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ORIGINAL CONTRIBUTION

Towards a comprehensive assessment of school absenteeism: development and initial validation of the inventory of school attendance problems

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Abstract
School attendance problems (SAPs) become manifest in many ways and are associated with multiple risk factors, calling for comprehensive assessment methods. This study documents the development of the inventory of school attendance problems (ISAP), which assesses both the quality and the function of a broad spectrum of SAPs by first asking students with SAPs to rate the intensity of symptoms prior to or at school and then to rate their impact on school attendance. An empirically generated pool of 124 items was analyzed (explorative factor analysis) using a clinical sample of $N = 245$ students with SAPs (53.5% male; M_{age}: 14.4). The Youth Self Report (YSR), a German version of the School Refusal Assessment Scale (SRAS), and the extent of school absenteeism were used to determine construct validity. The resulting 48 items loaded on 13 factors. The 13 scales assess internalizing and externalizing symptoms (Depression, Social Anxiety, Performance Anxiety, Agoraphobia/Panic, Separation Anxiety, Somatic Complaints, Aggression, School Aversion/Attractive Alternatives) as well as emotional distress due to problems in the school or family context (Problems with Teachers, Dislike of the Specific School, Problems with Peers, Problems Within the Family, Problems with Parents). All scales showed good internal consistencies. Their correlations with the YSR and the SRAS indicated convergent and discriminant validity. Positive associations between most of the scales and the extent of school absenteeism were obtained. Although preliminary, these results support the usefulness of the ISAP for a comprehensive assessment of SAPs in clinical settings.

Keywords School absenteeism · School refusal · Truancy · Assessment

Introduction

Problems related to school attendance are common—either as part of the symptomatology of childhood and adolescent psychiatric disorders or as distinct psychosocial problems. Prevalence rates for "problematic" school absenteeism are estimated to be as high as 5–10% [1–4]. Up to 30% of the affected students suffer from mental disorders [2]. Irregular school attendance has a negative impact on psychosocial functioning and development across the lifespan [3–5]. The intervention concepts that have been developed to prevent or resolve school absenteeism stress the need for a comprehensive assessment of the relevant factors involved in the emergence and maintenance of school absenteeism [6]. Building upon the School Refusal Assessment Scale (SRAS) [7–9], the most prominent instrument in this field, we describe the development of a new questionnaire, which aims to measure both the quality and the function of a broad spectrum of factors associated with school attendance problems (SAPs).

Classification and risk factors of SAPs

Various labels have been used to describe different presentations of SAPs. Mostly, "truancy" (school absences due to a lack of motivation, often accompanied by externalizing symptoms) has been differentiated from "school refusal" (school absences because of internalizing symptoms such as anxiety, psychosomatic complaints, or depression) [4]. However, these two subtypes have been operationalized inconsistently and

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were found to frequently overlap ("mixed group" with signs of both truancy and school refusal) [2, 10]. Some researchers have advocated the use of the term "problematic school absenteeism" (student is absent to a "problematic" degree, e.g., 25% of school time in 2 weeks or 10 days in 15 weeks, for illegitimate reasons other than parental withdrawal from school) [3] or the overarching construct "school refusal behavior", which incorporates the above-mentioned subtypes of school absenteeism and additionally includes students who visit school regularly but show intense difficulties doing so [3, 11, 12]. Others prefer to maintain the distinction between school refusal and truancy [13]. For the purposes of this study, SAPs will be used as a descriptive term for problems related to school attendance (excluding legitimate absences and parental withdrawal), reaching from significant motivational problems or emotional distress of any kind associated with going to or staying in school to complete school absenteeism. This includes students with low or even no school absences who experience severe emotional or motivational difficulties resulting from having to go to or having to stay in school [14].

Most of the risk factors associated with SAPs can be subsumed into adverse family (e.g., parental psychopathology, divorce, poverty, violence, ineffective parental control, overprotectiveness) and/or school environment (e.g., bullying, poor relations/conflicts with peers or teachers, bad school climate, ineffective control of school attendance). Mental disorders like social phobia, separation anxiety disorder, depression, or conduct disorder are associated with SAPs [2–5, 11, 15, 16]. In a study comparing the distribution of risk factors and symptoms between three different subtypes of school absentees, Egger et al. [2] found higher rates of poverty and lax parental supervision in truants, while school refusers were characterized by comparably higher rates of depression, separation anxiety, parental psychopathology, and suffering from social isolation and bullying in the peer context. Conduct disorders were mostly observed in truants and social phobia in school refusers. The highest rates of adverse psychosocial factors and mental disorders were found in "mixed" absentees (signs of both school refusal and truancy), including conflicts with peers because of aggression, parental unemployment, and fears related to the specific school. In light of the high overall number of external stressors, Egger et al. [2] concluded that school absentees often seem to have good reasons to worry about negative events in school or what will happen at home while they are in school.

Assessment of SAPs

In most of the studies on SAPs mentioned above, symptoms and risk factors have been assessed by clinical interviews or questionnaires measuring general child and adolescent psychopathology [3, 5, 11]. Only a few specific instruments for youths with SAPs have been developed. The Self-Efficacy Questionnaire for School Situations (SEQ-SS) [17] measures school refusing students' self-efficacy expectations for problematic situations commonly encountered in school. The School Avoidance Scale [18] contains 11 items measuring negative affect and attitudes towards school and school attendance. Havig et al. [19] developed a questionnaire assessing four reasons for school absences (somatic complaints, health complaints, school refusal and truancy). The most widely used instrument is the School Refusal Assessment Scale (SRAS) [7] in its revised form (SRAS-R) [8, 9]. Many studies based on different samples in various countries [1] support its reliability, validity, and clinical usefulness for distinguishing four functions of school refusal behavior: avoidance of stimuli that provoke negative affectivity, escape from aversive social and/or evaluative situations, pursuit of attention, and pursuit of tangible reinforcement outside school. The focus on these functions enabled researchers and clinicians to classify symptoms associated with school absenteeism according to their relevance for cognitive-behavioral interventions (modification of reinforcing conditions) [20].

Despite its scientific and practical value, some limitations of the SRAS-R need to be addressed. With regard to its psychometric properties, questions about the factor structure of the SRAS-R remain [14]. In some studies, some of the eight items added during the revision [8] had to be deleted to achieve the assumed four-factor structure [21, 22]. Some findings suggest that three factors might be more suitable because of the overlap of the two scales measuring negative reinforcement [8, 23, 24]. Other issues concern the content validity of the SRAS. Some items have been criticized as being too complex or ambiguous with regard to their content [14]. Furthermore, although during the revision many items have been changed by adding phrases like "How often do you stay away from school because…" [8], others still measure affective states without addressing the questionnaires' core construct of positive or negative reinforcement (e.g., "How much do you have bad feelings about school (e.g., scared, nervous, sad) compared to other kids your age?") [8]. Conversely, in SRAS-R-items with a causal link to school absence, the presence of a symptom is confounded with its functional impact on school absenteeism. For example, a student with extensive fears to speak to others might negate the SRAS-R-item "How often do you stay away from school because it is hard to speak with the other kids at school?" [8] because in his view these problems, albeit present, are not the reason for his school refusal. Moreover, the reference to school absenteeism, which is present in many items of the SRAS, suggests that its scope is limited to students who already are absent from school to a certain degree. The problems of students with SAPs who experience severe distress

in relation to school attendance (e.g., somatic complaints prior to school) but still manage to visit school on most days are not captured by these items.

Considering the heterogeneous nature of SAPs sketched above, the scope of the SRAS-R seems rather narrow. Some SRAS-R items incorporate adjectives beyond anxiety such as "scared, nervous, sad" [8], but a more explicit or separate assessment of depressive symptoms or somatic complaints as important antecedents of school absenteeism [13] is not possible. Although the importance of factors such as bullying, problematic relations with teachers, or problems within the family has been recognized [3, 11], emotional distress because of psychosocial problems typically associated with SAPs has not been taken into account. These different emotional states may indeed share a common functional relation with school absenteeism (avoidance of negative affect). Without knowledge of their quality or "form" [25], however, important information about the specific symptomatology of the individual student is missing.

Overall, despite its merits, the SRAS-R allows neither a precise nor a comprehensive assessment of SAPs. Information on both the quality of SAPs and their functions is crucial. As SAPs are often embedded in "mixed" symptoms and multiple psychosocial problems, measures with a broader range are needed to further disentangle this complex phenomenon. Finally, these instruments should also address students with SAPs who still visit school on most days although they experience severe emotional problems associated with school attendance.

Aims of the study

The primary aim for the development of the questionnaire presented here was to establish an instrument assessing common problems related to school attendance. From a self-regulation perspective [26], students with SAPs must cope with negative affect and cognitions either to set school attendance as their behavioral goal in the first place or, once this goal has been set, to protect it against competing action tendencies. These adverse emotions, cognitions, and action tendencies before or in school are the proximal determinants of the behavioral manifestations of SAPs (e.g., pleas to stay at home, arrange with others to skip lessons) and school absenteeism as their outcome. They include, but are not limited to, anxious-depressed affect and cognitions, somatic complaints, and reactive emotional distress due to stressors in the school or family context as well as boredom, school aversion and negative attitudes towards school, aggressive-oppositional tendencies, and the desire for more attractive activities outside school. Instead of subsuming different forms of negative affect under certain functions (SRAS), their quality should be assessed separately to enable a more precise and differentiated functional behavior analysis.

Another aim was to establish a both integrative and explicit measurement of the functional relevance of the above-mentioned context-specific affects and cognitions. Both aspects are crucial for the development and maintenance of SAPs. Symptoms of distress prior to or at school can be regarded as the starting point of a continuum. As adverse emotions gain more functional impact on school attendance (i.e., making it harder for the student to attend school), stronger behavioral signs of SAPs up to complete school absenteeism emerge [11]. To gain insight into this process, students should be asked explicitly if and how strong a given symptom is related to their school (non) attendance [19]. Separate scoring options for symptom and function would also resolve the confounded measurement of affective states and their impact on school attendance present in many items of the SRAS-R, so that the problems of students with SAPs without school absenteeism (e.g., mostly regular school attendance despite severe difficulties in the morning, see above) can be assessed, too.

Taken together, the construction of the "Inventory of School Attendance Problems (ISAP)" aimed at enhancing the diagnostic investigation of students with SAPs by delivering a context-specific and comprehensive screening tool for the presence and function of symptoms associated with SAPs.

Method

Participants

A minimum sample size requirement of $N > 200$ was derived by a priori determination of the number of variables with main loadings per factor, the magnitude of their loadings, and the resulting communalities [27]. Criteria for inclusion were SAPs as defined above, age ≥ 8, absence of severe mental illness such as psychotic symptoms, sufficient language and reading skills, IQ > 69, and no missing answers on any of the items of the pool. The final sample for the analysis of the item pool consisted of 245 patients of the Department of Child and Adolescent Psychiatry, Psychosomatics, and Psychotherapy, University Hospital Essen, University of Duisburg-Essen, Germany. $n = 184$ patients were recruited from a specialized outpatient unit for children and adolescents with SAPs, $n = 61$ were drawn from inpatient and daycare units of the hospital. No significant differences between inpatients and outpatients were observed with regard to age, gender, diagnoses, and severity of school absenteeism. 53.5% were male; the mean age was 14.4 years (SD 2.13, range 8–19). 17.6% visited a "Gymnasium" (preparatory high school), 23.7% a "Realschule" (secondary school), 29.8% a

"Gesamtschule" (comprehensive secondary school), 6.9% a "Hauptschule" (secondary school), 8.2% a vocational school, and 4.1% an elementary school. Schools for children with special needs were attended by 6.5% (other school types: 7.3%). The median school grade was 8 (range 1–12). 13.1% reported school absences between 0 and 4 school days during the last 12 school weeks, 12.7% up to 12, 24.5% up to 36, and 11% up to 48 school days in this period. 19.6% reported that they missed more than 48 days and 17.6% stated that they did not attend school at all during the last 12 school weeks (1.5% missing values). Most common ICD-10 main diagnoses were Depression (F32.x; 25.3%), Social Phobia (F40.1; 11.4%), Mixed Disorders of Conduct and Emotion (F92.x; 11%), Conduct Disorder (F91.x; 4.5%), Separation Anxiety Disorder (F93.0; 4.1%), Adjustment Disorder (F43.x; 8.6%), Attention-Deficit Hyperactivity Disorder (F90.x; 5.7%), Other Childhood Emotional Disorders (F93.8; 9.8%), Somatoform Disorder (F45.x; 5.3%), Specific Phobia (F40.2; 3.3%), Mixed Anxiety and Depression (F42.x; 2.9%), Generalized Anxiety Disorder (F41.1; 1.2%), and Agoraphobia (F40.0; 0.8%; other disorders: 2.8%; no disorder: 4.1%).

Measures

ISAP: design and item generation

Items were constructed based on answers of patients of an outpatient unit for SAPs (see above) during clinical exploration by the first and second author. First, emotions and cognitions before and in school were explored (functional analysis: SORKC, e.g.: "How do you feel before/in school?"). Then, patients were asked if the reported symptom has functional relevance for their SAPs (e.g., "Does this make it hard for you to go to/stay in school?"; "Is this a reason why you don't go to school?"). During this iterative process, new symptoms and reasons were recorded over a period of 2 years, including explorations of approximately 200 patients. After that, the obtained answers were categorized according to their main themes. Twenty-five aspects of SAPs were identified by content analysis (see Table 1). For each category, items addressing affective states, action tendencies, or cognitions before or in school were generated and checked for content validity by other members (physicians, psychologists) of the team of the outpatient unit and of the team of an inpatient unit for patients with SAPs. Many items were formulated in a rather general way to capture a broad part of the spectrum of each assumed aspect of SAPs. This procedure resulted in a pool of 124 items (see Table 1 for examples). During a pilot-testing phase, feedback was gathered from patients about the comprehensibility and the appropriateness of the items.

The aim of an integrated measurement of symptoms and function of SAPs outlined above was realized using a three row-design. In the left row of the questionnaire, under the heading "Prior to or at school/school time…", the 124 items were presented in the columns (e.g., "…I feel sad."). In the middle row, students rated how often an item describes their thoughts and feelings (heading: "Applies to me"). Then, in the right row, students rated how strongly this item is connected to their school (non)attendance (heading "That's why I miss school/attending school is hard for me"; response scale for both questions: never—sometimes—often—most of the time).

Other measures

A modified German version of the School Refusal Assessment Scale (ESV-R) was administered. For a detailed description see Knollmann et al. [24]. In sum, the assumed four-factor structure of the German version of the SRAS could not be confirmed, especially because the items of the negative reinforcement scales loaded on the same factor. Omission of three items with unclear factor loadings and problematic content validity led to a clear three-factor solution. After deletion of the item "Do you often do things to annoy or upset your family?" three items formed the scale Attention Seeking ($\alpha = 0.68$). All four items of the scale Tangible Reinforcement were retained ($\alpha = 0.64$). Two items of the scale Avoidance of Social and/or Evaluative Situations and the four items of the scale Avoidance of Negative Affect constituted the new scale Negative Reinforcement ($\alpha = 0.86$).

Patients also received the German version of the Youth Self Report (YSR) [28]. The eight scales of this well-established screening device measure both internalizing (Withdrawn, Somatic Complaints, Anxiety and Depression, Social Problems) and externalizing symptoms (Thought Problems, Attention Problems, Aggressive Behavior, Delinquent Behavior). Along with other descriptive variables (gender, age, class, school type), the extent of school absence was assessed by a question on the first page of the ISAP ("How much have you been absent in school in the past 12 school weeks, no matter why?"; answer options: not at all, up to 4 days, up to 12 days, up to 24 days, up to 48 days, more than 48 days, all days).

Procedure

Approval by the ethics committee of the University of Duisburg-Essen and written informed consent from patients and their parents was obtained prior to data collection. All outpatients and inpatients completed the item pool. Due to organizational constrains, the YSR was only completed by 95 and the ESV-R by 110 outpatients. The item pool was administered to inpatients and daycare patients during the

Table 1 Construction of the item pool

Category/aspect	Main theme	Example student statements	Item example	Items
Social anxiety	Afraid to speak/to embarrass oneself	"I'm afraid to speak to other students"	I worry that I might embarrass myself	5
Separation anxiety	Afraid of separation from/longing for parents	"I want to stay with my parents"	I miss my parents	5
Performance anxiety	Anxiety or worries about performance	"I'm worried that I might fail in school"	I am afraid of exams	5
School aversion	Perceiving school as uninteresting	"School is so boring"	I think that I am not interested in school	8
Alternative activities at home	Desire for activities at home instead of school	"I'd rather stay at home and play video games"	I want to do something at home that is more fun than school	4
Alternative activities outside	Desire for activities outside instead of school	"I want to hang out in the mall with my friends"	I want to do something outside rather than being in school	4
Opposition towards school attendance	Rejection of school attendance as a norm	"I think it's OK to play truant"	I think it is OK to skip school occasionally	5
Aggression	Aggressive mood	"I feel angry"	I get aggressive fast	4
Agoraphobia/Panic	Losing control; not being able to leave the class	"I'm afraid that I will throw up before I can leave the class"	I am afraid that I won't be able to leave the classroom when I feel bad	5
Somatic complaints	Feeling ill	"My stomach hurts"	I feel sick	5
Fears regarding reactions to school absences	Afraid of being confronted with past absences	"I'm afraid that they might ask me why I wasn't in school"	I am afraid of being asked about the reasons for my former absences or coming late to school	4
Weakness, tiredness	Tiredness, lack of energy	"I'm so weak and tired"	I feel tired or without energy	5
Depressed affect	Sadness	"I'm unhappy"	I am sad	4
Hopelessness with regard to school	School situation is perceived as desperate	"My school situation will never change for the better"	I have no hope anymore that my situation in school will get better	5
Low self-worth	Feeling insufficient	"I think that I'm ugly"	I don't like myself	5
Bullying	Afraid of being teased, threatened or hit	"I'm afraid that someone will pick on me"	I am afraid of being bullied by other students	7
Peer isolation	Feeling excluded	"I have no friends in school"	I feel excluded by my classmates	4
Conflicts with peers	Arguments/conflicts with other students	"I feel bad because I had an argument with my best friend"	I feel bad because I have conflicts with my classmates	3
Bad relationship with teachers	Perceived negative affect from teachers	"My teachers don't like me"	I think that one or more of my teachers are against me	6
Fears regarding teachers	Teachers being perceived as threatening	"I'm afraid that my teacher will make fun of me"	I am afraid of being scolded by teachers	4
Dislike of specific school	Negative perception of (aspects) of the school	"I'm on a very bad school"; "My school is so dirty"	I don't like my school	5
Concerns about the way to school	Negative affect related to the way to school	"I feel insecure on the way to school"	I am afraid that something terrible might happen on my way to school	5
Dislike of class	Disaffirmation of class	"I don't like my class"	I think that I am in a bad class	6
Bad relationship with parents	Perceived negative affect from parents	"My parents treat me unfairly"	I feel rejected by my parents	6
Problems within the family	Current/past problems or incidents in the family (other than Bad Relationship with Parents)	"I think about the conflicts between my parents"; "I'm sad because my grandma died"	I must think about problems or incidents in my family	5

first week after admission, while outpatients received the YSR, the ESV-R, and the item pool during their second appointment in the outpatient unit. During all assessments, an employee experienced in psychological testing assisted patients. Prior to administration of the item pool and the other questionnaires, patients were instructed (standardized written instructions and oral explanations) how to complete them. Special emphasis was put on the sequential structure

of the items and the difference between symptoms and their functions for SAPs.

Data analysis

Because of the sequential design of the questions, the two item response scales "presence of a symptom" and "functional relevance for SAPs" share a common item stem and the latter response scale is logically dependent from the first one. Therefore, local item independence cannot be assumed, and reliability is likely to be overestimated if both response scales were treated as separate items. Since both symptoms and their functions were conceptualized as highly intertwined aspects of SAPs and high scores on the function response scale are indicative of a higher relevance of the symptom for SAPs, testlets were formed for each item by aggregating the values of both response scales [29].

In a first step, the item pool was reduced by analyzing characteristics of the testlets. For each of the 25 aspects of school avoidance behavior outlined above (Table 1), the three items with the highest average functional impact on school attendance and with strong correlations with other testlets of the respective aspect were chosen as provisional scales. We selected three testlets per scale to assure that each aspect was equally weighted and fulfilled the prerequisites for forming an own factor in the subsequent factor analyses with regard to our criteria (see below).

The resulting 75 testlet-items were subjected to factor analysis after testing for sampling adequacy and sphericity. We decided to use an explorative principal component factor analysis with varimax rotation [30] because no a priori hypotheses about the number of factors and their interrelations existed. The number of factors to be retained was assessed by multiple criteria: The Kaiser Criterion (eigenvalues > 1), inspection of the scree-plot, Parallel Analysis [31], a minimum of explained variance of 75%, and interpretability of the factor structure [27, 32]. Since we aimed at constructing a comprehensive measure by differentiating as many separate aspects of SAPs as empirically reasonable, our priority was to avoid an under-extraction of factors and to explain as much variance as possible. The stepwise modification of the resulting factor solution and the selection of items were based on the inspection of the loading patterns and the literature on characteristics of school absenteeism and psychopathology in adolescence. When factor loadings indicated strong relations between testlets of different scales and these associations were supported by the literature, successive item reduction took place to explore if a common scale can be generated. Ambiguous loading patterns or factor structures were also modified by tentatively adding other items to the analysis. Testlets with main loadings < 0.40, with loadings of ≥ 0.40 on other factors than the main factor, or with a difference between the main loading and the next highest loading below 0.10 were omitted. Cross-loadings ≥ 0.32 were considered as significant. A minimum of 3 variables with loadings ≥ 0.70, of 4 variables with loadings ≥ 0.60, or of 5 variables with loadings ≥ 0.50 on each factor, communalities above 0.40, and a minimum of 75% explained variance were set as criteria for the quality of the factor structure [27].

The characteristics of the resulting items and scales (corrected item-scale correlation, Cronbach's α, mean, standard deviation, and intercorrelations of the scales) as well as the associations between the two item response scales (symptom and function) were analyzed using descriptive statistics, correlations and t tests for means. Construct validity was explored by inspecting the inter-correlations between the final scales, the scales of the YSR, the modified German version of the SRAS, and the extent of school absences.

Results

Factor analyses

Despite the small item number, the 25 provisional scales showed good internal consistencies ($0.73 \leq \alpha \leq 0.88$, 3 testlets/scale). The Kaiser–Meyer–Olkin measure of sampling adequacy (0.88) and Bartlett's test of sphericity ($\chi^2 = 15{,}086.39$, $p < 0.000$) indicated that the data were suitable for factor analysis.

The factor analysis conducted with the 75 items was first analyzed by extracting the number of factors following the results of the Parallel Analysis (9 factors, 62.9% explained variance) and the Scree Plot (7 factors, 57.6% explained variance), but both solutions, as well as the forced extraction of 8 and 10 factors were not interpretable. Next, we extracted the number of factors following the Kaiser Gutman Criterium. 17 factors had eigenvalues > 1. This factor solution was highly interpretable and informative with regard to the interrelations of the items and accounted for a sufficient amount of variance (76.7%). We decided to retain this solution for further analyses and to explore if the number of factors can be reduced.

The items of the following scales exclusively had main loadings on an own factor: Peer Isolation, Conflicts with Peers, Bullying (factor 1: Problems with Peers); Problems with Parents (factor 9), Performance Anxiety (factor 7), Separation Anxiety (factor 8), Problems Related to the Way to School (factor 10), Aggression (factor 12), and Problems Within the Family (factor 14). The items of the scales School Aversion, Oppositional Attitudes Towards School Attendance, and Alternative Activities at Home loaded on factor 2. The scale Alternative Activities Outside constituted an own factor (15), but two items also had main loadings on factor 2, suggesting that this factor subsumes truancy-related aspects

of SAPs [13]. The scales Lack of Energy and Tiredness and Depressed Affect loaded on the third factor. All items of the scales Hopelessness and Low Self-Worth showed main loadings on factor 4. However, the items measuring low self-worth had cross-loadings on factor 3 (Depressed Affect, Lack of Energy and Tiredness), indicating that this factor might represent depressive symptoms in association with SAPs [33]. One item of the scale Low Self-Worth also had a cross-loading on factor 17. This factor was formed by two items of the scale "Social Anxiety", which also loaded on factor 7 (Performance Anxiety) and factor 17, which was defined by all items of the scale Agoraphobia/Panic and the remaining item of the Social Anxiety Scale. Two items of the scale Somatic Complaints, which constituted factor 16, showed significant loadings on factor 3 (Depressed Affect, Lack of Energy and Tiredness). These loading patterns could be interpreted as reflecting the overlap between different forms of anxiety [34] as well as between depression, anxiety, and somatic complaints in adolescents [35]. Factor 5 displayed the items of the scales Dislike of Specific School and Dislike of Class, but the items of the latter scale also had loadings > 0.40 on the first factor (Problems with Peers). The items assessing problems and fears related to teachers formed factor 6, but high loadings on factor 7 (Performance Anxiety) of two of the fear-related items were observed. Factor 13 was constituted by the items measuring fear of reactions to school absences, with one item having a main cross-loading on factor 1 (Problems with Peers).

Based on these findings, we conducted a stepwise modification. This led to 48 items in the final solution, which loaded on 13 factors with eigenvalues ≥ 1, explaining 74.5% of the variance (see Table 2). Again, the scree plot (3 factors) and the parallel analysis (9 factors) for this final analysis (see Fig. 1) led to ambiguous loading patterns and explained variance below 75%. The following changes were made:

- Two items of the scale Tiredness and Lack of Energy were deleted, as well as one item of the scale Hopelessness, resulting in main loadings of the six remaining items on a common factor (Depression, factor 2).
- The number of items assessing problematic peer relations was reduced to four (Problems with Peers, factor 4).
- One item measuring agoraphobia/panic and one item measuring social anxiety were added, which led to clear factor loading patterns for Social Anxiety (factor 1), Agoraphobia/Panic (factor 12), and Somatic Complaints (factor 8).
- Since the modifications did not lead to clear loading patterns of the scale Self Worth (high loadings on the factors Depression and Social Anxiety), all its items were deleted.
- After two items from each of the four truancy-related scales School Aversion/Attractive Alternatives, Oppositional Attitudes Towards School Attendance, and Alternative Activities at Home/Outside were removed, the four remaining items showed main loadings on the same factor (School Aversion/Attractive Alternatives, factor 5).
- All items covering dissatisfaction with the class were omitted since reducing or adding items did not lead to clear factor loadings (main loadings on the factors Social Anxiety and Dislike of Specific School).
- After deletion of two items covering concerns about reactions of others to school nonattendance in the past, the remaining item loaded on factor 1 (Social Anxiety).
- Three items of the two scales assessing problems with teachers were deleted (Problems with Teachers, factor 13).

Since all three items of the separation anxiety scale focus on emotional distress because of separation from parents, the item "…I am worried that something terrible might happen to my parents" was added into the final analysis to include this aspect of separation anxiety and thereby to strengthen the content validity of this scale. It loaded on its respective factor (Separation Anxiety, factor 3). No changes were made regarding the scales Aggression (factor 6), Problematic Relations with Parents" (factor 7), Somatic Complaints (factor 8), Performance Anxiety (factor 9), Dislike of Specific School (factor 10) and Problems Within the Family (factor 11). Three items reached a critical cross-loading of 0.40, but since they did not exceed this limit and showed differences above 0.10 with regard to their respective main loadings, the items were maintained.

During the pilot testing phase, patients complained about the redundancy of the items measuring problems regarding the way to school. In light of the high internal consistency of this scale ($\alpha = 0.93$, 3 items), and since no substantial loadings on other factors were observed, we decided to include this aspect of school avoidance in the final version of the questionnaire by integrating it into a new descriptive item set assessing the "timeline" of SAPs ("How many problems do you have during school days: …getting up? …leaving the house? …walking or driving to school? …entering the school building? …staying in school until the end of the courses?").

Scale characteristics

While most of the resulting 3–4 item scales were very homogeneous and only consisted of one of the aspects identified during item generation, the scales Social Anxiety, Depression, School Aversion/Attractive Alternatives, and Problems with Peers contained items from two to four aspects. As can be seen in Table 3, all scales showed good internal consistencies and corrected item-scale correlations despite the low item number of most scales.

Table 2 Loadings for the final exploratory factor analysis (varimax rotation)

Item	Component													h^2
„Before or in school…	1	2	3	4	5	6	7	8	9	10	11	12	13	
…I am afraid to say something when other students are around (e.g., during the breaks)	**0.76**				0.31									0.79
…I am afraid to speak to other people or that others might speak to me	**0.74**								0.31					0.75
…I am afraid of having to say something in front of the entire class (e.g., giving presentations, being called to respond)	**0.73**											0.32		0.74
…I worry that I might embarrass myself	**0.70**													0.70
…I am afraid of being asked about the reasons for my former absences from or coming too late to school	**0.59**													0.53
…I am unhappy		**0.75**												0.77
…I am sad		**0.72**												0.74
…I feel down or depressed		**0.70**						0.32						0.72
…I have no hope anymore that my situation in school will improve		**0.60**												0.56
…I think that I will never be able to solve my school problems		**0.58**												0.63
…I feel tired or without energy		**0.51**						0.33						0.63
…I long for my parents and want to stay with them			**0.87**											0.80
…I miss my parents			**0.86**											0.81
…I am afraid of being in school for such a long time instead of being with my parents			**0.85**											0.82
…I worry that something terrible might happen to my parents			**0.59**											0.60
…I feel bad because I get into arguments with one or more of my classmates				**0.81**										0.76
…I feel excluded by my classmates				**0.75**										0.80
…I feel unhappy because I only have a few friends at school				**0.69**										0.68
…I am afraid of being teased or bullied by other students	**0.40**			**0.66**										0.64
…I want to do something at home that is more fun than school					**0.87**									0.80
…I want to do something outside rather than being in school					**0.74**									0.70
…I just don't feel like going to school or attending specific courses					**0.73**									0.69
…I think that it is OK if I skipped school once in a while					**0.68**		0.33							0.66
…I get aggressive easily						**0.84**								0.83
…I get irritable easily						**0.80**								0.78
…I am easily provocable						**0.80**								0.81
…I feel rejected by my parents							**0.83**							0.80
…I feel that my parents don't care about me							**0.81**							0.79
…I feel treated unfairly by my parents							**0.77**							0.76
…I have pain (e.g., stomachache, headache, …)								**0.78**						0.79

Table 2 (continued)

Item	Component													h^2
„Before or in school…	1	2	3	4	5	6	7	8	9	10	11	12	13	
…I feel sick		0.30						**0.75**						0.77
…I feel sick to my stomach, have to throw up, or have diarrhea								**0.74**				0.33		0.73
…I worry about my school grades									**0.83**					0.83
…I am afraid of exams									**0.79**					0.80
…I worry about doing bad in school									**0.76**					0.83
…I think that I would feel better at another school										**0.88**				0.82
…I think that I am in a bad school										**0.83**				0.83
…I don't like my school										**0.79**				0.75
…I must think about problems or incidents in my family											**0.86**			0.86
…I feel bad because of the problems in my family											**0.79**			0.80
…I am worried or sad because I can't handle the problems in my family							**0.40**				**0.74**			0.83
…I am afraid of vomiting or wetting my pants before I am able to leave the classroom												**0.76**		0.72
…I am afraid that I will not be able to leave the classroom in time before something embarrassing happens to me	**0.40**											**0.68**		0.74
…I am afraid of not being able to leave the classroom when I feel bad								0.34				**0.58**		0.65
…I am afraid that I will not be able to breathe or that I will faint in school												**0.57**		0.59
…I feel put under pressure by one or more teachers													**0.84**	0.81
…I don't feel well because of my problems with one or more teachers													**0.78**	0.78
…I think that one or more teachers are against me													**0.66**	0.66
Eigenvalue	12.0	4.1	3.5	2.5	2.3	1.9	1.7	1.6	1.5	1.2	1.1	1.0	1.0	
% variance	25.6	8.5	7.4	5.3	4.8	4.1	3.6	3.2	3.1	2.5	2.2	2.2	2.1	

h^2 = Communalities. Only loadings ≥ 0.32 are depicted. Loadings ≥ 0.40 are in bold. N = 245

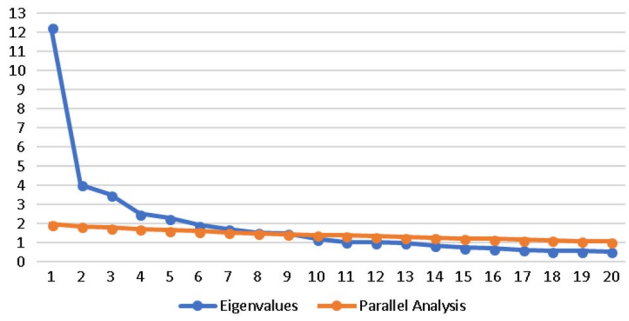

Fig. 1 Scree-plot of the final factor and parallel analysis

significant functional impact of Aggression vs. Somatic Complaints on school attendance (cutoff: scale value = 1.5, see Table 3).

The intercorrelations of the scales essentially mirrored the results of the factor analyses (see Table 4). Strong correlations were observed between the scales Depression and Somatic Complaints, Social Anxiety, and Performance Anxiety, but Depression was also substantially associated with Aggression and reactive emotional distress (Problems with Peers, Teachers, Parents). Separation Anxiety and Agoraphobia/Panic showed comparably weak correlations with the other scales but were moderately associated with each other

Table 3 Scale characteristics

Scale (number of items)	*M* (SD)	α	Range r_{it}	Range $r^{a}_{symptom/function}$	Range $M\|_{symptom-function}\|^{b}$	*N* (%) symptoms ≥ 1.5[c]	*N* (%) function ≥ 1.5[c]
Depression (6)	1.95 (1.23)	0.86	0.56–0.76	0.63–0.70	0.54–0.88	81 (33.1)	47 (19.2)
Social anxiety (5)	1.41 (1.5)	0.86	0.54–0.74	0.60–0.76	0.41–0.93	61 (24.9)	26 (10.6)
Performance anxiety (3)	1.57 (1.58)	0.87	0.72–0.78	0.50–0.66	0.76–1.05	78 (31.8)	38 (15.5)
Separation anxiety (4)	0.71 (1.13)	0.85	0.50–0.75	0.50–0.77	0.76–1.07	20 (8.2)	12 (4.9)
Agoraphobia/panic (4)	0.64 (1.08)	0.75	0.48–0.58	0.60–0.79	0.45–0.66	19 (7.8)	14 (5.7)
Somatic complaints (3)	2.02 1(0.71)	0.82	0.59–0.72	0.71–0.72	0.41–0.56	79 (32.2)	59 (24.2)
School aversion/attractive alternatives (4)	1.64 (1.4)	0.81	0.59–0.72	0.46–0.63	0.46–0.90	75 (30.6)	41 (16.7)
Aggression (3)	1.25 (1.43)	0.88	0.72–0.82	0.47–0.60	0.92–0.1.13	61 (24.9)	19 (7.8)
Problems with peers (4)	1.07 (1.43)	0.83	0.60–0.77	0.69–0.75	0.39–0.67	42 (17.1)	27 (11.1)
Problems with teachers (3)	0.89 (1.23)	0.81	0.57–0.71	0.59–0.76	0.45–0.77	32 (13.1)	23 (9.4)
Problems with parents (3)	0.64 (0.1.1)	0.85	0.69–0.74	0.51–0.61	0.89–0.93	20 (8.2)	9 (3.7)
Problems within the family (3)	0.87 (1.25)	0.88	0.76–0.77	0.51–0.66	0.66–0.78	29 (11.8)	14 (5.7)
Dislike of specific school (3)	1.4 (1.72)	0.85	0.67–0.76	0.53–0.61	0.80–0.89	65 (26.5)	36 (14.7)

r_{it}: corrected item-scale correlation. $N = 245$

[a]Only patients with values > 0 on the symptom scale of the respective item were taken into account (Range $n = 29$–192). All correlations are significant ($p < 0.05$)

[b]Absolute value of the difference between the mean of the symptom and the functional scale of each item, only patients with values > 0 on the symptom scale of the respective item were taken into account (range $n = 29$–192). All differences are significant ($p < 0.05$)

[c]*N*(%) of scale values (sum of item values/number of items) of symptom and function rating scale ≥ 1.5

For each item, the range of correlations and mean differences between the two item rating scales "presence of a symptom" and "functional impact on school attendance" were calculated for the subgroup of students with scores > 0 on the symptom rating scale of the respective item. All items showed high correlations between symptom and function and significant mean differences; however, the strength of the associations differed between the scales. The items of the scale Aggression, for example, had lower correlations and larger mean differences between symptom and function than the items of the scale Somatic Complaints. These differences are also reflected by the proportions of students who reported a

as well as with Somatic Complaints. The moderate–strong correlations between Social Anxiety, Performance Anxiety, and Agoraphobia/Panic underline both their shared and their distinctive features as parts of the anxiety spectrum. Of the anxiety-related scales, only Performance Anxiety had a significant correlation with School Aversion/Attractive Alternatives. This scale was mainly associated with the scales Aggression and Problems with Parents and Teachers, suggesting interrelations between interactional problems with adults and oppositional and aggressive behavior.

The moderate to high correlation between Problems Within the Family and Problems with Parents as well as their quite similar correlation pattern with most of the other scales

Table 4 Scale intercorrelations

Scales	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Depression												
(2) Social phobia	0.56**											
(3) Agoraphobia/panic	0.39**	0.51**										
(4) Separation anxiety	0.13*	0.19**	0.38**									
(5) Performance anxiety	0.57**	0.50**	0.31**	0.10								
(6) Somatic complaints	0.46**	0.42**	0.49**	0.24**	0.36**							
(7) School aversion/attractive alternatives	0.28**	0.11	0.07	0.11	0.18**	−0.04						
(8) Aggression	0.44**	0.30**	0.21**	0.22**	0.36**	0.12	0.39**					
(9) Problems within the family	0.39**	0.25**	0.22**	0.35**	0.21**	0.16*	0.26**	0.34**				
(10) Problems with parents	0.45**	0.31**	0.25**	0.16*	0.27**	0.19**	0.32**	0.34**	0.53**			
(11) Dislike of specific school	0.25**	0.22**	0.05	0.10	0.21**	0.09	0.30**	0.26**	0.13*	0.15*		
(12) Problems with teachers	0.42**	0.37**	0.25**	0.13*	0.44**	0.31**	0.28**	0.34**	0.26**	0.29**	0.38**	
(13) Problems with peers	0.45**	0.57**	0.32**	0.15*	0.31**	0.31**	0.03	0.29**	0.27**	0.25**	0.32**	0.35**

$N = 245$

**$p < 0.001$; *$p < 0.05$

stresses their shared origin. Their differences are indicated by the strengths of their associations with Separation Anxiety: to a certain degree, problems within the family seem to go along with increased worries about parents and the desire to stay with them, while conflictual relations to parents are only weakly connected to signs of separation anxiety.

The scale Problems with Peers was associated with a broad range of signs of emotional distress (Depression, Somatic Complaints). The moderate to high correlation of this scale with Social Anxiety could imply social anxiety because of exclusion and bullying, or vice versa [36]. Problems with Peers were also significantly related to the scales Problems with Teachers and Dislike of Specific School as two other features of adverse school context. The latter scale showed, with exception to its correlation with Problems with Teachers, comparably weak relations with the other scales, while the scale Problems with Teachers was moderately associated with Performance Anxiety, Depression, and Social Anxiety.

Construct validity

The correlations between the scales of the ISAP and the YSR, ESV-K, and the extent of school absenteeism are depicted in Table 5. With regard to the YSR, the scales Depression, Social Anxiety, and Performance Anxiety were highly correlated with the YSR-scale Anxious-Depressed. Agoraphobia/Panic and Separation Anxiety were also associated with this scale, but to a lesser degree. Remarkably, Separation Anxiety had its highest correlation with the YSR scale aggression, which might be indicative of the disruptive behavior often observed in children with separation anxiety [13]. High correlations were obtained between the ISAP scales Aggression, Problems with Peers, and Somatic Complaints and their respective YSR counterparts (Aggression, Somatic Complaints, Social Problems). School Aversion/Attractive Alternatives and Aggression showed substantial correlations with the YSR scale Delinquency. The scale Problems with Teachers and the two ISAP scales measuring family-related distress were moderately associated with both externalizing and internalizing scales of the YSR, which suggests interrelations between disruptive behavior, interactional problems with adults, and anxious–depressive symptoms in students with SAPs.

The consistently low correlations of the scale Dislike of Specific School with all YSR scales indicate that this scale has only weak relations to general psychiatric symptoms in adolescence. Instead, this aspect of SAPs had its highest correlations with the ESV-R scales Negative Reinforcement and Tangible Rewards. The latter scale also showed a substantial correlation with the ISAP scale School Aversion/Attractive Alternatives. The Pursuit of Attention scale of the ESV-R and the ISAP scale Separation Anxiety were

Table 5 Correlations of the Scales with SRAS, YSR, and Extent of School Absenteeism

ISAP scales	YSR social withdrawal	YSR Somatic Complaints	YSR Anxious Depressed	YSR Social Problems	YSR Thought Problems	YSR Attention Problems	YSR Delinquency	YSR Aggression	YSR Internalizing	YSR Externalizing	YSR total	ESV-R Negative Reinforcement	ESV-R Attention Seeking	ESV-R Tangible Rewards	Extent of school absenteeism
Depression	0.66**	0.54**	0.79**	0.49**	0.52**	0.69**	0.61**	0.54**	0.74**	0.59**	0.75**	0.57**	0.16	0.32**	0.33**
Social anxiety	0.61**	0.50**	0.75**	0.60**	0.52**	0.55**	0.40**	0.41**	0.69**	0.39**	0.67**	0.74**	0.30**	0.17	0.26**
Agoraphobia/panic	0.32**	0.38**	0.51**	0.19	0.45**	0.33**	0.27**	0.24*	0.45**	0.25*	0.44**	0.47**	0.38**	0.10	0.12
Separation anxiety	0.33**	0.18	0.31**	0.30**	0.27*	0.34**	0.24*	0.38**	0.27**	0.36**	0.35**	0.17	0.66**	0.09	0.01
Performance anxiety	0.34**	0.41**	0.61**	0.39**	0.38**	0.47**	0.41**	0.48**	0.52**	0.44**	0.55**	0.44**	0.13	0.25**	0.16*
Somatic complaints	0.56**	0.75**	0.54**	0.46**	0.37**	0.42**	0.14	0.26*	0.66**	0.24*	0.52**	0.41**	0.40**	-0.01	0.17**
School aversion/attr. Alternat.	0.02	0.00	0.10	0.04	0.10	0.13	0.44**	0.29**	0.08	0.39**	0.22*	0.07	0.08	0.49**	0.14*
Aggression	0.25*	0.33**	0.50**	0.18	0.44**	0.49**	0.53**	0.71**	0.42**	0.64**	0.53**	0.30**	0.13	0.37**	0.12
Problems within the family	0.27**	0.17	0.44**	0.20	0.27*	0.36**	0.43**	0.31**	0.33**	0.38**	0.39**	0.25**	0.23*	0.34**	0.14*
Problems with Parents	0.38**	0.26*	0.55**	0.25*	0.38**	0.38**	0.47**	0.45**	0.46**	0.44**	0.51**	0.41**	0.19*	0.30**	0.16*
Dislike of specific school	0.20	0.07	0.20	0.26*	0.22*	0.14	0.23*	0.18	0.17	0.22*	0.21*	0.32**	0.08	0.31**	0.22**
Problems with teachers	0.26*	0.24*	0.40**	0.28**	0.37**	0.34**	0.34**	0.42**	0.35**	0.40**	0.36**	0.39**	0.13	0.37**	0.12
Problems with peers	0.40**	0.39**	0.53**	0.60**	0.45**	0.33**	0.31**	0.34**	0.48**	0.32**	0.50**	0.58**	0.31**	0.20*	0.22**

YSR Youth Self Report, German version [28]. *ESV-R* modified German version of the School Refusal Assessment Scale [24]. $n_{YSR}=95$; $n_{ESV\text{-}R}=110$; $n_{Extent\ of\ school\ absenteeism}=243$

**$p<0.001$; *$p<0.05$

highly correlated. The other anxiety-related ISAP scales had medium (Agoraphobia/Panic, Performance Anxiety) to strong (Social Anxiety) correlations with Negative Reinforcement (ESV-R), which was also associated with the ISAP scales Depression, Somatic Complaints, and Problems with Peers.

For the scales Agoraphobia/Panic, Separation Anxiety, Aggression, and Problems with Teachers no significant correlations with the extent of school absenteeism in the last 12 weeks were obtained. Apart from Depression, which had a weak–moderate association with school absenteeism, the correlations of the other scales were below 0.30 (see Table 5).

Discussion

The heterogeneous phenomenology and etiology of school absenteeism continue to challenge researchers and clinicians. In a recent review, Elliot and Place [5] concluded that the key to individualized and effective treatment is a comprehensive assessment, including the subjective views of the students and environmental factors located in the school setting or the family context. In this line, the aim of the present study was to develop and initially validate a new assessment tool for SAPs.

The core features of the Inventory of School Attendance Problems are both integrative and explicit assessment of the presence and function of symptoms related to SAPs as well as the inclusion of the most relevant aspects of SAPs as separate scales. Conceptually, we took a pragmatic approach to the controversy about form and function of SAPs [3, 13]. Although building upon Kearneys' [3] functional model and the SRAS, some marked differences between the two questionnaires exist. Instead of using a deductive approach, we decided to undertake an inductive scale development. Different forms of SAPs were not a priori assigned to a certain function or scale based on theoretical considerations. Rather, we used a large item pool to investigate empirically if symptoms reported by patients with SAPs are aspects of a common factor or are independent from each other. Regarding content validity, we offered a solution to the confounding of symptom and function in many items of the SRAS by administering a sequential design to the questionnaire. This also resulted in an expanded scope of assessment by including students with SAPs who are not already absent in school to a large extent, but show emotional upset, somatic complaints, or other problems when they have to go to or stay in school.

Although 17 factors were extracted initially, the final number of 13 scales and 48 items still seems very high and underlines the nature of the ISAP as an empirically derived inventory. Instead of searching for higher order factors, it stays rooted on the phenomenological level to deliver detailed information about different presentations of SAPs to its user. Most of the 25 aspects identified by clinical exploration of patients with SAPs could be integrated. Due to the construction process, the scales differ in degree of homogeneity. Especially the items of the rather heterogeneous scales Depression, Social Anxiety, Problems with Peers, and School Aversion/Attractive Alternatives should be inspected separately, as they include different aspects of school avoidance behavior and, in some cases, different functions. The scales School Aversion/Attractive Alternatives and Separation Anxiety, for example, contain items related to negative (afraid of being away from parents; feeling bored by school) as well as positive reinforcement (staying with parents, attractive activities instead of school). In the recording sheets of the final version, the item scores will be listed under the graphic display of each scale value, so that single items with a high functional impact on school attendance can be detected easily. Furthermore, for descriptive purposes separate scale values for symptom and function will be delivered, so that the relation between these two aspects can be estimated for each scale. The question if a separate comparison of the functional aspects between different scales is justifiable, however, remains to be answered by future research with confirmative statistical techniques (see below).

All scales showed good reliability and the factor analyses as well as the scale inter-correlations indicate that they are valid measures of related, but distinct aspects of SAPs. The high intercorrelations between the scales measuring anxiety, somatic complaints, and depression reflect the known overlap between these symptoms as parts of the internalizing spectrum [35]. The results of the factor analyses suggest, however, that the ISAP is able to measure these symptoms separately despite this overlap. The scales' associations with the YSR and the ESV-R, a modified German version of the SRAS, support their construct validity. The high correlations between pairs of related scales of the YSR (e.g., ISAP Aggression—YSR Aggression) demonstrate that the ISAP is able to capture distinct psychopathological symptoms commonly observed in combination with SAPs (symptom level), while the high correlations with the respective scales of the ESV-R can be interpreted as evidence for the ISAPs capacity to assess the functional relevance of these symptoms for school attendance (functional level). On the other hand, the comparably lower correlations between the ESV-R and most of the scales of the ISAP measuring reactive emotional distress indicate that these scales cover aspects of SAPs beyond the scope of the ESV-R/SRAS.

The majority of the ISAP scales showed correlations with the extent of school absenteeism in the last 12 weeks. The observed relations were quite weak and have to be interpreted carefully because they rely on students' reports of absences (vs. school records). However, they correspond

with prior findings for the SRAS [25] and yield evidence for an association between many of the symptoms captured by the ISAP and the intensity of school absenteeism.

The main purpose of the ISAP is to foster the clinical assessment of youths with SAPs. Adolescents with SAPs are often reluctant to report their difficulties to a clinician [37]. In some cases, they might be more willing to address their problems in a questionnaire. Severe or chronic school absenteeism often is embedded in multiple adverse contextual influences and overlapping symptoms and functions [5, 37]. In these cases, the ISAP could be used as a screening tool to enhance further exploration and to gather insights into the ranking of different psychological and environmental factors and their impact on school absenteeism. Since the stepwise resumption of regular school attendance at an early stage of the treatment process is vital [4, 37], treatment targets must be prioritized to tackle the foremost barriers to school attendance promptly. The separate inspection of the scale scores on the functional level could provide additional valuable information for treatment preparation. Because students explicitly rate the reasons for their SAPs, it can be assumed that their scores not only represent functional aspects but also students' causal attributions or personal theories of their SAPs. If discrepancies between these beliefs and the professional view of the therapist are not detected, they cannot be dissolved, leading to a higher risk of noncompliance or termination of the therapy [37]. Conversely, using the scores of the functional item response scales for the elicitation and validation of the students' subjective view and its integration into a shared model, the therapeutic alliance between student and therapist could be strengthened.

There are, however, several limitations of the present study. Being aware of the results of the Parallel Analysis, we based the scale construction on factor extraction using the Kaiser Criterium, the amount of explained variance, and, most of all, the interpretability of the factor solution. Although we thereby risked an over-extraction of factors, this approach is in line with the recommendations of most experts in the field of scale development [30]. Even with 13 extracted factors, not all of the 25 aspects considered as relevant could be integrated into the final version of the questionnaire. Both the scales Low Self Worth and Dislike of Class showed main loadings on two factors which could not be dissolved. It could be argued that the omission of these aspects can be tolerated because they are not very specific for students with SAPs. However, this could also be true for many of the other aspects collected during the interviews with our patients in the item construction phase (see Table 1). The low correlations of the scale Dislike of Specific School with the other scales, for example, might indicate that this aspect is rather common among adolescents and not necessarily a sign of SAPs. Overall, since our sample solely consisted of patients with SAPs, no conclusions about the specificity of the different scales for SAPs or their ability to detect (emerging) SAPs can be drawn. Future studies with school samples are needed to gain insight into the prevalence of the symptoms assessed with the ISAP in the general population and the ISAPs potential for the detection of students with SAPs in nonclinical settings.

Furthermore, to limit the item number, the scales consist of items that are formulated rather general. A differentiated measurement of the dimensions of, e.g., adverse family dynamics, dysfunctional parenting practices, or unfavorable school climate in terms of their relation to SAPs [3] is beyond the scope of the ISAP. In addition, only symptoms reported during an exploration focusing on the functional analysis of SAPs have been included. Other symptoms of patients with SAPs we explored during the item construction phase either had no functional connection to school attendance (e.g., non-suicidal self-injury) or were reported by only a small minority (e.g., obsessive–compulsive behavior associated with SAPs) and therefore, were not operationalized as items. Nevertheless, these symptoms have important implications for treatment planning and thus need to be assessed with other instruments or during routine clinical exploration. The fact that the ISAP, as any other questionnaire, can only assist clinical judgement is also stressed by the absence of a separate scale for generalized anxiety disorder, a diagnosis with a comparably high prevalence rate among school absentees [2]. Since this disorder is characterized by the presence of fears and worries with diverse themes, the overanxious patients we explored added no new aspects to our item pool, but rather reported symptoms we already recorded. It can be assumed that high scores on anxiety-related items could identify generalized anxiety across different scales of the ISAP. However, since specific measures of, e.g., depression, agoraphobia, school climate, or family relations were not available, these hypotheses could not be tested. The diagnoses reported for our sample were not based on a structured clinical interview, so that their validity is low and comparisons between different groups of patients were not possible. Another caveat concerning construct validity is that no measures from parents or teachers were available.

Finally, important limitations concerning the sample have to be acknowledged. The heterogeneous construct of SAPs is bound to be highly sensitive to the kind of context in which it is observed [12]. Our sample exclusively consisted of patients of a child and adolescent psychiatric department. Biases regarding the prevalence and intensity of symptoms, the severity of school absenteeism, or other variables that were not assessed (e.g., socio-economic status) are likely to exist in comparison to samples drawn from schools, youth welfare institutions, or other institutional contexts. Furthermore, our sample largely consisted of adolescents rather than children. These biases could

have an important impact on the factor structure of the ISAP or its relations to the YSR and the ESV-R. Regarding the statistical prerequisites for factor analytic procedures, the size of our sample is rather small, especially since we opted for an empirical approach to scale construction and generated a large item pool. Although there now seems to be a consensus that the quality of the factor solution is the most important point to be considered with regard to sample size requirements, the advantages of larger samples are undeniable [27]. Especially for instruments assessing psychopathology with a high number of factors and a low number of items per factor, some authors recommend much larger sample sizes [38]. Therefore, the results of our factor analysis have to be interpreted cautiously and the factorial structure of the ISAP, as well as the loading patterns of the items reported in this study need to be confirmed in independent samples. Furthermore, the limits of the testlet approach call for the acquisition of a larger sample as well as the application of more sophisticated statistical methods. Confirmatory factor analyses should be used to investigate the relations between the symptom and function scores of the items without aggregating them. Rather, they could be modelled as loading on two subordinate factors (Symptom and Function) of the respective main factor (e.g., Depression), while the testlet or method effect could be controlled for (e.g., correlated trait-correlated uniqueness approach; [39]). With regard to the size of our sample and because the performance of exploratory and confirmatory factor analyses on the same sample is not recommended [40], these analyses will be subject of future research on the ISAP.

In sum, although the first results regarding the reliability and validity of the ISAP are promising, several questions remain to be answered. Ongoing studies include the evaluation of the psychometric properties of the ISAP in different samples of students with SAPs (e.g., youth welfare), the relation of its scales to more specific measures of psychopathology in adolescence, its retest-reliability, and its sensitivity to change (before vs. after treatment). Furthermore, the data collection for the construction and validation of a parent and teacher version of the ISAP continues. The results of these research efforts will render more empirical evidence on the potential of the ISAP to contribute to a comprehensive clinical assessment of SAPs. In addition, future studies with school samples will make use of the structure of the ISAP (separate scoring options for symptoms and their impact on school attendance) to explore its applicability for detecting students with first signs of SAPs and for informing prevention strategies [6].

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Compliance with ethical standards

Ethical standards This study has been approved by the ethics committee of the University of Duisburg-Essen and has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. All persons gave their informed consent prior to their inclusion in the study.

Conflict of interest The authors declare that they have no conflict of interest.

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