A universal behavioral screener linked to personalized classroom interventions: Psychometric characteristics in a large sample of German schoolchildren

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ABSTRACT

The current study represents the first psychometric evaluation of an American English into German translation of a school-based universal screening measure designed to assess academic and disruptive behavior problems. This initial study examines the factor structure and diagnostic accuracy of the newly translated measure in a large sample of 1009 German schoolchildren attending grades 1–6 in Western Germany. Confirmatory factor analysis supported a two-factor model for both male- and female- students. Configural invariance was supported between male- and female-samples. However scalar invariance was not supported, with higher thresholds for ratings of female students. Results of receiver operating characteristic (ROC) curve analyses were indicative of good to excellent diagnostic accuracy with areas under the curve ranging from 0.89 to 0.93. Optimal cut-off scores were 10, 5, and 13 for the Academic Productivity/ Disorganization, Oppositional/Disruptive, and the Total Problems Composite scores of the Integrated System Teacher Rating Form respectively. This initial study of the newly translated measure supports further investigations into its utility for universal screening in German speaking schools.

Policy changes in the United States (US) have brought into focus the role US schools should–and do–play in supporting student mental health (Adelman & Taylor, 2012). Schools should address student psychosocial and mental health to enable academic success because schools afford access to such services (Taylor & Adelman, 2013). Although each year approximately 20% of school-aged children demonstrate some kind of mental health disorder (National Research Council and Institute of Medicine, 2009), the provision of mental health services in school is far outweighed by the need for them (Hoagwood, 2005; Jensen et al., 2011). Over the past 15 years, there has been a dramatic increase in the number of well-controlled studies investigating the efficacy of treatments for a wide array of child emotional and behavior problems (Hoagwood et al., 2012); yet, the traditional approach to delivering such interventions is inefficient and delays the provision of services (Gresham, 2008). Increasingly, schools in the US have begun to establish multi-tiered systems of support (MTSS) using a problem-solving framework wherein every student is exposed to primary prevention efforts, and universal screenings are conducted to identify each student's level of risk and to match him or her to an

intervention of appropriate intensity (Gresham, Hunter, Corwin, & Fischer, 2013). Over the past decade, the number of tools designed for school-based universal screening of emotional and behavior problems has expanded markedly in the US (e.g., Kamphaus & Reynolds, 2007; Kilgus, Eklund, von der Embse, Taylor, & Sims, 2016; Miller et al., 2015; Volpe & Fabiano, 2013) and there is a burgeoning interest in understanding how to support and maintain school-wide screening efforts (e.g., Cook et al., 2015; Lane, Menzies, Oakes, & Kalberg, 2012).

As in the US, in Germany there is a significant service delivery gap with just under half of affected students being provided treatment (Ravens-Sieberer et al., 2008). Although there is increasing interest in MTSS in Europe (e.g., Grosche & Volpe, 2013), the absence of viable assessment tools to identify at-risk students represents a clear barrier to adopting such tiered models of support. In this manuscript we report the translation of an American English language screening instrument into German and the creation of an abbreviated version for use in German schools. In addition, we report an examination of the factor structure, measurement invariance and diagnostic accuracy of this novel screening measure.

Given the focus of the current study on the translation of an American screening tool for use in Germany, it seems appropriate to make some brief comparisons between educational systems. Both the US and Germany are federal republics. Germany is comprised of 16 federal states or *Länder*. As in the US, primary responsibility of the education system lies within each *Land* (singular of Länder). Although there are some differences across Länder, formal schooling in Germany typically begins in first grade at the age of 6.

1. Three-tiered German education system

From first- to fourth-grade most children in Germany attend *Grundschule* (primary school). Whereas American schoolchildren typically attend school for about 6.5 to 7 h per day, in Germany the school day is several hours shorter. German children in primary school typically start the school day between 07:30 and 08:15 and return home around 1:00 PM to eat lunch and complete several hours of homework. In German and US primary schools, typically developing students of varying abilities attend the same schools. However, the system of secondary schools in Germany is more divided than the system in the US. Although tracking students by overall achievement level (low, medium, high) is common in American high schools, such grouping most typically occurs under one roof. In the German system, however, there are five separate types of secondary schools. In the overwhelming majority of Länder, the particular type of school attended is decided based on grades and teacher recommendations at the end of fourth-grade (age 10; National Institute on Student Achievement, Curriculum, and Assessment, 1999).

There are three traditional forms of secondary schools in Germany that differ in regard to their academic rigor: *Gymnasien*, *Realschulen*, and *Hauptschulen*. The most academically rigorous is the Gymnasium (singular of Gymnasien). Gymnasien, covering grades 5 through 12–13 in most Länder, are the most challenging and academically focused. Gymnasium students take the *Abitur*, which is an exit exam that qualifies them for university study. However, there are several other pathways into the university system. Realschule, covering grades 5 through 10 in most Länder, is less demanding than Gymnasium. It has its own exit exam called the *Mittlere Reife* (Middle Maturity), which qualifies students to obtain a degree comparable to an American high school diploma. Once students graduate from Realschule, they can then move on to a vocational school, complete an apprenticeship, or advance to complete the 2–3 final years of Gymnasium and take the Abitur. Students with average or below average grades typically attend Hauptschule, covering grades 5 through 9 or 10 in most Länder. Hauptschulen serve high proportions of students from low-income families and students with learning disabilities. Graduates of Hauptschulen either move on to vocational school or enter the workforce, though a Hauptschule degree (Hauptschulabschluss) is less desirable to potential employers than degrees from the more rigorous types of secondary schools.

In addition to the traditional three-tiered system, there are also Gesamtschulen (Common Schools). Gesamtschulen serve students in grades 5–9 or 10, and grades 11–13 for high achieving students. They appear to be growing in popularity across Germany, though are not present in every Länder. These schools do not have the rigorous admission requirements of the Gymnasium and Realschule, and cater to a far wider range of students. Students can earn their Hauptschulabschluss after 9 years or their Realschule degree after 10 years, and high achieving students can earn the Abitur after grade 12 or 13.

In sum, the overwhelming majority of students in Germany are streamed into different types of secondary schools based on their achievement in the first four years of formal schooling, and these placement decisions have important implications for the amount of schooling they receive and the vocational opportunities afforded to them. Early tracking of students calls into question the influence that early classroom behavior problems may have on these critical placement decisions.

The relationship between early problem behavior and academic achievement is clear (e.g., DuPaul, Morgan, Farkas, Hillemeier, & Maczuga, 2016; Morgan, Farkas, & Wu, 2011; Volpe et al., 2006). Approximately 22% of German schoolchildren demonstrate significant behavior problems that have a negative impact on their learning and social interactions with peers and adults (Hölling, Schlack, Petermann, Ravens-Sieberer, & Mauz, 2014), and indeed may have a costly impact on their educational trajectories. Neuenschwander and Malti (2009) examined the influence of student classroom problem behavior on the transition to secondary school. Results suggested that student classroom behavior problems had a negative impact on educational placement, with fewer students with such problems attending Gymnasium. This effect remained significant even after controlling for gender, socio-economic status, and academic performance. Likewise, Kaiser, Retelsdorf, Südkamp, and Möller (2013) found primary school teachers' recommendations for secondary school placement to be heavily influenced by students' classroom behavior. In yet another study, Jantzer et al. (2012) examined the correlation between externalizing problem behavior in primary school and teachers' recommendation for secondary school placement. High negative correlations were found between the degree of student externalizing behavior and the recommended secondary school level. These authors also found that teacher-rated inattentiveness and aggressive behavior was associated with recommended placement in special educational schools (Jantzer et al., 2012).