Childhood physical abuse and emotional neglect are specifically associated with adult mental disorders

Running title: Specific role of physical abuse & emotional neglect

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Abstract

Background: Childhood adversities and trauma (CAT) are associated with adult mental disorders. Yet, although CAT of different domains mostly co-occur, and co-morbidity is common, the associations between CAT and mental disorders, when taking these interrelations into account, are not well known.

Aims: We aimed to study differential associations between the five core domains of CAT and current axis-I disorders, taking into consideration their interrelations.

Methods: Four hundred and fifteen outpatients attending adult primary (n=255) and psychiatric care (n=160) were assessed with the Trauma And Distress Scale (TADS) and the Mini International Neuropsychiatric Interview (MINI). Associations between CAT core domains and diagnostic categories were examined by path analyses.

Results: At least some infrequent experience of CAT (83.6%), mostly of neglect, and current mental disorders (49.4%), mostly depression, was frequent, as were comorbidities and co-occurrence of CAT domains. Considering these interrelations in a path model of excellent fit, physical abuse predicted depressive, manic, psychotic, and anxiety disorders, while emotional neglect predicted depressive, anxiety and substance misuse disorders.

Conclusions: Of all five CAT core domains, physical abuse and emotional neglect had the strongest association with adult psychiatric disorders and might have transmitted earlier reported main effects of other CAT domains onto mental disorders.

Introduction

Persons with mental problems often report childhood adversities and traumatic experiences (CAT). Recent systematic reviews and meta-analyses have demonstrated that each core domain of CAT, i.e., emotional neglect and abuse, physical neglect and abuse, and sexual abuse (Burgermeister, 2007; Thabrew, de Silva, & Romans, 2012), is significantly individually associated with adult mental axis-I disorders, in particular with psychotic, affective, anxiety and substance use disorders (Enoch, 2011; Brady & Back, 2012; Varese, et al., 2012; Bonoldi, et al., 2013; Lindert, et al., 2014; Mandelli, Petretti, & Serretti, 2015; Aas, et al., 2016; Fernandes & Osório, 2015; Nelson, Klumparendt, Doebler, & Ehring, 2017). Commonly, direct main effects of single CAT domains, as well as their simple additive effects on selected disorders or diagnostic categories, are studied, despite the fact that more often than not, there is considerable comorbidity of mental disorders (Green, et al., 2010; Hartley, Barrowclough, & Haddock, 2013; van Loo, Romeijn, de Jonge & Schoevers, 2013; Lai, Cleary, Sitharthan, & Hunt, 2015; van Loo & Romeijn, 2015; Lozano, Rojas & Fernández Calderón, 2017), as well as broad co-occurrence of CAT domains (Salokangas, et al., 2016; Schilling, et al., 2016).

Studies concerning the impact of CAT on comorbidity have generally focused on specific disorders, e.g., in terms of sensitivity analyses of meta-analyses, frequently comorbid depressive, anxiety or substance use disorder (Harkness & Wildes, 2002; Levitan, Rector, Sheldon, & Goering, 2003; Gibb, Chelminski, & Zimmerman, 2007; Spinhoven, et al., 2010; Enoch, 2011; Bonoldi, et al., 2013; Fernandes & Osório, 2015; Mandelli, et al., 2015; Aas, et al., 2016). They have consistently found that the presence of any CAT increased the odds for the respective comorbid disorder. Similarly, studies comparing the impact of different CAT domains on mental disorders frequently considered both CAT domains and mental

disorders independent of each other in analyses, or analysed an additive effect of specific combinations of CAT (Enoch, 2011; Bonoldi, et al., 2013; Fernandes & Osório, 2015; Mandelli, et al., 2015; Aas, et al., 2016; Guillaume et al., 2016; Pavlova, et al., 2016; Turner, Taillieu, Cheung, & Afifi, 2017). They commonly found that the occurrence of several CAT domains (or higher global scores of CAT assessments) increased the odds for an adult mental disorder (Bonoldi, et al., 2013; Fernandes & Osório, 2015; Turner, et al., 2017).

Only recently, research that has begun to consider these interrelations, mainly of CAT dimensions, indicated a particular role of the emotional domain. Using partial correlations to control for interrelations of CAT domains, Neumann et al. (2017) reported that among the different types of child abuse and neglect, emotional abuse was shown to be most frequently correlated with DSM-5 personality disorders, whose interrelations, however, were not controlled for. Studying a single disorder without consideration of interaction effects of comorbidities, Trauelsen et al. (2015) found that emotional abuse and neglect, and physical abuse associated specifically with first episode psychosis when controlling for the effects of other CAT domains. In a first attempt to control for interrelations of both CAT domains and psychopathology using structural equation modelling, Vachon, Krueger, Rogosch and Cichetti. (2015) controlled for the interrelation of the latent variables sexual and non-sexual child maltreatment (neglect, emotional and physical abuse) as well as of the two latent variables internalizing and externalising symptoms, yet did not distinguish the effects of emotional and physical neglect and abuse or of distinct mental disorders. They reported significant effects of the non-sexual CAT domain on both symptom factors. Thus, studies on potentially specific associations of certain CAT domains with different clinical disorders that simultaneously disentangle the respective interrelations of both CAT domains and mental disorders are still lacking, although detailed knowledge of specific associations

would be crucial for clinicians in focussing their interventions when they meet a patient with multiple CAT domains and mental disorders.

Aims of the Study

To shed first light on the network of interrelations, the present study examined the specific association between the core domains described for childhood adversities and trauma, and the main axis-I diagnostic categories, thereby controlling for the potential effects of comorbidities and co-occurrences of adversity and trauma domains, as well as age and gender, in a combined sample of adult patients attending primary and psychiatric care, using path analyses.

Material and methods

Procedure

This study belongs to a larger educational intervention programme, which was carried out in two stages in 2003/2004 and 2005 (see also Figure 1). Within the first stage, we recruited consecutive adult patients presenting at primary Health Care Centres (PrimC) or Community Mental Health Centres (PsychC) in three catchment areas in South-Western Finland during two months in spring 2003 and 2004. In Finland, both kinds of walk-in clinical services are responsible for the treatment of all people living in the same catchment area. Mental problems can be treated by either service, referral to PsychC is not obligatory. The study protocol of each study stage was separately approved by the ethical committee of the University of Turku and the Turku University Central Hospital.

Sample

Within the first-stage two-month recruitment phase, 2703 PrimC and 420 PsychC patients were invited to participate in the study and, following written informed consent, asked to complete a short questionnaire before seeing a doctor (Figure 1). Of these, 1357 (50.2%) PrimC and 283 (67.4%) PsychC patients completed a questionnaire on socio-demographic background and former treatment for mental problems (yes/no), and a depressive symptoms screen, the DEPS, where a score ≥8 indicates probable clinically relevant depressiveness (Salokangas, Poutanen, & Stengård, 1995).

The DEPS, originally developed for the use of general practitioners, is a short (10 questions) screen for detecting depression that is widely used in Finnish health care services. Contrary to the BDI, the DEPS does not include somatic questions, except sleep difficulties, and, because of this, was found to be more gender neutral (Salokangas, Vaathera, Pakriev, Sohlman, & Lehtinen, 2002). .

Two hundred and two (79.5%) of the 254 PrimC patients who scored ≥8 in the DEPS and, randomly selected, 142 (12.9%) of the 1103 who scored <8, as well as 221 (78.1%) of 283 PsychC patients underwent an additional telephone interview. In recruiting the PrimC sample, the DEPS score ≥8 screen was used to find more PrimC patients with a psychiatric disorder. Reasons for refusal to participate at questionnaire- or interview-level were not recorded.

In the second-stage recruitment phase in 2005, all interviewed 344 PrimC and 221 PsychC patients were re-contacted by a letter informing them about the study and mailed another questionnaire. Next to the assessment of CAT, the questionnaire collected information on psychiatric symptoms as well as patient's functioning and satisfaction with past service uses, which was used in educational courses for local health care personnel. It was emphasized that the CAT questions were sensitive and that response was fully voluntary. Completion and return of the questionnaire were considered informed consent. The questionnaire was fully completed and returned by 250 (73.9%) PrimC and 160 (72.4%) PsychC patients (Figure 1). They form the sample of the present study.

Figure 1

Compared to refusers/other non-participants (n=2448) of the initially invited PrimC patients (n=2703), participating PrimC patients (n=255) were more often female (64.1% vs. 72.2%; $\chi_{(1)}^2$=6.525, p=0.011) but of similar age (mean age: 49.9 vs. 49.3 years; U=303562.5, p=0.517). No corresponding differences were detected in PsychC patients (females 64.2% vs. 71.3%; age 45.0 vs. 45.0 years).

Assessments

CAT was assessed with the Trauma And Distress Scale (TADS; Patterson, et al., 2002), a valid, reliable and clinically useful instrument for retrospectively assessing reported CAT (Salokangas, et

al., 2016) and the then only available CAT instrument in Finnish. It includes 43 items rated in a five-point Likert format ranging from 0=’never’ to 4=’almost always’. Similar to the Childhood Trauma Questionnaire (Bernstein et al., 2003; see Supplementary Table 1), five domain scores can be calculated from 24 items: emotional neglect (EmoNeg) and emotional abuse (EmoAb), physical neglect (PhyNeg), physical abuse (PhyAb) and sexual abuse (SexAb), as well as the TADS domain total. Furthermore, as a measure of ‘severity’ of each domain, each domain item can be dichotomised (‘0’=0-1, and ‘1’=2-4) and totalled.

In the first-step telephone interview, 15 current axis-I disorders according to DSM-IV (Table 1) were assessed with the Mini International Neuropsychiatric Interview (MINI 5.0.0; Lecrubier, et al., 1997) that does not include somatoform disorders. The MINI possesses good validity in telephone settings (Sheehan, et al., 1998). As the MINI does not allow assessment of lifetime diagnoses for all disorders, and because of the focus on comorbidities, i.e., the concurrent rather than sequential occurrence of disorders, only current disorders were considered.

Statistical analyses

Data were analysed using Statistical Programme for the Social Sciences (SPSS) v22.0. Path analyses were carried out with Mplus version 7.4 (Muthén & Muthén, 1998-2011). Generally, analyses were based on the total sample and used the severity score of CAT domains. There were no missing data. Since the numbers of many individual diagnoses were low, in analyses only diagnostic categories (any depressive disorder [ANYDEP], any manic disorder [ANYMAN], any psychotic disorder [ANYPSY], any anxiety disorder [ANYANX] and any substance dependency [ANYSUB]; see Table 1) were used. To descriptively explore the main associations of diagnostic categories and CAT domains, as well as with age and gender, we first calculated bivariate correlations. A stepwise path analytical approach was used to test for specific effects of five CAT domains on axis-I categories when controlling for comorbidities and co-occurrence of CAT domains, as well as gender and age effects. As there is currently no evidence to support disregard of certain predictor--outcome paths, no specific paths between mediators could be hypothesized. Therefore, we started by

estimating a saturated model, in which all ten endogenous variables q (the ordinal scaled CAT domains and the binary diagnostic categories) but not the two exogenous variables p (gender and age) are interrelated. For this model including 12 observed variables, a minimum sample size of 328 is needed to detect at least a small effect with a power of 0.95 (Soper, 2017). Model fit was assessed by the χ^2 test, the Comparative Fit Index (CFI), the Tucker-Lewis index (TLI), and the Root-Mean-Square Error of Approximation (RMSEA). A good-fitting model should produce a non-significant χ^2 test ($p<0.05$), and further assumed good fit with CFI and TLI values of >0.95, and a RMSEA-value of <0.05. However, for the known hypersensitivity of χ^2 in larger samples (such as ours), emphasis was put on CFI, TLI and RMSEA. In the case of any of these three model-fit indices being unsatisfactory, a second, optional step was planned to derive a trimmed, well-fitting final model in an iterative procedure by testing nested models with the χ^2 difference test and comparison of goodness-of-fit indices.

Results

Frequency of CAT and mental disorder

Our elderly sample (19-80 yrs.) consisted of mainly women and only few singles. Unsurprisingly, mental disorders were more frequent in PsychC than in PrimC patients (Table 1). Of all 415 patients, 210 (50.6%) had none of the 15 assessed current diagnoses. They were, however, included in analyses. While eating disorders were never diagnosed, major depressive and generalized anxiety disorder were most prevalent (Table 1). Comorbidity was also common in the 205 patients with a current disorder: 87 (42.4%) met one, 87 (42.5%) two or three, and 31 (15.1%) four or more diagnostic criteria, resulting in a mean number of diagnoses of 2.12 (SD 1.44).

Table 1

Most patients (85.8%) confirmed that at least one CAT item had occurred at least 2=‘sometimes’ in their youth; more than half reported EmoNeg (67.5%), PhyNeg (57.8%) and EmoAb (52.0%),

slightly fewer PhyAb (47.7%) and fewest SexAb (13.7%). The severity in each domain, except SexAb, was higher in PsychC than in PrimC patients (Table 1).

Bivariate associations between CAT domains and mental disorders

All severities of CAT domains were highly significantly correlated (Table 2), whereby SexAb was least linked to other domains ($0.279 \leq \rho \geq 0.197$). Furthermore, all diagnostic categories were significantly interrelated, though mostly less frequently than CAT domains amongst themselves. Correlations between CAT domains and diagnostic categories became significant in only 14 of the 25 instances and were generally highest for PhyAb and EmoNeg (Table 2). ANYPSY was not related to any domain, and SexAb only to ANYDEP. ANYSUB was only related to PhyAb and EmoNeg, and, besides SexAb, ANYMAN was also unrelated to PhyNeg. Additionally, few correlations were observed between gender or age, and disorder or CAT (Table 2).

Table 2

Path modelling of relationship between CAT domains and axis-I diagnostic categories

Although, as expected given our large sample size, the χ^2 test became significant ($\chi^2_{(65)}=680.528$, $p<0.001$), already the saturated model produced an excellent model fit as indicated by RMSEA of 0.000 (90%CI 0.000-0.062), CFI of 1.000 and TLI of 1.018 (Figure 2). Thus, we did not calculate a trimmed model.

Figure 2

Again, severities of CAT domains were highly interrelated, as were diagnostic categories with the exception of ANYPSY and ANYSUB (Figure 2). Female gender was associated with EmoAb and male gender with ANYMAN and ANYSUBS. Age associated negatively with ANYANX and ANYSUBS. PhyAb had significant effects on ANYDEP, ANYMAN, ANYPSY and ANYANX, and EmoNeg on ANYDEP, ANYANX and ANYSUBS (Figure 2). Notably, there were no significant paths from EmoAb, SexAb and PhyNeg to any diagnostic category, not even on a statistical trend level ($p<0.10$). The only additional paths significant on a trend level were between

being female and SexAb (0.154, p=0.065), and between younger age and ANYPSY (-0.226, p=0.089).

Discussion

As expected, severities of CAT domains and, though less pronounced, presence of mental disorders of different diagnostic categories were both significantly interrelated in both correlation and path analyses. As evidenced by the path model, these interrelations accounted for several of the significant bivariate correlations between CAT domains and mental disorders. Broadly in line with the majority of studies that frequently focus selectively on bilateral relations between distinct mental disorder and preselected or single CAT domains (Enoch, 2011; Brady & Back, 2012; Varese, et al., 2012; Bonoldi, et al., 2013; Lindert, et al., 2014; Mandelli, et al., 2015; Fernandes & Osório, 2015; Aas, et al., 2016), in correlation analyses, all types of CAT domains, except sexual abuse (SexAb), associated comprehensively with all but psychotic disorders. In the path model, these significant associations broke down into those with the highest correlations, i.e., physical abuse (PhyAb) and emotional neglect (EmoNeg), indicating that these two domains had moderated or mediated the significant bivariate correlations between the other three CAT domains and mental disorders. Thereby, depressive and anxiety disorders were linked to both PhyAb and EmoNeg, while manic and psychotic disorders were specifically related to PhyAb, and substance dependence specifically to EmoNeg. Gender and age did not moderate these relations.

These results are striking in several ways. First, for the obvious insignificance of SexAb that has received more attention than any other CAT domain for its assumed major contribution to mental ill health (Nelson, Baldwin, & Taylor, 2012; Thabrew, et al., 2012; Hanson & Adams, 2016). Although, commonly, sexual abuse is least correlated with other CAT domains (Shin, Hassamal, & Groves, 2015), probably because of its lesser frequency, studies have reported that the odds of SexAb were significantly elevated in the presence of other forms of CAT or a family history of dysfunction, and that SexAb would add to the odds of developing adult mental disorders in the

presence of other CAT domains (Schilling, et al. 2016; Turner, et al., 2017). The low frequency of SexAb may explain why, also in the present study, its weak correlation was significant only with depressive disorders. In accordance with results of a structural equation model that took interrelations into account (Vachon et al., 2015), this association of SexAb was also no longer significant in our path analysis, once the effects of other CAT domains were taken into account. Thus, as recently reported for the effects of CAT on the neural circuits underlying mentalizing (van Schie, et al., 2017), the main role of SexAb on axis-I disorders might at least partly be explained in terms of a moderator of the effect of some other CAT. Consequently, in clinical practice, focus should not be mainly on sexual abuse but comprehensively on all kinds of CAT. However, SexAb has been particularly related to borderline personality, as well as to somatoform and dissociative disorders (Nelson, et al., 2012; Winsper, et al. 2016): these were not considered in our study and might still play a more directly specific role in the development of these particular disorders and related symptoms such as self-injury and suicidality (Maniglio, 2011).

Second, our results are striking as they indicate that EmoNeg, although thought to be less severe and traumatizing than EmoAb, but not EmoAb, was a predictor of presence of mental disorder, in particular depressive, anxiety and substance disorder. This is in line with a recent meta-analysis on CAT domains and depression (Nelson et al., 2017) that found emotional neglect most strongly related to the presence of depression – in which it was also the most commonly reported CAT type, while emotional abuse was most strongly related to depression severity. This indicates a differential role of emotional neglect and abuse on presence and severity of depression with emotional neglect playing the stronger role when sheer presence is considered, such as in our study. A greater effect of emotional neglect in comparison to emotional abuse, i.e., the greatest Odd Ratios, was also reported for non-affective psychosis (Trauelsen et al., 2015). As EmoNeg had a higher severity compared to EmoAb in our study, this indicates that a chronic family atmosphere that, passively, does not provide sufficient feelings of security and appreciation, in more than one respect can deleterious effects that leads to mental ill-health. The more occasional, “one-off” episodes of

actively delivered rejection, humiliation, being hated or made to feel bad or inferior, however, might be then related to the severity of ill-health. This might convey the significant role of emotional abuse reported in other studies. For example, an earlier meta-analysis of the effect of CAT on adult depression (Mandelli, et al., 2015) found emotional abuse to be slightly more strongly associated with depression than combined emotional and physical neglect (OR=2.75), followed by sexual abuse and physical abuse. However, their definition of emotional abuse also included aspects of EmoNeg according to the TADS such as indifference that causes the child to feel worthless, unloved or inadequate. Interestingly, all effects of CAT except neglect were higher in community than in clinical studies (Mandelli, et al., 2015). Thus, EmoNeg might associate with presence of depressive and anxiety disorders more specifically than EmoAb.

For substance use disorders, the evidence on potential main effects of certain CAT domains is conflicting (Enoch, 2011). While each CAT domain seems to increase the odds for drug misuse/dependency, some studies report major effects of sexual abuse, others of emotional neglect/abuse, with the effect of emotional neglect/abuse perhaps being stronger in women (Enoch, 2011). Thus, it is possible that the specific effect of EmoNeg on ANYSUB was moderated by the high prevalence of women in our study, which showed ANYSUB itself to be related to both (younger) age and (male) gender. However, gender played no significant role in a recent community study that found emotional abuse to be associated via psychological distress to specifically alcohol dependence, when effects of other CAT domains, but not of comorbidities, were controlled in the structural equation modelling (Shin, et al., 2015). In any case, emotional neglect seems to play a rather prominent role in explaining the occurrence of substance abuse. Unfortunate, same emotionally neglecting treatment is often repeated when substance abusers try to seek help from health care services (Ebsworth & Foster, 2017).

Third, our results are striking for the significant role of PhyAb that added to the effect of EmoNeg to a similar degree in the case of ANYDEP and to a lesser degree in the case of ANYANX, and that was unique for ANYMAN. In meta-analyses, the independent impact of physical abuse/neglect on

depressive and anxiety disorders had been not only less than that of emotional abuse/neglect but also less than that of sexual abuse (Fernandes & Osório, 2015; Mandelli, et al., 2015). Again, this indicates that much of the assumed single effect of sexual abuse is explained by the effects of co-occurring CAT domains when these are appropriately taken into account. Furthermore, our result suggests that physical abuse, i.e., bodily assaults on a child that posed a risk of or resulted in injury, might be particularly damaging, resulting in depressiveness and generally heightened anxiety when no emotional support is provided to overcome these experiences.

As regards the association between PhyAb and ANYMAN, the dominant role of PhyAb was surprising in light of studies on bipolar disorder that indicated a dominant role of sexual abuse and emotional neglect for bipolar I and II disorders, respectively (Aas, et al., 2016). In a study on bipolar patients differentiating depressive and (hypo)manic episodes, depressive but not (hypo)manic episodes were related to physical abuse that was also related to self-harm and lower global functioning (Larsson, et al., 2013). Yet, in patients with bipolar disorder, physical abuse increased the risk for comorbid substance use and anxiety disorder, in particular panic disorder (Aas, et al., 2016; Pavlova, et al. 2016). Thus, should this result be replicated in future larger samples, more studies are needed on the various mediators or moderators of the association between ANYMAN and PhyAb in bipolar patients for differentiating the type of present and past episodes to control for the dominance of depressive or (hypo)manic features.

Strengths and limitations

Besides the major strength of our study in using a method that can account for expected interrelations between both diagnostic categories and CAT, and thus help to disentangle their effects in a sufficiently large patient sample, some limitations, apart from those discussed above, should be acknowledged. First, the PsychC sample was but the PrimC sample was not randomly selected but weighted to those with depressive symptoms in order to increase the number of patients with psychiatric disorders. The associations between CAT and diagnostic categories were higher in the PrimC (for CAT total and any diagnoses $\rho=0.325$, $p<0.001$) than in the PsychC ($\rho=0.238$, $p=0.002$) but highest in the combined sample ($\rho=0.377$, $p<0.001$), indicating that combining PrimC and PsychC samples emphasised the associations between CAT and psychiatric diagnoses. The overrepresentation of females had a similar effect (in females $\rho=0.442$, $p<0.001$, in males $\rho=0.241$, $p<0.009$). However, the effect of gender was taken into account in path analysis.

Despite its size, our sample did not allow for modelling of single disorders, although efforts were made to increase the number of PrimC patients with psychiatric disorders by selecting them using the DEPS screen. Furthermore, personality as well as some axis-I disorders, such as somatoform disorders, are not covered by the MINI, while others, such as eating disorders, were clearly underrepresented in our sample; these should be covered in more detail in future similar studies.

A disadvantage shared with most other studies is the cross-sectional study design that, strictly speaking, does not allow causal conclusions. However, the focus on current disorders and past, retrospectively assessed CAT does introduce a “natural” sequence of events that is commonly treated as being sufficient for causal conclusions (Pirkola, et al., 2005; Read, van Os, Morrison, & Ross, 2005; Weich, Patterson, Shaw, & Stewart-Brown, 2009). Additionally, it is still unclear how far CAT can be validly assessed retrospectively as their recall in adulthood might be subject to several general and domain-specific biases (Hardt & Rutter, 2004). However, in the absence of any indication of a clear-cut advantage of interviews over questionnaires, or vice versa (Hardt & Rutter,

2004), the TADS that is psychometrically comparable to other questionnaires (Salokangas, et al., 2016) is unlikely to have introduced a bias not shared with other retrospective assessments.

In conclusion, even in light of these limitations, the most momentous finding of our study remains: CAT domains, as well as mental disorders, are interrelated to such a degree that their individual assessment and analysis might convey a distorted impression of the relevance of certain associations. This might be true in particular for sexual abuse that has frequently been in the exclusive focus of studies and of recommendations for clinical practice (Nelson, et al., 2012). Because of its relative rarity and probably only moderating effect, such a focus carries the risk of missing children at heightened risk of adult mental disorder due to emotional and physical CAT. Our results are, therefore, a strong call to consider the complex networks of CAT and mental disorders appropriately in future studies, including studies on the neurobiological effects of CAT.

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Figure legends

Figure 1 Flow chart of recruitment during the first and second phase of the study.

Figure 2 Path model of the relation between CAT domain severities and diagnostic categories with consideration of the influence of gender and age.

Dashed lines indicate non-significant paths (p>0.05), thick lines significant paths with standardized estimates in bold and p-values in Italics. ANYDEP: any depressive disorder; ANYMAN: any manic disorder; ANYPSY: any psychotic disorder; ANYANX: any anxiety disorder; ANYSUB: any substance dependency; PhyAb: physical abuse; EmoAb: emotional abuse; SexAb: sexual abuse; EmoNeg: emotional neglect; PhyNeg: physical neglect.

Significant interrelations (estimate, *p-value*) of diagnostic categories and CAT domains, respectively (from top to bottom, left to right): ANYDEP–ANYMAN: 0.300, *0.006*; ANYDEP–ANYPSY: 0.394, *0.001*; ANYDEP–ANYANX: 0.601, *<0.001*; ANYDEP–ANYSUB; 0.357, *0.001*; ANYMAN–ANYPSY: 0.359, *0.020*; ANYMAN–ANYANX: 0.368, *0.004*; ANYMAN–ANYSUB: 0.249, *0.049*; ANYPSY–ANYANX: 0.373, *0.005*; ANYANX–ANYSUB: 0.374, *<0.001*; PhyAb–EmoAb: 0.600, *<0.001*; PhyAb–SexAb: 0.219, *<0.001*; PhyAb–EmoNeg: 0.510, *<0.001*; PhyAb–PhyNeg: 0.515, *<0.001*; EmoAb–SexAb: 0.243, *<0.001*; EmoAb–EmoNeg: 0.667, *<0.001*; EmoAb–PhyNeg: 0.518, *<0.001*; SexAb–EmoNeg: 0.254, *<0.001*; SexAb–PhyNeg: 0.291, *<0.001*; EmoNeg–PhyNeg: 0.649, *<0.001*.

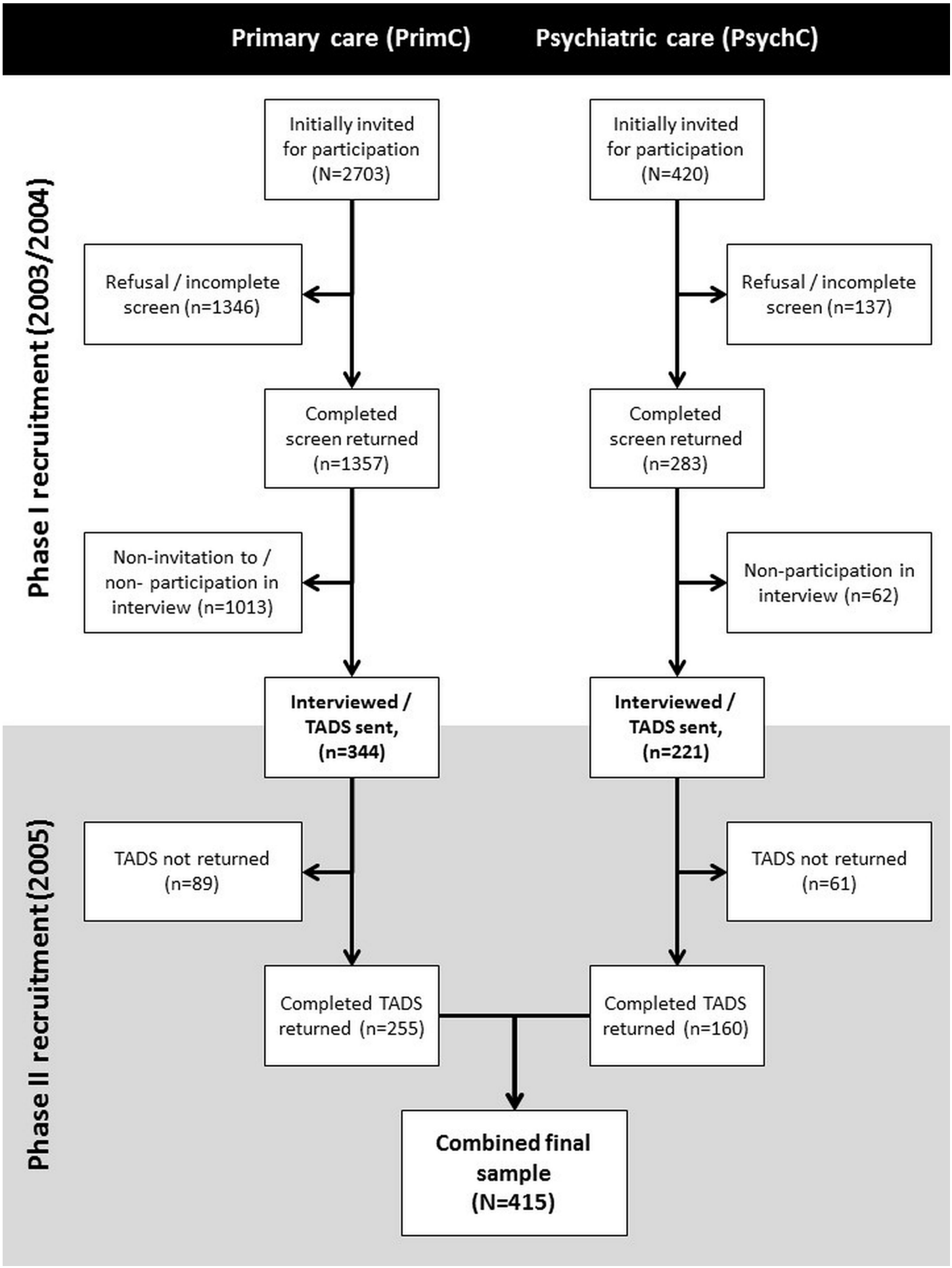

Primary care (PrimC)
Psychiatric care (PsychC)
Phase I recruitment (2003/2004)
Initially invited for participation (N=2703)
Initially invited for participation (N=420)
Refusal / incomplete screen (n=1346)
Refusal / incomplete screen (n=137)
Completed screen returned (n=1357)
Completed screen returned (n=283)
Non-invitation to / non- participation in interview (n=1013)
Non-participation in interview (n=62)
Interviewed / TADS sent, (n=344)
Interviewed / TADS sent, (n=221)
Phase II recruitment (2005)
TADS not returned (n=89)
TADS not returned (n=61)
Completed TADS returned (n=255)
Completed TADS returned (n=160)
Combined final sample (N=415)

Table 1. Sociodemographic and clinical characteristics of patients from primary (PrimC) and psychiatric care (PsychC).

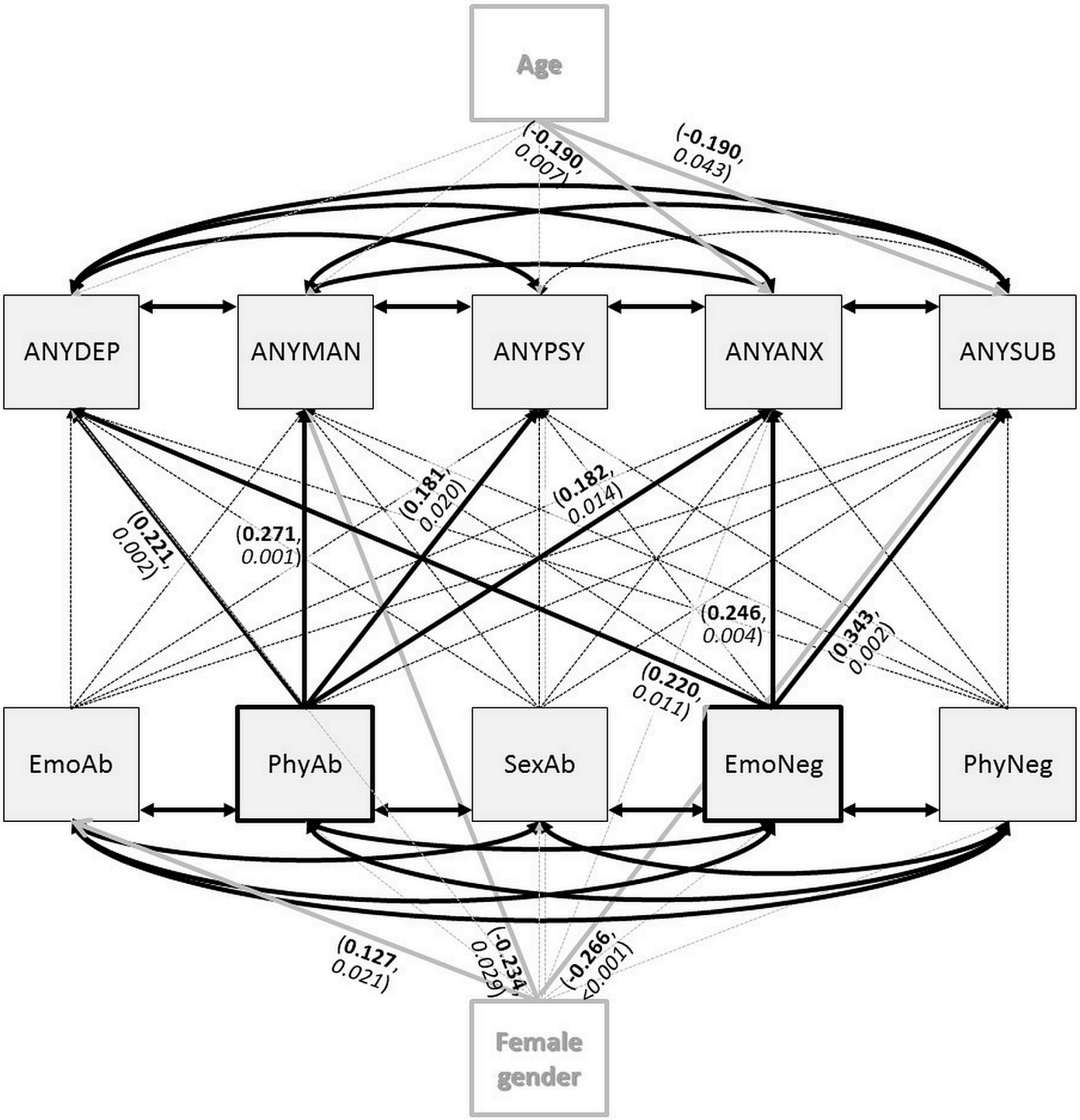
	PrimC (n=255; 61.4%)	PsychC (n=160; 38.6%)	Total sample (n=415; 100%)	Statistics $\chi^2_{(df)}$ / U, p
Gender, % male	27.8%	28.8%	28.2%	$0.040_{(1)}$, 0.842
Age; Mdn, mean (SD)	52.0; 49.3 (15.1)	46.9, 45.0 (10.9)	49.7, 47.6 (13.8)	32640.0, 0.002**
Mariatal status, %				$6.244_{(2)}$, 0.044*
Single	15.3%	14.4%	14.9%	
Married / cohabiting	55.7%	66.9%	60.0%	
Divorced or separated / widowed	29.0%	18.8%	25.1%	
MINI categories and diagnoses, %				
Any depressive disorder (ANYDEP)	23.9%	58.1%	37.1%	$49.282_{(1)}$, <0.001***
Major depressive episode (MDD)	20.8%	45.6%	30.4%	$28.692_{(1)}$, <0.001***
Dysthymia (DYS)	5.5%	29.4%	14.7%	$44.732_{(1)}$, <0.001***
Any manic disorder (ANYMAN)	2.7%	3.8%	3.1%	$0.327_{(1)}$, 0.567
Manic episode (MAN)	1.6%	2.5%	1.9%	$0.451_{(1)}$, 0.492^F
Hypomanic episode (HYPOMAN)	1.2%	1.3%	1.2%	$0.004_{(1)}$, 1.0^F
Any psychotic disorders (ANYPSY)	1.6%	5.6%	3.1%	$5.331_{(1)}$, 0.038^F*
Any anxiety disorder (ANYANX)	16.1%	48.1%	28.4%	$49.617_{(1)}$, <0.001***
Generalised anxiety disorder (GAD)	14.5%	39.4%	24.1%	$33.234_{(1)}$, <0.001***
Panic disorder (PANIC)	1.2%	8.8%	4.1%	$14.354_{(1)}$, $<0.001^F$***
Social phobia (SOC)	1.2%	12.5%	5.5%	$24.080_{(1)}$, $<0.001^F$***
Agoraphobia (AGO)	0%	0%	0%	not calculated
Obsessive-compulsive disorder (OCD)	1.6%	15.0%	6.7%	$28.189_{(1)}$, $<0.001^F$***
Posttraumatic stress disorder (PTSD)	1.2%	3.8%	2.2%	$3.069_{(1)}$, 0.094^F
Any substance dependency (ANYSUBS)	9.4%	16.3%	12.0%	$4.338_{(1)}$, 0.037*
Alcohol dependency (ALC)	8.6%	14.4%	10.8%	$3.359_{(1)}$, 0.067
Drug dependency (DRUG)	1.2%	3.1%	1.9%	$1.974_{(1)}$, 0.270^F
Any eating disorder (ANYEAT)	0%	0%	0%	not calculated
Anorexia or Bulimia nervosa	0%	0%	0%	not calculated
Any MINI diagnosis	34.5%	73.1%	49.4%	$58.648_{(1)}$, <0.001***
CAT domain severity; Mdn, mean (SD)				
Emotional neglect (EmoNeg, range 0-5)	1, 1.6 (1.8)	3, 2.8 (1.9)	2, 2.1 (1.9)	13549.0, <0.001***
Emotional abuse (EmoAb, range 0-5)	0, 0.9 (1.3)	1, 1.8 (1.7)	1, 1.2 (1.5)	14057.0, <0.001***
Physical neglect (PhyNeg, range 0-4)	1,0.9 (1.1)	1, 1.4 (1.3)	1, 1.1 (1.2)	16052.0, <0.001***
Physical abuse (PhyAb, range 0-5)	0, 0.7 (1.1)	1, 1.1 (1.3)	0, 0.9 (1.2)	15630.0, <0.001***
Sexual abuse (SexAb, range 0-5)	0, 0.3 (0.9)	0, 0.5 (1.2)	0, 0.4 (1.0)	19318.0, 0.128

* p<0.05, ** <0.01, *** <0.001; ^{F} indicates use of Fisher's exact test for any expected cell frequency <5
Wilcoxon test of EmoNeg > EmoAb: Z=-10.642, p<0.001.
Wilcoxon test of PhyNeg > PhyAb: Z=-4.068, p<0.001.

Table 2 Correlation matrix of age, gender, severity of CAT domains and presence of current diagnostic categories (N=415), Spearman's ρ and Pearson's r.

	Gender [a]	Age	EmoAb	PhyAb	SexAb	EmoNeg	PhyNeg	ANYDEP	ANYMAN	ANYPSY	ANYANX
Gender	1.000 .										
Age	0.009 0.848	1.000 .									
Emotional abuse (EmoAb)	-0.111* 0.024	-0.042 0.391	1.000 .								
Physical abuse (PhyAb)	0.014 0.777	0.020 0.687	0.542** 0.000	1.000 .							
Sexual abuse (SexAb)	-0.159** 0.001	0.004 0.928	0.279** 0.000	0.197** 0.000	1.000 .						
Emotional neglect (EmoNeg)	0.014 0.780	-0.031 0.523	0.658** 0.000	0.523** 0.000	0.249** 0.000	1.000 .					
Physical neglect (PhyNeg)	-0.066 0.180	0.083 0.091	0.534** 0.000	0.522** 0.000	0.263** 0.000	0.639** 0.000	1.000 .				
Any depressive disorder (ANYDEP)	0.040 0.420	-0.012 0.803	0.272** 0.000	0.326** 0.000	0.100* 0.042	0.312** 0.000	0.235** 0.000	1.000 .			
Any manic disorder (ANYMAN)	0.103* 0.037	-0.060 0.220	0.126* 0.010	0.161** 0.001	0.053 0.280	0.126** 0.010	0.055 0.259	0.148** 0.002	1.000 .		
Any psychotic disorder (ANYPSY)	0.072 0.144	-0.085 0.083	0.037 0.456	0.079 0.109	0.010 0.842	-0.003 0.953	0.013 0.798	0.120* 0.015	0.126** 0.010	1.000 .	
Any anxiety disorder (ANYANX)	0.009 0.860	-0.144** 0.003	0.248** 0.000	0.267** 0.000	0.043 0.378	0.290** 0.000	0.199** 0.000	0.445** 0.000	0.163** 0.001	0.132** 0.007	1.000 .
Any substance depen-dency (ANYSUB)	0.196** 0.000	-0.121* 0.014	0.065 0.185	0.144** 0.003	0.010 0.833	0.198** 0.000	0.089 0.069	0.221** 0.000	0.146** 0.003	0.103* 0.035	0.243** 0.000

[a] 0=female; 1=male; * p<.05; ** p<.01


Age
(-0.190, 0.007)
(-0.190, 0.043)
ANYDEP
ANYMAN
ANYPSY
ANYANX
ANYSUB
(0.221, 0.002)
(0.271, 0.001)
(0.181, 0.020)
(0.182, 0.014)
(0.246, 0.004)
(0.220, 0.011)
(0.343, 0.002)
EmoAb
PhyAb
SexAb
EmoNeg
PhyNeg
(0.127, 0.021)
(-0.234, 0.029)
(-0.266, <0.001)
Female gender