primary studies that were to be included. This operationalization enables an assessment of the degree to which interventions are delivered as intended in the primary studies. In the present meta-analysis we examined whether treatment integrity is a moderator of the reduction of client antisocial behavior after an intervention. In addition to treatment integrity, other study characteristics possibly moderate the reduction of client antisocial behavior after an intervention, including intervention (e.g., intervention type, intervention duration, intervention modality) and methodological characteristics (e.g., study design and follow up time). We subsequently examined these characteristics as moderators. Finally, we examined the unique contribution of several moderating variables in a multivariate (multiple moderator) model.

2. Methods

2.1. Inclusion criteria

To be included in the current meta-analysis, studies had to evaluate the effects of an evidence-based intervention targeting juveniles with antisocial behavior. We included studies on the basis of four criteria. First, studies had to examine the effectiveness of evidence-based

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