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Author contributions

NK, MR, MS, TL; Screening, recruitment, rating, examinations, implementing examination protocols of the study

NS, KD; Methodology, formal analysis, data curation

NK; Project administration, funding acquisition, supervision

SR, RU, RS, CP, EM, SW, PB, SB, LR, KJ; Supervision, review and editing

FSL; Conceptualization, methodology, writing, review and editing

TH; Conceptualization, methodology, formal analysis, writing, screening, recruitment, rating

Validation of the Bullying Scale for Adults

-Results of the PRONIA-study-

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Abstract

Background: Bullying as a specific subtype of adverse life events is a major risk factor for poor mental health. Although many questionnaires on bullying are available, so far none covers bullying retrospectively throughout school and working life. To close this gap, the Bullying Scale for Adults (BSA) was designed.

Methods: Based on data of 622 participants from five European countries collected in the prospective multicenter Personalized Prognostic Tools for Early Psychosis Management (PRONIA) study, we investigated whether the BSA is a reliable and valid measurement for bullying and whether there is a difference across different diagnostic groups of early mental disorders (recent onset depressive/ psychotic patients, patients at clinical high-risk of psychosis) and healthy controls.

Results: Bullying experiences were significantly less frequent in healthy controls than in patient groups, with no significant differences between the three clinical groups. The BSA exhibited a high item scale discrimination ($r > .3$) and very good internal consistency (Cronbach's $\alpha = .93$). Four factors were identified: 1. Sexual harassment, 2. Emotional Abuse, 3. Physical Abuse, 4. Problems at school. The highly significant correlation between bullying, and childhood adversities and trauma ($r = .645$, $p < .001$) indicated good concurrent validity.

Discussion: The BSA is the first validated questionnaire that, in retrospective, reliably records various aspects of bullying (incl. its consequences) not only throughout childhood but also working life. It can be used to assess bullying as a transdiagnostic risk factor of mental disorders in different mental disorders, esp. psychosis and depression.

Introduction

Mental disorders are one of the main causes of disability worldwide and, therefore, are associated with enormous social costs (Gustavsson et al., 2011; Reeves et al., 2011; Whiteford et al., 2013). In Europe, depression and psychosis are among the three most expensive brain disorders (Gustavsson et al., 2011). To prevent these, modifiable disorder-specific as well as important transdiagnostic risk factors need to be identified. Childhood adversities and traumatic experiences (CAT) have been repeatedly reported to be such important transdiagnostic risk factors (Iffland et al., 2013; Read et al., 2007; Saed et al., 2013; Salokangas et al., 2019; Schussler-Fiorenza Rose et al., 2016). Within the context of CAT, childhood bullying is an important aspect, related in itself to poor mental health and reduced adaptation to adult roles (Copeland et al., 2013; Moffa et al., 2017; Nansel et al., 2004; Niedhammer et al., 2006; Nolfé et al., 2007; Rigby, 1999; Trotta et al., 2013; Valmaggia et al., 2015; Wolke and Lereya, 2015). In addition, in adulthood, a connection between workplace bullying and poor mental health was repeatedly shown (Einarsen and Nielsen, 2015; Finne et al., 2011; Leach et al., 2017; Nielsen and Einarsen, 2012; Nielsen et al., 2010; Rugulies et al., 2012; Verkuil et al., 2015). A meta-analysis (Lahelma et al., 2012) reported that victims of workplace bullying had a 68% increased probability of subsequent poor mental health compared to people not experiencing workplace bullying; and that exposure to workspace bullying predicted mental health problems 5-7 years later. In doing so, the association between workplace bullying and poor mental health was independent of the influence of other common workplace psychosocial adversities (Hauge et al., 2010; Lahelma et al., 2012). In addition, bullying significantly impacted on job satisfaction, workforce retention, and work quality (Vessey et al., 2010). In the light of these results, it seems important to not only record bullying experiences in childhood but also in current occupation.

With regard to bullying in childhood and adolescence, reported prevalence rates greatly differ, which is most likely due to differences in the operationalization of bullying (Menesini and Nocentini, 2009). A recent review (Juvonen and Graham, 2014) estimated the prevalence of bullying in youth at 20-25%, while a meta-analysis with a total sample of 335.519 young people (12-18 years) reported a mean prevalence of traditional bullying of 35%, while the prevalence of workplace bullying in 70 studies was 14.6% (Modecki et al., 2014).

The term "bullying" was defined by Olweus (1991) as the repeated exposure over time to negative actions (physical and verbal) of one or more other pupils. Leymann and colleagues (1996) complemented Olweus' definition by a time criterion of a minimum duration of six months and a minimum frequency of one event per week. The term "mobbing" is often used synonymously but was originally conceived for the behavior of a group but not a single person against an individual (Heinemann, 1972; Olweus, 1973).

Commonly, the various questionnaires on bullying (Einarsen, 2001; Felix et al., 2011; Finkelhor et al., 2005; Leymann, 1990; Swearer, 2016), incl. the most established one, the Bully-/Victim-Questionnaire (Cornell and Bandyopadhyay, 2009; Olweus, 1996), exclusively cover either school or working life but not both. To close this coverage gap, Ruhrmann and Kaiser developed the Bullying Scale (BSA) (Ruhrmann and Kaiser, 2013), which is based on the Bully Survey (Swearer, 2016). With 21 items, the BSA is significantly shorter than the 46-item school period-focused Bully Survey and, additionally, covers working life. Other than the Bully Survey, the BSA records duration and frequency of bullying as well as the kind of perpetrator. Just as the Bully Survey, the BSA is complemented by a list of the most frequent consequences of bullying experiences. Furthermore, similar to the Bully Survey but in contrast to other bullying scales, the BSA asks for both own bullying experiences and own bullying activities.

In this study, the psychometric properties, validity and reliability, of the BSA were investigated in a large European sample that was recruited within the multicenter Personalized Prognostic Tools for Early Psychosis Management (PRONIA) study (Koutsouleris et al., 2018) (see www.pronia.eu), which allowed the evaluation of the BSA in five different European countries and four different languages. Additionally, the prevalence of bullying in this young European sample was examined and compared across language regions.

Methods

Sample

Participants were recruited within the PRONIA study, a prospective project funded by the European Union under the 7th Framework Program (grant agreement n° 602152). Seven clinical centers (German region: Munich (LMU), Bale (UBS) and Cologne (UKK); Finnish region: Turku; English region: Birmingham (BHAM); Italian region: Udine and Milan) in five European countries participated. Three clinical groups, i.e., patients clinically at high-risk of psychosis (CHR), patients with a recent onset psychosis (ROP), patients with a recent onset depression (ROD), and healthy controls (HC) were recruited in psychiatric hospitals and outpatient clinics as well as in early detection centers for mental illness, mainly psychoses. Recruitment and assessments were carried out by trained psychiatrists and clinical psychologists, and was following a standardized recruitment and ascertainment protocol. The characteristics of the recruiting institutions of the PRONIA consortium are displayed in **Supplement Table 1**. Between February 2014 and January 2016, 3'416 individuals were screened for study eligibility; 704 were included (recruitment per center: LMU=196, UBS=99, UKK=130, Turku=70, BHAM=81, Milan / Udine =39; recruitment per group: CHR=137; ROD=146, ROP=153; HC=267). All adult patients provided their written informed consent prior to study

inclusion, while minors provided written informed assent and guardians written informed consent. The observational study protocol involved follow-up examinations every three months for a duration of 18 months. In a screening examination, the inclusion and exclusion criteria were carefully examined. Following obtaining written consent of eligible patients, a detailed clinical interview was conducted and self-disclosure questionnaires were handed out to the patients.

The design of the PRONIA study as well the comprehensive battery of assessment tools, including clinical, neuroimaging, and neuropsychological investigations as well as blood sampling, has been previously described in detail by Koutsouleris and colleagues (Koutsouleris et al., 2018). Only data from the baseline examination were used in the present study.

Inclusion and exclusion criteria

General inclusion criteria were age between 15 and 40 years, capacity to provide informed consent and sufficient language skills. General exclusion criteria were IQ below 70, current or past head trauma with loss of consciousness for >5 minutes, current or past disorders which could affect brain structure, current or past alcohol or polysubstance dependence, and any indication against an MRI investigation.

CHR individuals were included for the basic symptom criterion Cognitive Disturbances (COGDIS)(Schultze-Lutter et al., 2016) assessed with the Schizophrenia Proneness Instrument, Adult version (SPI-A) and/or ultra-high-risk (UHR) criteria (Phillips et al., 2000) assessed with the Structured Interview for Psychosis-Risk Syndromes, version 5.0 (SIPS) (McGlashan et al., 2010; Miller et al., 2003). ROD patients had to fulfil criteria of a major depression within the last three months as specified by the Structured Clinical Interview for DSM-IV-TR (SCID) (American Psychiatric Association, 2013). Specific exclusion criteria for ROD were a duration of the current episode >24 months and/or a previous episode of major depression. CHR and ROD patients were excluded, when taking antipsychotic medication for more than 30 cumulative days at or above the minimum dosage threshold defined by the DGPPN S3 Guidelines for the treatment of first-episode psychosis and/or when taking antipsychotic drugs within the past three months before baseline assessment at or above the minimum dosage threshold (Deutsche Gesellschaft für Psychiatrie , Psychotherapie und Nervenheilkunde, 2006). HC were excluded when suffering from any current or past DSM-IV axis disorder, having a first-degree relative with an affective or non-affective psychosis, or taking psychotropic medications or drugs in the last month before baseline or more than five times/year. ROP had to fulfill DSM-IV criteria for affective or non-affective psychosis according to the SCID within the last 24 months but not before. Specific exclusion criterion for ROP was an antipsychotic medication for >90 days at or above the minimum dosage of the '1st-episode psychosis' range of

DGPPN S3 Guidelines (Deutsche Gesellschaft für Psychiatrie, Psychotherapie und Nervenheilkunde 2006).

Assessments

The assessment battery includes various psychopathological assessments that were used investigate their possible associations with bullying. Psychopathological assessments included the Beck-Depression-Inventory-II (BDI-II) for the measurement of depressive symptoms, the Positive And Negative Syndrome Scale (PANSS) (Kay et al., 1987) for the assessment of positive and negative psychotic symptoms and the Social Phobia Inventory (SPIN) (Connor et al., 2000). A measurement of social anxiety was selected because of report of its substantial association with bullying / peer victimization (Pontillo et al., 2019). Moreover, the Childhood Trauma Questionnaire (CTQ) (Bernstein and Fink, 1998) was carried out. The CTQ is a well-established self-assessment tool for the retrospective assessment of maltreatment and neglect in childhood. It consists of 28 items rated on a five-point Likert scale (0= never to 4= very often), and includes five subscales: emotional abuse (EA), physical abuse (PA), sexual abuse (SA), emotional neglect (EN) and physical neglect (PN). The CTQ's convergent and discriminative validity was found to be good (Bernstein and Fink, 1998). The original English CTQ was translated by the single non-English PRONIA centers into the respective country's languages, followed by a back-translation into English by a professional translator.

The Bullying Scale (BSA)

The BSA (Ruhrmann and Kaiser, 2013) (**Figure 1**) is a modified version of the Bully Survey (Swearer, 2016; Swearer and Cary, 2003; Swearer et al., 2008). The development of the BSA was based on a pragmatic approach, with the aim of creating an economic instrument that can also be used in adults. For this purpose, questions likely relevant for adults and children were taken from the Bully Survey and adapted in their formulation and additionally assessed information in three areas. Area A) was taken unchanged from the Bully Survey and covers the frequency of incidents. Area B) records by whom the bullying was carried out; it was taken from the Bully Survey and adapted to the adult environment. Area C) on the duration and time of bullying, incl. the question of whether it occurred before or after the age of 17, was newly added. The chosen time frames ("at least for a month", "past 12 months") were chosen in correspondence to time periods relevant to other scales used in the PRONIA, such as in the Structured Interview for Psychosis-Risk Syndromes (McGlashan et al., 2010) and its assessment of the attenuated psychotic symptoms syndrome and the genetic risk and functional decline syndrome. The choice of the cut-off point at 17 years was chosen with regard to the PRONIA neuroimaging measurements, based on results, which could demonstrate a deviation from the normal neuromaturatory pattern in clinical high-risk subjects for psychosis (CHR), which in

turn predicted a higher risk of conversion to psychosis and a pattern of poor functional outcomes. These effects were unique to cases between 12 and 17 years of age when their prodromal and psychotic symptoms began. (Cannon et al., 2015; Chung et al., 2018; Chung et al., 2019).

Similar to the CTQ, the BSA was translated into the different native languages by a member of the single PRONIA centers, followed by a back-translation into English by a professional translator. It is a self-report questionnaire, consisting of 21 items that cover school and working life.

The BSA is divided into three different subsections:

1. **Own bullying experiences:** Thirteen items rated on a five-point Likert scale (0=never to 4=always) with an additional "don't know" option; perpetrator can be specified as "others/students", "colleagues", "school staff/coach/instructor/supervisor", "family members/partner" or "neighbors". One question asks about duration. i.e., "at least for a month", "past 12 months", "before age 17".
2. **Personal consequences of bullying:** Six items rated on a five-point Likert scale (0= never a problem to 4=always a problem).
3. **Own bullying behavior:** Two items that assess frequency and duration of in own bullying experiences as perpetrator.

-Figure 1-

Preparation of data

Data analyses were performed with SPSS, version 21, and R Studio, version 1.0.136. Nineteen subjects were excluded because they could not be clearly assigned to one country. Persons with more than 85% missing data incl. "don't know" answers in the items in the BSA (73 subjects), or with >3 inconsistent answers (two subjects) were excluded for assuming non-conscientiously completion of the BSA (Cornell and Bandyopadhyay, 2009; Peters and Dörfler, 2014). An answer was considered inconsistent, if an experience was negated, yet, detailed in the additional questions on perpetrator or duration. These items are displayed detailed in **Supplement Table 2**.

Based on the BSA, all subjects were classified into four bullying groups: Those who answered one or more items positively in the first part of the questionnaire were labeled as "Victim". People who affirmed the question of own bully behavior got the label "Bully". If both criteria were fulfilled, participants were labeled "Bully-Victim". If all criteria were denied, the label "No-Status" was assigned (**Supplement Table 3**).

Data analyses

Differences between the three clinical subgroups and the HC's were investigated by Kruskal-Wallis- (Kruskal and Wallis, 1952), Mann-Whitney-U-Test (Mann and Whitney, 1947) and Rosenthal's R (Rosenthal, 1994).

Kolmogorov-Smirnoff and Shapiro-Wilk tests were conducted for the BSA to test for a normal distribution of the ordinal scaled data. The item-scale correlations and the inter-item correlations were determined by Kendall's Tau. As a measure of construct reliability, the internal consistency was calculated using Cronbach's α .

In order to examine the factor structure of the BSA and of the CTQ, a factor analysis was carried out to test whether the reported 5-factor structure of CTQ (Bernstein and Fink, 1998) was confirmed in our data. Moreover, an explorative factor analysis of the BSA data using the Promax rotation was performed. The Kaiser-Meyer-Olkin coefficient was calculated to determine whether the level of correlations between all variables were sufficient (Bühner, 2011). The Measure of Sample Adequacy coefficient (MSA index) was determined to examine the uniqueness of the items (Bühner, 2011). As a termination criterion for the number of factors, the Kaiser-criterion was used. The absolute value of factor loads of $>.3$ was considered sufficient (Gollwitzer et al., 2015).

For the reported overlap of CAT and bullying (Copeland et al., 2013; Moffa et al., 2017; Nansel et al., 2004; Niedhammer et al., 2006; Nolfé et al., 2007; Rigby, 1999; Trotta et al., 2013; Valmaggia et al., 2015; Wolke and Lereya, 2015), the CTQ was chosen as the best available measure to test construct validity of the BSA. Since the CTQ only asks for childhood experiences, it was compared only with BSA data, which were reported to happen before the age of 17. An intra class correlation (ICC) of BSA and CTQ data was calculated to evaluate the correspondence of bullying experiences before the age of 17 and adversity experiences in childhood. To determine the interaction of bullying with other psychopathological measures, Kendall's Tau correlations that control for tied ranks between the BSA and CTQ, BDI, PANSS and SPIN were calculated. In order to adjust for multiple testing while avoiding unduly increase of the type II error (Aickin and Gensler, 1996), Holm's method (Hemmerich, 2016) was used across groups but separately for BSA and CTQ, which were separately evaluated (Bender and Lange, 2001). In addition, these interactions were also examined for gender effects using the Mann-Whitney-U-Test (Mann and Whitney, 1947).

Finally, to determine a cut-off value for significant bullying experiences measured by the BSA, the Youden index J was calculated ($J = \text{sensitivity} + \text{specificity} - 1$) using patient vs. HC status as outcome.

Results

Sample characteristics

Baseline data of 706 participants were included (**Table 1**). After excluding 82 subjects, 622 persons remained for further analyses (n=383 (61.58%) German region, n=99 (15.92%) Italian region, n=60 (9.65%) Finland, n=80 (12.86%) England). Throughout the entire sample, the HCs were the largest group (n=251 (40.35%)) and 52.6% (n=327) were female. The average age was 24.91 years (SD=5.98). HCs were also the largest group within the individual countries. The sizes of the patient groups varied between the individual countries. The HC group in all countries consisted with $\geq 60\%$ of females. The percentage of women in the different patient groups, as well as the average age, varied between the single countries (**Table 1**).

*-Table 1-**Descriptive analyses*

With regard to symptom expression, the RODs showed the highest values on the BDI-II, followed by the CHR subjects, while the HC's scored very low. The PANSS score was by far highest among the ROP patients, followed by the CHR subjects. Social anxiety was lowest expressed in the HC subjects. In the patient groups, CHR reached the highest values, followed by ROD and ROP (**Table 2**). BSA and CTQ total scores differed slightly between groups (**Table 2**) with lower values in the HCs compared to the clinical subgroups, yet, these became significant for the BSA only in the total sample and in the German-speaking sample, in which the clinical subgroups did not differ from each other, except ROP and ROD in the total sample (**Table 3**). However, in both total and German-speaking sample, all group differences but the medium-sized differences between HC and ROP ($r= 0.46$), and HC and ROD ($r= -0.38$) were of small effect size only. The Finnish sample showed significant differences in BSA total scores between HC and ROP, HC and CHR, and ROD and CHR. There was a medium effect for HC vs. ROP and a large effect for HC vs. CHR. In the English sample, there were significant differences between HC vs ROD and HC vs CHR, with a medium effect for HC vs. CHR. The Italian results showed significant differences for HC vs CHR, ROP vs CHR and ROD vs. CHR, with a large effect for ROP vs CHR and medium effects for HC vs. CHR and ROD vs. CHR (**Table 3**).

CTQ and BSA sum scores were both correlated with the PANSS cumulative score in the CHR group only (**Supplement Table 4**). Social anxiety was significantly correlated with bullying experiences in ROD patients. In contrast, CTQ showed only a significant correlation with social anxiety in HC individuals (**Supplement Table 4**). Depressiveness was significantly associated with bullying in all subgroups except the CHR and ROP patients (**Supplement Table 4**). In contrast, the association

between depression and childhood trauma was significantly correlated in all groups except the CHR and ROD patients (**Supplement Table 4**).

With regard to gender effects, there were no significant differences in BSA and CTQ except for a significantly higher CTQ value in female ROP patients (**Supplement Table 5**).

-Tables 2 and 3-

Subjects most often belonged to the groups "victim" or "bully-victim" (**Supplement Table 3**). Bullying mostly took place through "others/students/colleagues" and before the age of 17 (**Supplement Table 6**). With regard to the total sample, most subjects stated that they never ($n=325$; 52.5%) or rarely ($n=178$; 28.62%) appeared as perpetrators. Seventy-eight (12.54%) reported having bullied "sometimes", 20 (3.22%) "often"; only one bully (0.16%) answered with "always". Twelve subjects (1.93%) chose the "do not know" option, and eight subjects (1.29%) gave no answer (**Supplement Table 7**). Altogether 246 (71.93%) subjects stated to have bullied others before the age of 17, 85 (24.85%) to have done so for at least one month; only 11 (3.22%) stated to have bullied others within the last 12 months, six of these were less than 17 years old ($r=-.139$, $p=.016$). Thus, a significant, correlation (albeit with a weak effect) for bullying behaviour in the last 12 months and an age below 17 was shown.

Item and construct reliability

In the total sample, an excellent Cronbach's α of .932 was achieved (**Supplement Table 8**) that was largely maintained in the language regions: German: .933, Italian: .941, Finnish: .914, English: .932. In the Italian version, item 10 had an item scale correlation below .3 and, in the Finnish version, this applied to items 9 and 10. All other items and all other language versions achieved sufficient item-scale correlations of at least .3.

Construct validity

The overall data showed a significantly positive intra-class correlation between the total score of the CTQ and BSA ($r = .645$, $p < .001$). Even after dividing the data into the different languages, a positive significant correlation could be achieved in German ($r = .680$, $p < .001$), Italian ($r = .596$, $p < .001$), Finnish ($r = .458$, $p = 0.014$) and English samples ($r = .573$, $p = .001$).

Factor analyses

Five factors of the CTQ that explained 61.46% of the variance were extracted (**Supplement Table 9**). For the BSA, three factors, which explained 61.48% of the variance, emerged in the total sample (**Supplement Table 10**), while, in the separate language versions, four factors of slightly different

composition emerged. These explained 58.3% of the variance in the German sample, 75.99% of the variance in the Italian sample, 69.72% of the variance in the Finnish sample and 74.82% of the variance in the British sample (**Supplement Table 10**). When comparing the distribution of the individual items to the different factors across the different countries, the following core items of the four factors were identified (**Supplement Table 11**):

1. Sexual harassment (core items 9 and 10)
2. Emotional Abuse (core items 1, 2, 4, 5, 11, 13, 15, and 16)
3. Physical Abuse (core items 3 and 6-8)
4. Problems at school (core items 17 and 18)

The three factors found in the total sample each corresponded to the factors one to three across the different countries. Only factor four (problems at school) was part of factor two (emotional abuse) in the total sample.

Cut-off values for relevant bullying experiences

The determination of the Youden Indexes and the AUCs yielded satisfying results in the total sample (AUC=.751; Youden Index=11.5 with sensitivity=.638, specificity=.805) (**Figure 2**). Yet, these measures differed greatly across the language regions, with low specificities in the German and Finnish region and low AUC in the Italian region (German: AUC=.77; Youden Index=13.5 with sensitivity=.661, specificity=.203; Italian: AUC=.661; Youden Index=10.5 with sensitivity=.509, specificity=.795; Finnish: AUC=.810; Youden Index=10.5 with sensitivity=.767, specificity=.176; English: AUC=.712; Youden Index=13.5 with sensitivity=.553, specificity=.857).

-Figure 2-

Discussion

Within PRONIA, the BSA was developed as a brief self-report scale of bullying experiences, covering bullying in both childhood and the current living situation. The aim of the present study was to examine the major psychometric properties of the BSA and to compare bullying and childhood adversities and trauma measured by the CTQ.

Psychometric examination

A reliable assessment of the target construct was proven by a very good internal consistency (Cronbach's α above .9 in all countries). Only in two countries, two different items showed an item scale correlation of $<.3$ (Italy and Finland: Item 10 "Have become sexually assaulted"; Finland: Item 9 "Have sexually harassed me"). Since the item-scale correlation of these two items is above .3 in the other countries and the low correlation in these two countries might also be due to their infrequent affirmation, however, they should not be removed from the questionnaire but re-examined in larger samples. Two questions from the BSA were answered more often than the average with the "don't know" option (Item 12 "Wrote bad things about me" and Item 13 "Said mean things behind my back"). Both items were asking for events in which the respondent was not actively involved. However, particularly with the nowadays rising problem and prevalence of cyber bullying (Modecki et al., 2014) by direct offenses in written messages or image material or by insulting electronic conversations (made accidentally or even intentionally known to the victim), it can be expected that these questions will become more important in future samples ("wrote" should perhaps be replaced by "published"). The problem of cyber bullying could also be addressed in future by adding a fourth additional assessment area, ascertaining whether bullying experiences occurred in direct contact or via social media.

There was a positive correlation between the measurements of the CTQ and the BSA across all countries. Since bullying is known as an important component of CAT, it could be shown that the BSA is measuring the correct construct. Significantly higher values for bullying were reported in the patient groups compared to the HCs. This is consistent with previous findings showing that bullying is associated with an increased risk for mental illness (Copeland et al., 2013; Moffa et al., 2017; Nansel et al., 2004; Niedhammer et al., 2006; Nolfé et al., 2007; Rigby, 1999; Trotta et al., 2013; Valmaggia et al., 2015; Wolke and Lereya, 2015). Interestingly, the clinical subgroups did not differ significantly from each other with regard to their bullying experiences. Thus, bullying did not appear to be diagnosis-specific but to represent a transdiagnostic risk factor for mental illness, which is in line with previous findings (Moffa et al., 2017; Nolfé et al., 2007).

Social anxiety was significantly associated with bullying experiences in ROD patients. In contrast, CTQ showed only a significant correlation with social anxiety in HC individuals. Depressiveness was significantly correlated with bullying experiences in all subgroups except the ROP and CHR patients, while depressiveness and CTQ were associated in the HC as well in the ROP group. Moreover, CTQ and BSA were both correlated with the PANSS total score in the CHR individuals but no other subgroup. However, it should be emphasized that no conclusions on causality can be drawn here, as this is a purely exploratory analysis. Furthermore, moderating effects such as resilience, which should

urgently be considered in such a context, were not considered in this analysis but should be highlighted in the future.

In the PRONIA data, the reported five factors of the CTQ again emerged. (Bernstein and Fink, 1998) In the BSA four factors (1. Sexual harassment, 2. Emotional Abuse, 3. Physical Abuse, 4. Problems at school) were identified. The results of the factor analyses indicated that the items on the BSA performed equivalently across four diverse populations with differing bullying experiences, broadly supporting the measurement invariance of the scale. These aspects of negative physical and emotional experiences as well as of sexual abuse are comparable to the subscales Emotional Abuse, Physical Abuse and Sexual Abuse of the CTQ. In contrast, the CTQ additionally provides a more detailed difference of physical and emotional abuse and neglect, while the BSA covers problems at school.

The Youden Indexes of the BSA in the different languages were comparable, if not identical, yet resulted in considerably differing sensitivity and specificity values. The differences may again be due to the low number of subjects in the individual countries and groups.

General and country-specific results

Most subjects could be assigned to the "Victim" (41.64%) and "Bully-Victim" (41.16%) groups. Thus, it can be assumed that a considerable part of people who become victims of bullying tend to also bully other people, which was also reported in a meta-analysis by Copeland et al., 2013. Furthermore, this is in line with preliminary results, showing that not only victims of bullying have an increased risk for mental illnesses, but also people who engage in bullying (Copeland et al., 2013). Only few subjects (3.38%) were exclusively "bullies". This also corresponds to the meta-analytic results, which found only 5% "exclusive" bullies in the investigated general population. Interestingly, these bullies showed an increased risk for the development of an antisocial personality disorder (OR, 4.1; 95% CIs: 1.1–15.8) (Copeland et al., 2013).

Furthermore, the HCs appeared significantly less frequently as perpetrators than subjects from the clinical subgroups. Moreover, it was shown that bullying was most likely to occur before the age of 17. This supports earlier results reporting bullying to be twice as frequent in childhood (9-13y; 23.4%) than in adolescence (14-16y; 10.2%) (Copeland et al., 2013). Moreover, the results of the BSA suggested that other students / colleagues carry out bullying most often. This is consistent with previous research, which has focused primarily on school and the workplace, as a place of bullying (Menesini and Salmivalli, 2017; Olweus, 2013; Rayner and Hoel, 1998).

Limitations

In addition to the satisfying psychometric properties of the BSA some further strengths and limitations should be discussed. A main limitation was that the German-language data accounted for more than 60% of the total data, whereas the other countries only accounted for between 9% and 15%. This imbalance limited the power of the analyses in the different countries. Moreover, in all countries except Finland, the HC group accounted for the largest proportion of subjects. In addition, gender was only balanced in a few groups, and especially in the HC group, women outnumbered men. However, no effect of gender on bullying experiences or CAT could be found in our data. This differs from previous findings, where childhood adversities and trauma are usually not equally distributed across the sexes (Goldberg and Freyd, 2006), with girls being less often involved in bullying both as victims and perpetrators compared to boys (Copeland et al., 2013). On the contrary, it was shown that women who were bullied (even after control for other emotional problems in childhood) had a higher risk for mental illness and suicidal tendencies (Klomek et al., 2009; Sourander et al., 2009).

Despite the relatively large total sample, the (sex-specific) subgroups of each country were too small to be considered representative and suitable for general prevalence estimations and comparisons. Another limitation of the study is that the inclusion and exclusion criteria were primarily designed for the PRONIA- but not for the current validation study. Thus, only patients with recent onset diseases were included, who do not represent the characteristics of these general patient groups.

Furthermore, there are no prescribed rules for the division into the different bullying groups. In the present study, all patients with bullying experiences were assigned to the "Victim" group. However, this very-low threshold definition of victims carries the risk of pathologizing "normal" experiences in childhood, such as teasing. In order to avoid this, bullying experiences may only be regarded as relevant if negative consequences are pointed out.

Another problem, intrinsic to all retrospective assessments, is the risk of distorted remembering of bullying experiences. Although there is indication that bullying experiences were causally responsible for mental illnesses, it is also conceivable that the interpretation of past social situations is distorted against the background of a mental illness (Cornell and Bandyopadhyay, 2009). Thus, the possibility that reported bullying experiences are partly or even entirely the result of the symptoms of a mental disorder should always be taken into account (Catone et al., 2017). For this reason, similar to other bullying scales, the BSA should not be considered as an objective but subjective measurement of perceived bullying experiences. In order to reduce such possible biases, further studies should carry out observer ratings to ensure the objectivity of the reported bullying experiences by the interviewer. However, the risk of an incomplete and distorted picture remains, as an overview of all areas of life rarely succeeds (Lopes, 2013).

Conclusion

Overall, the BSA can be regarded as a reliable and valid instrument for the measurement of bullying. However, the results from the BSA may only be compared with caution to other bullying research and a further evaluation of the questionnaire seems worthwhile. To the best of our knowledge, it is the first questionnaire that covers past and current bullying as well the own engagement in it as a perpetrator. Moreover, it is an extremely economic questionnaire that has the potential to be used in a standardized way in the risk assessment of bullying which, again, appeared to be a transdiagnostic risk factor for mental illness across different European countries.

Journal Pre-proof

References

- Aickin, M., Gensler, H., 1996. Adjusting for multiple testing when reporting research results: the Bonferroni vs Holm methods. *Am J Public Health* 86(5), 726-728.
- American Psychiatric Association, 2013. Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Pub.
- Bender, R., Lange, S., 2001. Adjusting for multiple testing--when and how? *J Clin Epidemiol* 54(4), 343-349.
- Bernstein, D., Fink, L., 1998. Childhood Trauma Questionnaire: A retrospective self-report. The Psychological Corporation., San Antonio.
- Bühner, M., 2011. Einführung in die Test-und Fragebogenkonstruktion. Pearson Deutschland GmbH.
- Cannon, T.D., Chung, Y., He, G., Sun, D., Jacobson, A., van Erp, T.G., McEwen, S., Addington, J., Bearden, C.E., Cadenhead, K., Cornblatt, B., Mathalon, D.H., McGlashan, T., Perkins, D., Jeffries, C., Seidman, L.J., Tsuang, M., Walker, E., Woods, S.W., Heinssen, R., North American Prodrome Longitudinal Study, C., 2015. Progressive reduction in cortical thickness as psychosis develops: a multisite longitudinal neuroimaging study of youth at elevated clinical risk. *Biol Psychiatry* 77(2), 147-157.
- Catone, G., Marwaha, S., Lennox, B., Broome, M.R., 2017. Bullying victimisation and psychosis: the interdependence and independence of risk trajectories. *BJPsych Advances* 23(6), 397-406.
- Chung, Y., Addington, J., Bearden, C.E., Cadenhead, K., Cornblatt, B., Mathalon, D.H., McGlashan, T., Perkins, D., Seidman, L.J., Tsuang, M., Walker, E., Woods, S.W., McEwen, S., van Erp, T.G.M., Cannon, T.D., Longitudinal, N.A.P., Gene, P.I.N., 2018. Use of Machine Learning to Determine Deviance in Neuroanatomical Maturity Associated With Future Psychosis in Youths at Clinically High Risk. *Jama Psychiatry* 75(9), 960-968.
- Chung, Y., Allswede, D., Addington, J., Bearden, C.E., Cadenhead, K., Cornblatt, B., Mathalon, D.H., McGlashan, T., Perkins, D., Seidman, L.J., Tsuang, M., Walker, E., Woods, S.W., McEwen, S., van Erp, T.G.M., Cannon, T.D., North American Prodrome Longitudinal Study, C., 2019. Cortical abnormalities in youth at clinical high-risk for psychosis: Findings from the NAPLS2 cohort. *Neuroimage Clin* 23, 101862.
- Connor, K.M., Davidson, J.R., Churchill, L.E., Sherwood, A., Foa, E., Weisler, R.H., 2000. Psychometric properties of the Social Phobia Inventory (SPIN). New self-rating scale. *Br J Psychiatry* 176, 379-386.
- Copeland, W.E., Wolke, D., Angold, A., Costello, E.J., 2013. Adult psychiatric outcomes of bullying and being bullied by peers in childhood and adolescence. *JAMA psychiatry* 70(4), 419-426.
- Cornell, D., Bandyopadhyay, S., 2009. The assessment of bullying, in: Jimerson, S., Swearer, S., Espelage, D. (Eds.), *The international handbook of school bullying*. Routledge, Londol, pp. 265-276.
- Deutsche Gesellschaft für Psychiatrie, Psychotherapie und Nervenheilkunde, 2006. DGPPN S3. Treatment Guideline Schizophrenia / Psychotic Disorders. AWMF.
- Einarsen, S., 2001. The Negative Acts Questionnaire: Development, validation and revision of a measure of bullying at work, Paper presented at the 10th European Congress on Work and Organisational Psychology. Prague (Czech Republic): 10th European Congress on Work and Organizational Psychology, 2001.

- Einarsen, S., Nielsen, M.B., 2015. Workplace bullying as an antecedent of mental health problems: a five-year prospective and representative study. *Int Arch Occ Env Hea* 88(2), 131-142.
- Felix, E.D., Sharkey, J.D., Green, J.G., Furlong, M.J., Tanigawa, D., 2011. Getting precise and pragmatic about the assessment of bullying: The development of the California Bullying Victimization Scale. *Aggressive Behavior* 37(3), 234-247.
- Finkelhor, D., Ormrod, R., Turner, H., Hamby, S.L., 2005. The victimization of children and youth: A comprehensive, national survey. *Child maltreatment* 10(1), 5-25.
- Finne, L.B., Knardahl, S., Lau, B., 2011. Workplace bullying and mental distress - a prospective study of Norwegian employees. *Scand J Work Env Hea* 37(4), 276-287.
- Goldberg, L.R., Freyd, J.J., 2006. Self-reports of potentially traumatic experiences in an adult community sample: gender differences and test-retest stabilities of the items in a brief betrayal-trauma survey. *Journal of trauma & dissociation : the official journal of the International Society for the Study of Dissociation* 7(3), 39-63.
- Gollwitzer, M., Eid, M., Schmitt, M., 2015. *Statistik und Forschungsmethoden*. Beltz.
- Gustavsson, A., Svensson, M., Jacobi, F., Allgulander, C., Alonso, J., Beghi, E., Dodel, R., Ekman, M., Faravelli, C., Fratiglioni, L., Gannon, B., Jones, D.H., Jennum, P., Jordanova, A., Jonsson, L., Karampampa, K., Knapp, M., Kobelt, G., Kurth, T., Lieb, R., Linde, M., Ljungcrantz, C., Maercker, A., Melin, B., Moscarelli, M., Musayev, A., Norwood, F., Preisig, M., Pugliatti, M., Rehm, J., Salvador-Carulla, L., Schlehofer, B., Simon, R., Steinhausen, H.C., Stovner, L.J., Vallat, J.M., Van den Bergh, P., van Os, J., Vos, P., Xu, W., Wittchen, H.U., Jonsson, B., Olesen, J., Group, C.D., 2011. Cost of disorders of the brain in Europe 2010. *Eur Neuropsychopharmacol* 21(10), 718-779.
- Hamburger ME, Basile KC, Vivolo AM., 2011. *Measuring Bullying Victimization, Perpetration, and Bystander Experiences: A Compendium of Assessment Tools*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.
- Hauge, L.J., Skogstad, A., Einarsen, S., 2010. The relative impact of workplace bullying as a social stressor at work. *Scandinavian Journal of Psychology* 51(5), 426-433.
- Heinemann, P., 1972. *Mobbning – gruppvåld bland barn och vuxna*. . Natur och kultur, Stockholm
- Hemmerich, W., 2016. *StatistikGuru: Abhängige Variable*.
- Iffland, B., Brahler, E., Neuner, F., Hauser, W., Glaesmer, H., 2013. Frequency of child maltreatment in a representative sample of the German population. *BMC public health* 13, 980.
- Juvonen, J., Graham, S., 2014. *Bullying in Schools: The Power of Bullies and the Plight of Victims*. *Annu Rev Psychol* 65, 159-185.
- Kay, S.R., Fiszbein, A., Opfer, L.A., 1987. The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bull* 13(2), 261.
- Klomek, A.B., Sourander, A., Niemela, S., Kumpulainen, K., Piha, J., Tamminen, T., Almqvist, F., Gould, M.S., 2009. Childhood bullying behaviors as a risk for suicide attempts and completed suicides: a population-based birth cohort study. *Journal of the American Academy of Child and Adolescent Psychiatry* 48(3), 254-261.
- Koutsouleris, N., Kambeitz-Ilankovic, L., Ruhrmann, S., Rosen, M., Ruef, A., Dwyer, D.B., Paolini, M., Chisholm, K., Kambeitz, J., Haidl, T., Schmidt, A., Gillam, J., Schultze-Lutter, F., Falkai, P., Reiser, M., Riecher-Rossler, A., Uptegrove, R., Hietala, J., Salokangas, R.K.R., Pantelis, C., Meisenzahl, E., Wood,

- S.J., Beque, D., Brambilla, P., Borgwardt, S., Consortium, P., 2018. Prediction Models of Functional Outcomes for Individuals in the Clinical High-Risk State for Psychosis or With Recent-Onset Depression: A Multimodal, Multisite Machine Learning Analysis. *JAMA psychiatry*.
- Kruskal, W.H., Wallis, W.A., 1952. Use of Ranks in One-Criterion Variance Analysis. *J Am Stat Assoc* 47(260), 583-621.
- Lahelma, E., Lallukka, T., Laaksonen, M., Saastamoinen, P., Rahkonen, O., 2012. Workplace bullying and common mental disorders: a follow-up study. *J Epidemiol Commun H* 66(6).
- Leach, L.S., Poyser, C., Butterworth, P., 2017. Workplace bullying and the association with suicidal ideation/thoughts and behaviour: a systematic review. *Occup Environ Med* 74(1), 72-79.
- Leymann, H., 1990. Mobbing and psychological terror at workplaces. *Violence and victims* 5(2), 119-126.
- Leymann, H., 1996. The content and development of mobbing at work. *European journal of work and organizational psychology* 5(2), 165-184.
- Lopes, B.C., 2013. Differences between victims of bullying and nonvictims on levels of paranoid ideation and persecutory symptoms, the presence of aggressive traits, the display of social anxiety and the recall of childhood abuse experiences in a Portuguese mixed clinical sample. *Clinical psychology & psychotherapy* 20(3), 254-266.
- Mann, H., Whitney, D., 1947. On a test of whether one of two random variables is stochastically larger than the other. *Annals of mathematical Statistics*. 18, 50-60.
- McGlashan, T.H., Woods, S., Walsh, B., 2010. *The Psychosis-Risk Syndrome : Handbook for Diagnosis and Follow-Up*. Oxford University Press, New York.
- Menesini, E., Nocentini, A., 2009. Cyberbullying Definition and Measurement Some Critical Considerations. *Z Psychol* 217(4), 230-232.
- Menesini, E., Salmivalli, C., 2017. Bullying in schools: the state of knowledge and effective interventions. *Psychol Health Med* 22(sup1), 240-253.
- Miller, T.J., McGlashan, T.H., Rosen, J.L., Cadenhead, K., Cannon, T., Ventura, J., McFarlane, W., Perkins, D.O., Pearlson, G.D., Woods, S.W., 2003. Prodromal assessment with the structured interview for prodromal syndromes and the scale of prodromal symptoms: predictive validity, interrater reliability, and training to reliability. *Schizophrenia bulletin* 29(4), 703-715.
- Modecki, K.L., Minchin, J., Harbaugh, A.G., Guerra, N.G., Runions, K.C., 2014. Bullying Prevalence Across Contexts: A Meta-analysis Measuring Cyber and Traditional Bullying. *J Adolescent Health* 55(5), 602-611.
- Moffa, G., Catone, G., Kuipers, J., Kuipers, E., Freeman, D., Marwaha, S., Lennox, B.R., Broome, M.R., Bebbington, P., 2017. Using Directed Acyclic Graphs in Epidemiological Research in Psychosis: An Analysis of the Role of Bullying in Psychosis. *Schizophrenia bulletin* 43(6), 1273-1279.
- Nansel, T.R., Craig, W., Overpeck, M.D., Saluja, G., Ruan, W.J., Health Behaviour in School-aged Children Bullying Analyses Working, G., 2004. Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archives of pediatrics & adolescent medicine* 158(8), 730-736.

- Niedhammer, I., David, S., Degioanni, S., 2006. Association between workplace bullying and depressive symptoms in the French working population. *Journal of psychosomatic research* 61(2), 251-259.
- Nielsen, M.B., Einarsen, S., 2012. Outcomes of exposure to workplace bullying: A meta-analytic review. *Work & Stress* 26(4), 309-332.
- Nielsen, M.B., Matthiesen, S.B., Einarsen, S., 2010. The impact of methodological moderators on prevalence rates of workplace bullying. A meta-analysis. *J Occup Organ Psych* 83(4), 955-979.
- Nolfe, G., Petrella, C., Blasi, F., Zontini, G., Nolfe, G., 2007. Psychopathological dimensions of harassment in the workplace (mobbing). *International Journal of Mental Health* 36(4), 67-85.
- Olweus, D., 1973. *Hackkycklingar och översittare – forskning om skolmobbing*. . Almqvist & Wiksell, Stockholm.
- Olweus, D., 1991. Bully/victim problems among schoolchildren: Basic facts and effects of a school based intervention program. *The development and treatment of childhood aggression* 17, 411-448.
- Olweus, D., 1996. *The revised Olweus bully/victim questionnaire*. University of Bergen, Research Center for Health Promotion.
- Olweus, D., 2013. School bullying: development and some important challenges. *Annu Rev Clin Psychol* 9, 751-780.
- Peters, J.H., Dörfler, T., 2014. *Abschlussarbeiten in der Psychologie und den Sozialwissenschaften: Planen, Durchführen und Auswerten*.
- Phillips, L.J., Yung, A.R., McGorry, P.D., 2000. Identification of young people at risk of psychosis: validation of Personal Assessment and Crisis Evaluation Clinic intake criteria. *The Australian and New Zealand journal of psychiatry* 34 Suppl, S164-169.
- Pontillo, M., Tata, M.C., Aversa, R., Demaria, F., Gargiullo, P., Guerrera, S., Pucciarini, M.L., Santonastaso, O., Vicari, S., 2019. Peer Victimization and Onset of Social Anxiety Disorder in Children and Adolescents. *Brain Sci* 9(6).
- Rayner, C., Hoel, H., 1998. A Summary Review of Literature Relating to Workplace Bullying. *Journal of Community and Applied Social Psychology* 7(3), 181-191.
- Read, J., Hammersley, P., Rudegeair, T., 2007. Why, when and how to ask about childhood abuse. *Adv Psychiatr Treat* 13, 101–110.
- Reeves, W.C., Strine, T.W., Pratt, L.A., Thompson, W., Ahluwalia, I., Dhingra, S.S., McKnight-Eily, L.R., Harrison, L., D'Angelo, D.V., Williams, L., Morrow, B., Gould, D., Safran, M.A., Centers for Disease, C., Prevention, 2011. Mental illness surveillance among adults in the United States. *MMWR supplements* 60(3), 1-29.
- Reijntjes, A., Kamphuis, J.H., Prinzie, P., Telch, M.J., 2010. Peer victimization and internalizing problems in children: a meta-analysis of longitudinal studies. *Child Abuse Negl* 34(4), 244-252.
- Rigby, K., 1999. Peer victimisation at school and the health of secondary school students. *British Journal of Educational Psychology* 69(1), 95-104.
- Rosenthal, R., 1994. Parametric measures of effect size., in: Cooper, H., L.V., H. (Eds.), *The handbook of research synthesis*. Russell Sage Foundation, New York, pp. 231-244.

- Rugulies, R., Madsen, I.E.H., Hjarsbech, P.U., Høgh, A., Borg, V., Carneiro, I.G., Aust, B., 2012. Bullying at work and onset of a major depressive episode among Danish female eldercare workers. *Scand J Work Env Hea* 38(3), 218-227.
- Ruhrmann, S., Kaiser, N., 2013. *The Bullying Scale*. Cologne.
- Saed, B.A., Talat, L.A., Saed, B.A., 2013. Prevalence of childhood maltreatment among college students in Erbil, Iraq. *Eastern Mediterranean health journal = La revue de sante de la Mediterranee orientale = al-Majallah al-sihhiyah li-sharq al-mutawassit* 19(5), 441-446.
- Salokangas, R.K.R., Schultze-Lutter, F., Schmidt, S.J., Pesonen, H., Luutonen, S., Patterson, P., Graf von Reventlow, H., Heinimaa, M., From, T., Hietala, J., 2019. Childhood physical abuse and emotional neglect are specifically associated with adult mental disorders. *J Ment Health*, 1-9.
- Schultze-Lutter, F., Debbane, M., Theodoridou, A., Wood, S.J., Raballo, A., Michel, C., Schmidt, S.J., Kindler, J., Ruhrmann, S., Uhlhaas, P.J., 2016. Revisiting the Basic Symptom Concept: Toward Translating Risk Symptoms for Psychosis into Neurobiological Targets. *Frontiers in psychiatry* 7, 9.
- Schussler-Fiorenza Rose, S.M., Eslinger, J.G., Zimmerman, L., Scaccia, J., Lai, B.S., Lewis, C., Alisic, E., 2016. Adverse Childhood Experiences, Support, and the Perception of Ability to Work in Adults with Disability. *PLoS one* 11(7), e0157726.
- Sourander, A., Ronning, J., Brunstein-Klomek, A., Gyllenberg, D., Kumpulainen, K., Niemela, S., Helenius, H., Sillanmaki, L., Ristkari, T., Tamminen, T., Moilanen, I., Piha, J., Almqvist, F., 2009. Childhood bullying behavior and later psychiatric hospital and psychopharmacologic treatment: findings from the Finnish 1981 birth cohort study. *Archives of general psychiatry* 66(9), 1005-1012.
- Swearer, S.M., 2016. *The Bully Survey*, Unpublished manuscript. University of Nebraska-Lincoln.
- Swearer, S.M., Cary, P.T., 2003. Perceptions and attitudes toward bullying in middle school youth: A developmental examination across the bully/victim continuum. *Journal of Applied School Psychology* 19(2), 63-79.
- Swearer, S.M., Turner, R.K., Givens, J.E., Pollack, W.S., 2008. "You're so gay!": Do different forms of bullying matter for adolescent males? *School Psychology Review* 37(2), 160.
- Trotta, A., Di Forti, M., Mondelli, V., Dazzan, P., Pariante, C., David, A., Mule, A., Ferraro, L., Formica, I., Murray, R.M., Fisher, H.L., 2013. Prevalence of bullying victimisation amongst first-episode psychosis patients and unaffected controls. *Schizophr Res* 150(1), 169-175.
- Valmaggia, L.R., Day, F.L., Kroll, J., Laing, J., Byrne, M., Fusar-Poli, P., McGuire, P., 2015. Bullying victimisation and paranoid ideation in people at ultra high risk for psychosis. *Schizophrenia Research* 168(1-2), 68-73.
- Verkuil, B., Atasayi, S., Molendijk, M.L., 2015. Workplace Bullying and Mental Health: A Meta-Analysis on Cross-Sectional and Longitudinal Data. *Plos One* 10(8).
- Vessey, J.A., Demarco, R., DiFazio, R., 2010. Bullying, harassment, and horizontal violence in the nursing workforce: the state of the science. *Annu Rev Nurs Res* 28, 133-157.
- Whiteford, H.A., Degenhardt, L., Rehm, J., Baxter, A.J., Ferrari, A.J., Erskine, H.E., Charlson, F.J., Norman, R.E., Flaxman, A.D., Johns, N., Burstein, R., Murray, C.J., Vos, T., 2013. Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *Lancet* 382(9904), 1575-1586.

Wolke, D., Lereya, S.T., 2015. Long-term effects of bullying. *Archives of disease in childhood* 100(9), 879-885.

Wu, L., Zhang, D., Cheng, G., Hu, T., 2018. Bullying and Social Anxiety in Chinese Children: Moderating Roles of Trait Resilience and Psychological Suzhi. *Child Abuse Negl* 76, 204-215.

Figures

Figure 1: *The Bullying Scale for Adults (BSA) (Ruhrmann & Kaiser 2013) in part adapted for use in adults from the Bullying Survey, Swearer and Carey (2003), based on the version published in Hamburger et al., 2011."*

Figure 2: *Receiver Operating Characteristic Curve of the total data*

The PRONIA consortium

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Table 1: Distribution of age, gender and subgroups across centers

	N (%)	Age, mean (SD)	Female %
Total (N=622)			
HC	251 (40.35)	28.19 (6.37)	61.8
CHR	118 (18.97)	26.87 (5.04)	46.6
ROD	128 (20.58)	29.12 (6.11)	52.3
ROP	124 (19.61)	28.53 (5.77)	39.5
Germany / Switzerland (N=383)			
HC	149 (38.90)	28.41 (5.87)	60.1
CHR	72 (18.80)	26.75 (4.72)	43.1
ROD	83 (21.67)	29.81 (5.71)	45.8
ROP	79 (20.63)	28.82 (5.79)	34.2
Italy (N=99)			
HC	44 (44.44)	30.20 (6.55)	63.6
CHR	19 (19.19)	26.74 (5.64)	36.8
ROD	20 (20.20)	27.25 (6.79)	65.0
ROP	16 (16.16)	27.06 (3.91)	31.3
Finland (N=60)			
HC	17 (28.33)	32.53 (5.89)	70.6
CHR	14 (23.33)	27.57 (3.79)	57.1
ROD	11 (18.33)	31.27 (7.04)	63.6
ROP	18 (30.00)	29.61 (7.44)	61.1
Britain (N=80)			
HC	42 (52.50)	23.57 (5.58)	61.9
CHR	13 (16.25)	27.00 (7.17)	69.2
ROD	14 (17.50)	26.07 (5.53)	64.3
ROP	11 (13.75)	26.82 (4.69)	54.5

HC= Healthy controls, CHR=Clinical high-risk for psychosis, ROD=Recent onset depression, ROP= Recent onset of psychosis

Table 3: Pairwise comparison of BSA total scores (Rosenthal's r , Kruskal Wallis and Mann-Whitney-U-Test)

Total (N=622)	r	p
HC-ROP	-0.02	<0.001
HC-ROD	-0.08	<0.001
HC-CHR	0.21	<0.001
ROD-CHR	0.13	0.55
ROP-ROD	0.06	0.04
ROP-CHR	0.19	0.16
Germany (N=383)		
HC-ROD	-0.38	<0.001
HC-CHR	-0.40	<0.001
HC-ROP	-0.46	<0.001
ROD-CHR	-0.05	0.60
ROD-ROP	-0.03	0.73
CHR-ROP	-0.02	0.80
Finnland (N=60)		
HC-ROD	-0.25	0.19
HC-ROP	-0.51	<0.001
HC-CHR	0.78	<0.001
ROD-ROP	-0.25	0.18
ROD-CHR	0.52	0.01
ROP-CHR	0.27	0.13
Britain (N=80)		
HC-ROP	-0.18	0.20
HC-ROD	-0.29	0.03
HC-CHR	0.45	<0.001
ROP-ROD	0.12	0.55
ROP-CHR	0.30	0.14
ROD-CHR	0.19	0.34
Italy (N=99)		
HC-ROP	-0.04	0.76
HC-ROD	-0.20	0.13
HC-CHR	0.54	<0.001
ROP-ROD	0.19	0.34
ROP-CHR	0.62	<0.001
ROD-CHR	0.43	0.03

* HC= Healthy controls, CHR=Clinical high-risk for psychosis, ROD=Recent onset depression, ROP= Recent onset of psychosis. The significance level is .05. Rosenthal's r is interpreted as follows: small: $r=.1$; moderate: $r=.3$; strong: $r=.5$.

Table 2: Psychopathology in the total sample and the language subsamples

	BSc mean (SD)	CTQ mean (SD)	BDI-II (SD)	PANSS (SD)	SPIN (SD)
Total (N=622)					
HC	7.38 (8.77)	9.76 (7.81)	3.68 (5.21)	---	10.53 (7.77)
CHR	20.56 (13.75)	23.33 (15.56)	25.25 (12.20)	50.65 (13.50)	28.48 (14.65)
ROD	17.08 (13.64)	20.17 (13.74)	26.43 (13.69)	47.47 (10.99)	26.32 (12.96)
ROP	17.45 (11.93)	22.70 (14.17)	21.37 (12.56)	69.65 (21.74)	23.85 (14.08)
German-speaking (N=383)					
HC	7.41 (8.56)	9.04 (6.90)	2,49 (3,19)	---	9.67 (6.78)
CHR	19.08 (13.92)	24.04 (16.28)	27,25 (12,20)	51,39 (13,81)	29.84 (13.97)
ROD	18.93 (14.12)	20.89 (17.70)	28,43 (12,98)	50,35 (11,46)	26.78 (12.24)
ROP	19.19 (11.67)	24.04 (14.82)	22,97 (11,61)	72,41 (20,24)	24.85 (13.07)
Italian (N=99)					
HC	6.95 (8.37)	9.45 (8.86)	4,45 (7,82)	---	12.19 (8.98)
CHR	22.89 (15.43)	26.74 (15.89)	18,47 (11,29)	50,21 (12,63)	23.83 (16.59)
ROD	12.35 (12.42)	16.75 (12.32)	17,65 (14,27)	43,75 (9,35)	24.55 (16.59)
ROP	9.75 (11.72)	17.00 (12.43)	12,87 (11,21)	62,44 (21,61)	20.33 (14.35)
Finnish (N=60)					
HC	7.41 (6.82)	13.00 (10.03)	5,29 (6,20)	---	9.06 (9.58)
CHR	24.93 (10.88)	20.00 (10.48)	22,29 (10,67)	47,69 (11,74)	24.21 (15.29)
ROD	12.55 (9.10)	18.91 (4.66)	20,09 (13,73)	40,80 (4,76)	19.73 (14.53)
ROP	18.17 (9.36)	22.39 (12.71)	15,00 (11,62)	56,24 (16,10)	18.11 (15.43)
English (N=80)					
HC	7.71 (10.70)	11.31 (8.41)	6,38 (6,00)	---	13.11 (8.83)
CHR	20.62 (12.93)	18.00 (15.10)	27,30 (12,01)	50,15 (15,40)	31.82 (15.99)
ROD	16.50 (14.06)	21.79 (22.28)	32,07 (10,68)	40,50 (6,11)	29.79 (8.75)
ROP	15.00 (13.02)	21.91 (13.61)	31,90 (12,02)	81,00 (29,40)	29.55 (16.77)

HC= Healthy controls, CHR=Clinical high-risk for psychosis, ROD=Recent onset depression, ROP= Recent onset of psychosis

PANSS wasn't achieved in HC individuals

Bullying Scale for Adults (BSA)

Instructions:

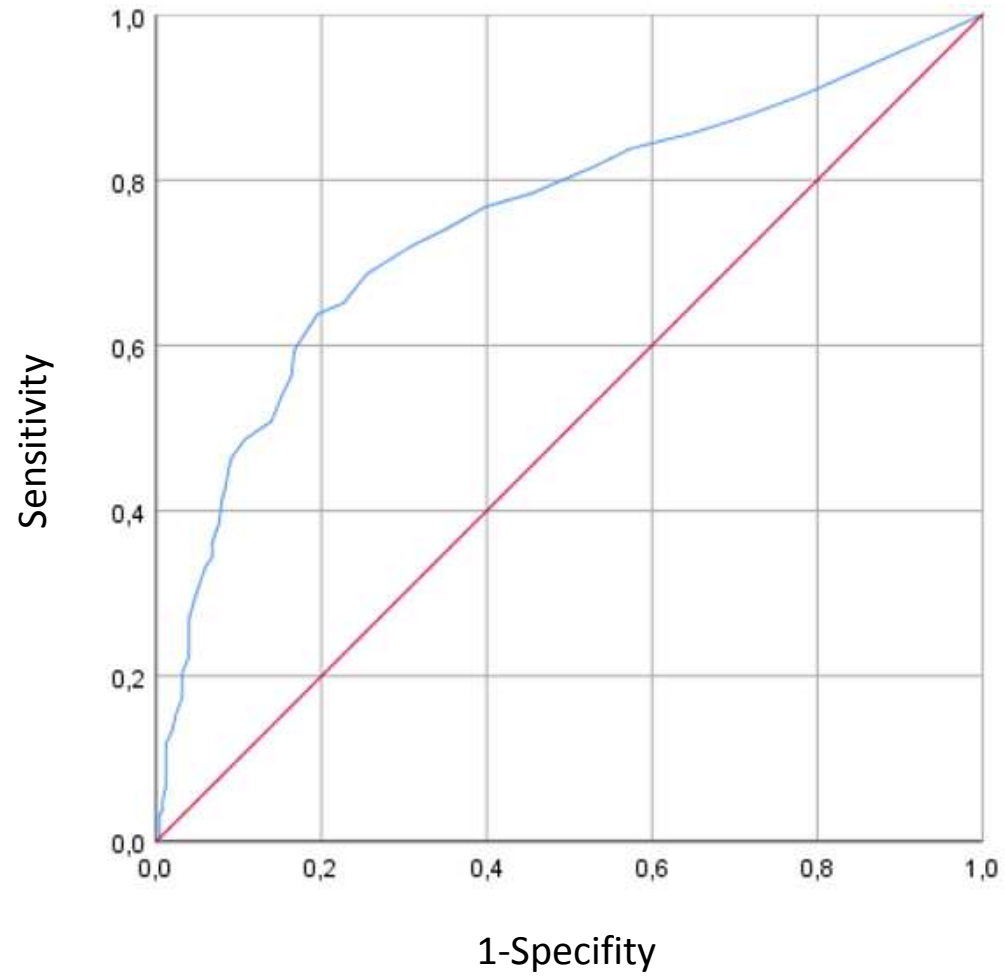
In this survey you will be asked to respond to questions and statements about 'bullies' and 'bullying'.

1. How did you get bullied? (Check, how often this happened)	A. How often did this happen?						B. Who bullied you? (multiple selections possible)				C. When/ How long did you get bullied? (multiple selections possible)		
	Never	Rarely	Sometimes	Often	Always	Don't know	Other students/ colleagues	School staff/ coach/ instructor/ supervisor	Family members/ Partner	Neighbors (Living Place)	At least for a month	Past twelve months	Before age 17
<i>Others...</i>													
Called me names	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Made fun of me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Said they will do bad things to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Played jokes on me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Won't let me be a part of their group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Broke my things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Attacked me physically (except sexually)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Assaulted me (except sexually)/ robbed me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Sexually harassed me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Sexually assaulted me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Won't talk to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Wrote bad things about me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no
Said mean things behind my back	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no

2. How much of a problem was the bullying for you?	Never a problem	Rarely a problem	Sometimes a problem	Often a problem	Always a problem
Made me feel sick	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I couldn't make friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Made me feel bad or sad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Made it difficult to learn at school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Didn't come to school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had problems with my family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Have you taken part in bullying another person? (Check how often this happened)	Never	Rarely	Sometimes	Often	Always	Don't know
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. If ever: When/ How long did you bully other people? (multiple selections possible)	At least for a month	Past 12 months	Before age 17
		<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no



Highlights

- BSA assesses bullying retrospectively throughout school and working life
- Bullying was significantly less frequent in healthy controls than in patients
- No differences between patient groups regarding bullying
- High item scale discrimination and very good internal consistency
- Good concurrent validity
- Factors: 1.Sexual harassment 2.Emotional Abuse 3.Physical Abuse 4.Problems at school

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Declaration of interest

Christos Pantelis has participated on Advisory Boards for Janssen-Cilag, Astra-Zeneca, Lundbeck, and Servier. He has received honoraria for talks presented at educational meetings organised by Astra-Zeneca, Janssen-Cilag, Eli-Lilly, Pfizer, Lundbeck and Shire.

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