

# **Dropout prediction for an early intervention for sub-threshold and mild panic disorder**

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## Abstract

Dropout is a common and serious problem in research and psychological practice. When participants terminate treatment prematurely, there are methodological, clinical, financial and moral consequences. The aim of the present study was to identify predictors of dropout in a sample of patients ( $N=217$ ) with sub-threshold and mild panic disorder treated with an early intervention program which was based on cognitive-behavioral principles. Three groups of possible predictors were selected from literature: socio-demographic, personal and illness-related variables. A total of 51 participants (23.5%) were classified as dropouts. The group of dropouts was divided into three groups: the total dropout group ( $n=51$ ) consisting of pretreatment dropouts ( $n=17$ ) who attended 0 course sessions and regular dropouts ( $n=34$ ) who attended 1-5 course sessions. The results of the study showed that *years of education* were significantly related to total dropout. Furthermore, *male gender* was related to pretreatment dropout. There were no significant predictors found for regular dropout. The explanatory variation of the predictors remained small. Other predictors were not significantly related to (pretreatment) dropout. It can be concluded that, at present, it remains difficult to predict dropout risk precisely, even in a homogeneous group of patients treated with standardized treatments.

## Samenvatting

Dropout is een veel voorkomend en ernstig probleem in onderzoek en in psychologische behandelingen. Als een deelnemer of patiënt vroegtijdig stopt met de deelname aan het onderzoek of met de behandeling, zorgt dat voor methodologische, klinische, financiële en morele gevolgen. Dit onderzoek doelt erop, om voorspellers van dropout te identificeren bij een sample ( $N=217$ ) van cursisten die deelnamen aan een vroege interventie voor (milde) panieklachten. De cursus is gebaseerd op principes van de cognitieve- gedragstherapie. Er zijn drie groepen van mogelijke voorspellers geselecteerd op basis van literatuuronderzoek: socio-demografische, persoonlijke en ziektegerelateerde variabelen. Eenenvijftig deelnemers (23,5%) stopten vroegtijdig met de cursus. De totale dropout groep ( $n=51$ ) bestaat uit pretreatment dropouts ( $n=17$ ) die nul keer deel hebben genomen aan de cursus bijeenkomsten en regular dropouts ( $n=34$ ), die tussen de een en vijf keer aanwezig waren bij de bijeenkomsten. Uit de resultaten blijkt dat het *aantal jaren opleiding* totale dropout significant voorspelt. Daarnaast is *mannelijk geslacht* een significante voorspeller voor pretreatment dropout. Er zijn geen significante voorspellers gevonden voor regular dropout. De gevonden verklarende variantie van de voorspellers is klein. Deze resultaten laten zien dat het moeilijk blijft om dropout precies te voorspellen, hoewel er een homogene groep van deelnemers is onderzocht die een cursus volgde, gebaseerd op gestandaardiseerde principes van de cognitieve gedragstherapie.

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## 1. Introduction

Dropout is a serious and common problem in research trials and in every day practice of psychological treatment (White, Allen, Barlow, Gorma, Shear & Woods, 2010; Bados, Balaguere & Sandana, 2007; Keijsers, Kampman & Hoogduin, 2001). Dropout causes methodological, clinical, financial and moral problems for researchers, mental health professionals, patients, their families and ultimately society.

In clinical studies, dropout is often described as a subject withdrawing or failing to complete a clinical study and not returning before the program is accomplished (Bados et al., 2007). In psychological practice, a person deciding to quit psychological therapy before the end of the protocol or leaving before the therapist considered this decision as appropriate is also considered a dropout (Veeninga & Hafkenscheid, 2004).

A significant problem in most research concerning the management of dropout is the lack of one commonly accepted definition for dropout. (Mahon, 2000, Reis & Brown, 1999, Pekarik & Wierzbicki, 1986). As a result, each study tends to apply a different, often arbitrary definition of dropout. That has resulted in for example in some studies distinguishing between participants leaving the study (treatment attrition), the participant's unilateral decision to stop (dropout) and the exclusion from the study by a researcher (premature termination) (Mahon, 2000). In addition, some studies distinguish between early and later dropouts (Sonawalla, Focrabaugh & Leslie, 2002) while other studies do not report different groups of dropout at all (Grilo, Money, Barlow, Goddard, Gorman, Hofman, Papp, et al., 1998). Many studies use the dropout terms interchangeably instead of choosing one definition and using it consistently (Mahon, 2002). The effect of different definitions of dropout seems to be underestimated. Wierzbicki and Pekarik (1992) discovered that different definitions of dropout result in different rates of dropout, which affects the effectiveness of the studies. That in turn, makes it difficult to compare the results of different studies among themselves.

Next to the lack of a definition, there are several problems concerning the dropout in research. When dropout occurs in research trials, scientists face methodological challenges. Participants' dropout reduces e.g. sample size and alters the group composition which can lead to reduced reliability and validity of study results. The statistical power which restricts statistical conclusion validity is also sensitive to changes in sample size. This can affect the internal, external and construct validity of the study (White et al. 2010; Nantz, Lui- Seifert & Kljaresvski, 2009; Keijsers et al., 2001).

Within the current literature there are more difficulties identified concerning the management of dropout. One problem which occurs in research is the administration and analysis of the dropout data. Although it should be a common procedure to record the percentages and reasons of dropout, only few studies actually gather this information (Nantz et al. 2009; White et al. 2010). Even if dropout rates are gathered, the data is often not carefully assessed because all dropouts are combined and analyzed together regardless of the reason and moment of termination. Since there are differences in dropout behavior such as not starting with the program or terminating halfway the treatment, the different dropout groups should be examined separately (White et al. 2010).

Besides negative consequences of dropout in research, there are also consequences detected in the field of psychological practice. Dropping out from psychological treatment affects participants themselves but also their families, the practitioners and on long term the society. Patients who dropout earlier from psychological treatment are unlikely to recover on their own (Pekarik 1983, 1992; King, 1989) and they will not derive the same potential benefit of the treatment as “so-called” completers do (Davis, Hook & Page 2006). Hollon, Shelton and Davis (1993) showed that patients with mood disorders who stopped drug treatment prematurely had a higher chance to experience a relapse of symptoms or other undesirable (side) effects. Patients who dropout, are also at risk of losing hope and developing a negative attitude towards (further) treatment. Several studies have shown that previous treatments affect treatment attitude and the outcome of subsequent treatments (White et al., 2010). Therefore a successful treatment experience seems to be important to the participant’s future treatment seeking behavior. Participant’s dropout also affects his or her environment. When participants leave the study without any explanation, the family and colleagues can undergo additional stress because the participant’s problem remains untreated (Mahon, 2000; Grilo et al., 1998). Furthermore the therapist can become demoralized when participants leave the treatment (Mahon, 2000; Visser, 2001; Pekarik, 1985). Moreover Mahon (2000) found out that in group therapy the cohesion of a group is also in danger of becoming disrupted when participants quit the treatment and leave the group. Furthermore, economical consequences play also a role in dropout. In case of terminating treatment, dropouts will not receive the benefits of the treatment. Little or no improvement is associated with a large burden of disease because of absence through illness, extensive loss of productivity and medical consumption which can result in considerable economic costs for society on long term (Batelaan, De Graaf, van Balkom, Vollebergh & Beekman, 2007; Smit, Cuijpers,

Oostenbrink, Batelaan, De Graaf & Beekman, 2006; Harvison, Woodruff, Borden & Jeffery, 2004).

If dropout occurs in psychological practice, patients might not complete potentially effective treatment for several reasons. Reported reasons for dropout gathered from cognitive behavioral therapy (CBT), are mainly practical problems such as transportation, external pressure like work constrains, symptom improvement or decline, adverse life events or treatment dissatisfaction (White et.al., 2010; Nantz et.al. 2009; Keijsers et.al. 2001). Unfortunately many respondents terminate treatment without any explanation (Keijsers et al. 2001).

### **Predictors for dropout**

Previous studies have shown that there are several predictive factors possibly playing a role in dropout behavior. Although mixed results were found, it is possible to outline three main categories of predictors related to dropout: (a) Socio-demographic variables, (b) personal factors and (c) illness characteristics.

*Socio-demographic variables:* Previous studies about panic disorder treatment for instance cognitive behavioral therapy, have shown that younger age (White et al. 2010, Edlund, Wang, Berglund, Katz, Lin & Kessler, 2002), fewer years of education (King & Canada, 2003; Wade & Treat, 1998, Wierzbicki & Pekarik, 1993), lower income (Nantz, 2009; Edlund et al.2002, Wierzbicki & Pekarik, 1993) and ethnical background such as minority status (King & Canada, 2010; Nantz et.al. 2009; Wierzbicki & Pekarik, 1993) result in higher early treatment dropout. These findings are comparable to variables leading to a higher dropout rate in psychotherapy in general. Previous studies found out that lower socio-economic status, minority racial status and lower level of education are related to dropout. These studies also found additional predictors like female gender (Baekeland & Lundwall, 1975) as well as *marital status* (Garfield, 1986) such as divorced, un-married or widowed to play a role in dropout behavior (Renses, Munoz, Lopez-Ibor, 2009).

*Personal variables:* Variables such as attitude also play a role when it comes to dropout behavior (Ajzen, 1985; Bandura, 1986). Keijsers, Kampan and Hoogduin (2001), as well as Baekeland and Lundwall (1993), found a relationship between motivation and treatment completion in manualized cognitive behavioral therapy and psychotherapy in general. Highly motivated respondents were more eager to finish the treatment compared to less motivated respondents. Negative treatment attitudes are also related to treatment dropout (Grilo et al.,

1998). In case of discrepancy between the patient's and the therapist's expectations about the treatment, higher dropout rates were discovered (Garfield et al., 1963). In studies exploring the relationship between personality traits and dropout, participants leaving the study earlier, scored higher on novelty seeking, impulsiveness, and passive aggressive behavior (Wingerson, Sullivan, Dager & Flick, 1993; Baekeland & Lundwall, 1975). On the other hand there are also studies which found no association between personality and treatment dropout (e.g. Grilo et al., 1998).

*Illness characteristics:* Symptom severity is an often mentioned factor within the dropout context. There are mixed results found for symptom severity. In some previous studies a relationship between symptom severity and treatment dropout was found. In a study of Otto, Tuby, Gould, McLean & Pollack (2001) participants with significantly more severe symptoms of obsessive compulsive disorder tended to terminate treatment more often. Similarly, respondents who experienced severe panic symptoms or a relapse of panic symptoms tend to dropout earlier (Keijsers et al., 2001). Findings of Baekeland and Lundwall (1975) are not in line with these results. They found that low levels of anxiety and depression symptoms as well as a relief of symptoms are strongly associated with dropout. Other studies found no relationship with symptom severity (Grilo et al., 1998). Research has shown that 50-80% of patients with anxiety disturbances meet the diagnostic criteria for other co-morbid disorders such as mood disorders, other anxiety disorders, substance use related disorders or somatoform disorders (Brown & Barlow, 1992). There are some indications that co-morbidity can have an influence on participants' treatment behavior. Research with anxious young adults showed that co-morbid depression led to higher chances of dropout (Gonzales, Weersing, Waarnick, Cahill & Wooston, 2010). Some studies on panic disorder have shown that symptoms of agoraphobia are related to dropout as well. In a study of Grilo, Money, Barlow, Goddard, Goman, Hofman, Papp, et al. (1998) participants with decreased agoraphobia tended to dropout more often than participants with the full spectrum of agoraphobia. Factors like alcoholism and drug addiction are also associated with dropout but are less often taken into account (Baekeland & Lundwall 1972).

### **Implications for prevention and early interventions for anxiety disorders**

In the last decades the focus of psychological treatment is shifting more towards prevention and early treatment of disorder symptoms (Fledderus, Bohlmeijer & Westerhof, 2010; Altamura, Buoli, Camuri & Dell'osso 2010). The importance of prevention of anxiety disorders is emphasized by its high prevalence, early onset, large burden of disease and



economic costs to society (Bijl et al., 2002; Marciniak, Lage, Landbloom, Dunayevich & Bowman, 2004; Smit et al., 2006). The longer an illness remains untreated, the worse the outcome. In case of an untreated depression for example, the chances of a longer duration of illness, a higher number of relapses and higher chances of co-morbidity increase (Altamura et al., 2010). Similarly, there is a substantial proportion of the population suffering from sub-threshold panic disorder (Batelaan, De Graaf, Van Balkom, Vollebergh & Beekman, 2007). Sub-threshold panic disorder can be defined as the presence of some symptoms of panic disorder, which do not meet the DSM-IV diagnostic criteria. These subjects might be at risk of developing full-blown panic disorder (Katherndal, 1999). A study by Swinson, Soulios, Cox and Kuch (1992) about patients with panic symptoms, support findings that early help is needed in order to treat symptoms as early as possible to prevent the development of a full-blown disorder. Subjects who had received exposure instruction, significantly improved over a six-month follow-up period for symptoms of depression, avoidance, and panic frequency, whereas subjects only receiving reassurance did not improve for any of these. In 1979, Brown and Lewinsohn established a preventive course called “Coping with depression” (Brown & Lewinsohn, 1984). Results show that the course was effective in reducing symptoms of depression. In the Netherlands there is a comparable preventive program established by Pim Cuijpers in 1998, which also showed positive results in reducing depressive symptoms. (Cuijpers, 1998; Beekman, Cuijpers, Van Meerwijk, Smit, Schoevers & Hesman, 2006; Cuijpers & Smit, 2007). Despite the public health importance to prevent mood and anxiety disorders, studies concerning the effectiveness of prevention programs are rare (Bienvenu, Omiyke, Stein, Chan, Samuels, Nestadt & Eaton, 2007; Feldner, Zvolenski & Schmidt, 2004). However, most of the existing studies about prevention and early interventions focus on the effectiveness of these programs. There are only a few studies which focus on dropout (Brown & Lewinsohn, 1984; Gardenscharz & Craske 2001). Although the effect of early interventions in panic disorder are promising (Dadds, Spence, Holland, Barret & Laurens, 1997; Swinson, Soulios, Cox & Kuch 1992) apparently hardly any research has been done concerning dropout in an early intervention program for panic disorder.

Unfortunately, risk factors for dropout have not been well researched yet. Many existing studies concerning dropout in cognitive behavioral treatment try to assess dropout predictors to be able to reduce the risk of patient dropout from clinical trials. Many of these studies fail due to inclusion of too many predictors in too small or too heterogeneous patient samples. The results of these studies can often not be replicated in subsequent studies (Keijsers et al.,

2001). Therefore the current study focuses on the systematic examination of a more limited set of predictors based on literature research in a sample of  $N > 200$ .

Based on the findings above, the present study investigates whether demographic, personal and illness variables are related to dropout in an early intervention program for sub-threshold and mild panic disorder called “Don’t panic”.

## **2. Methods**

### **2.1. Sample**

Data were obtained from the randomized controlled trial on the effectiveness of an early intervention for panic symptoms, a study by Meulenbeek, Willemse, Smit, Van Balkom, Spinhoven and Cuijpers (2010). The sample comprised 217 participants who were 18 years of age or older, experiencing sub-threshold or mild panic disorder with and without agoraphobia. Inclusion criteria were defined as having symptoms of panic disorder falling below the cut-off score of 13 on the Panic disorder Severity Scale Self Report (PDSS-SR; Shear, Williams, Frank, Grochocinski, Vander Bilt et al., 2001; Van der Meer & Burgerhout, 2004). A cut-off score of eight may discriminate between the presence or absence of current DSM-IV panic disorder and a cut-off score of thirteen may discriminate between mild and severe panic disorder. Exclusion criteria were the occurrence of severe panic disorder (PDSS-SR  $\geq 13$ ), not functioning independently nor in a group, current psychological treatments for panic disorder and related complaints, presence of other severe mental or social problems or suicidal intentions.

### **The intervention**

The intervention course for panic symptoms was developed in 2000 by GGNet, a Dutch community mental health centre. The course is based on cognitive-behavioral principles and makes use of interventions that have proven to be effective in the treatment of the full-blown disorder. The program consists of eight weekly sessions of two hours each in groups of six to twelve participants. The ‘Don’t Panic’ course uses a course manual, to be used by the psychologist and prevention worker offering the intervention, and an accompanying workbook for the participants. The course includes (a) a psycho-educational element, (b) lifestyle changes, (c) stress management, (d) relaxation training, (e) cognitive restructuring, (f) interoceptive exposure, (g) ‘in vivo’ exposure, and (h) techniques aimed at relapse prevention. The intervention was extensively pilot-tested before entering the clinical trial stage.

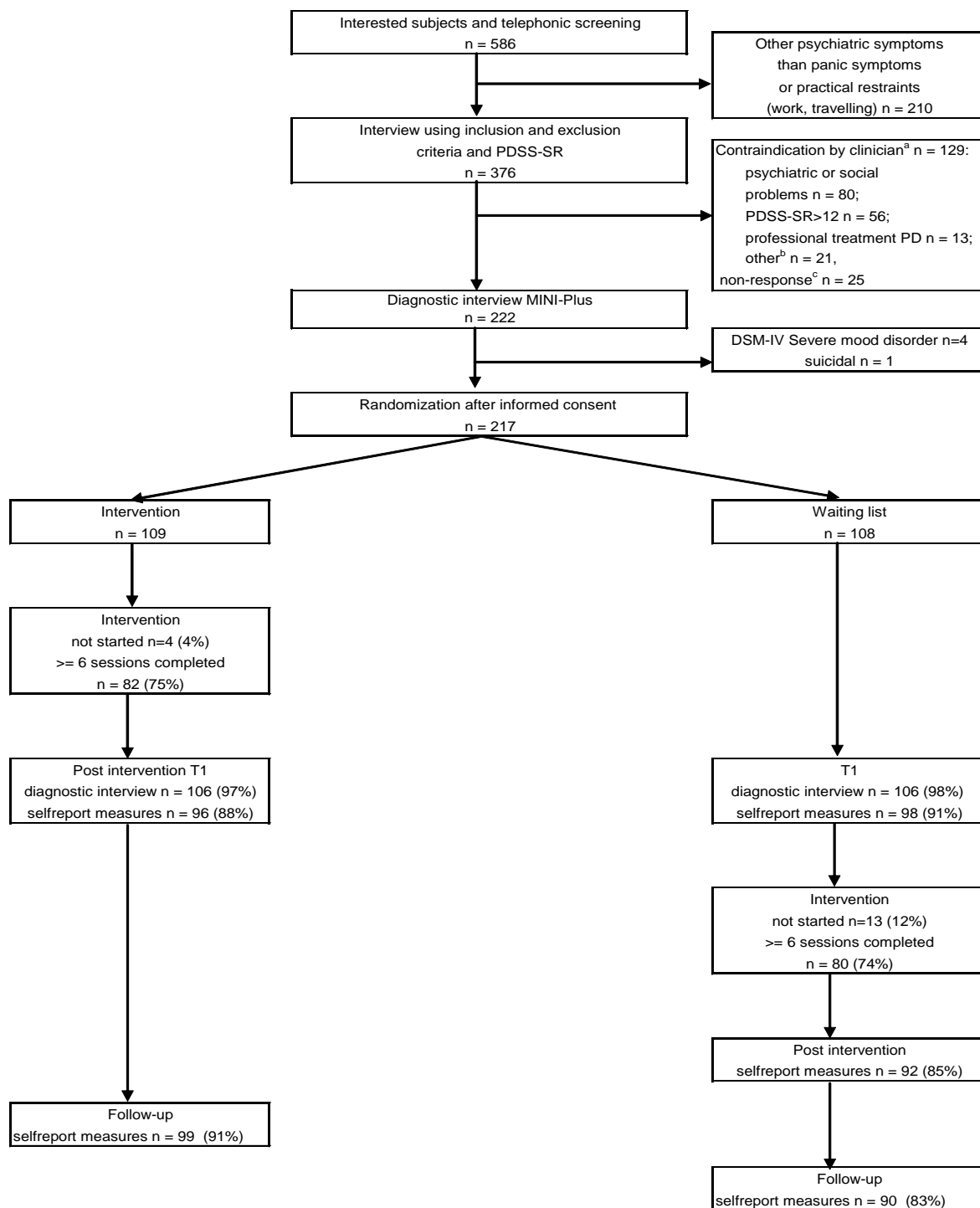
### **2.2. Study design and procedure**

The recruitment, intake procedure, offering the intervention and monitoring outcomes was conducted by seventeen community centers in order to mimic the Dutch healthcare system as naturalistically as possible to enhance validity. Participants were recruited from the general population by media announcements and via banners placed on the internet. The community

centers participated in screening the people who showed interest with standard procedures like providing more information first, a telephone screening to ascertain the presence of panic symptoms and an interview with an experienced psychologist to check the inclusion criteria. Additionally an interview with a trained staff member from the Trimbos institute (Dutch Institute of Mental Health and Addiction) was held to assess the diagnosis, presence of agoraphobia and severe depressive disorder by using the MINI Plus questionnaire (Sheehan, Lecrubier, Sheehan, Amorim, Janavs, Weiller, et al., 1998). Explanations of the study procedures were given and the participants' written informed consents were collected. The participants' flow through the study is shown in Figure 1.

Randomization of the sample took place after administering the MINI Plus and was done by an independent third party using a blocked randomization scheme: sub-threshold panic disorder versus mild panic disorder and by presence versus absence of agoraphobia. The latter was included because agoraphobia was assumed to be relevant for treatment response in panic disorder. The measurements were assessed before the start of the intervention at baseline (T0) and at post test after three months after baseline (T1). The experimental group underwent a follow up measurement nine month after baseline, which is six month after the end of the intervention (T2). The experimental group receiving the treatment first, consisted of 109 participants. The waiting list group consisting of 108 participants, who received the treatment as well, started the course four months after baseline (T0). The control group had an additional measurement after the course (three months after the start of the course) and a follow up measurement six months after the end of the intervention. Results showed that participants in the experimental condition improved significantly more on panic disorder symptomatology compared to clients in the waiting list condition (control group) (Meulenbeek, Willemse, Smit, van Balkom, Spinhoeven & Cuijpers 2010). The trial protocol was approved by an independent medical ethics committee (METIGG) and was conducted between September 2005 and July 2007.

Figure 1: The participants' flow through the study



Note. PDSS-SR = Panic Disorder Severity Scale-Self Report; PD = Panic Disorder; MINI-Plus = Mini-International Neuropsychiatric Interview-Plus.

<sup>a</sup> Participants can have more than one contraindication.

<sup>b</sup> Including: somatic problems (n=11).

<sup>c</sup> Including: practical restraints

### 2.3. Instruments

Validated and frequently applied measurement instruments for psychological problems, quality of life and economic costs of panic complain are used. Demographic variables concerning gender, age, living situation, education and occupation were assessed as part of the questionnaires. Self-report questionnaires were mostly used for all measurements and were completed at home, except from the MINI-Plus. The data from the MINI-Plus were assessed during an interview with an assistant from the Trimbos Institute. The DSM-IV diagnosis, symptoms (profile, frequency and severity), anxiety and agoraphobia symptoms, perceived control, depressive symptoms, quality of life, alcohol use and economic costs were assessed. Co-morbidity and alcohol use were assessed as well, since panic disorder is characterized by these phenomena (Kampan, Keijsers, Hoogduin & Hendricks, 2008). Furthermore, perceived treatment credibility was assessed as a possible moderator.

#### Socio- Demographic variables

For socio- demographic measures, the following variables were assessed: age in years, gender (male/female), country of birth (Netherlands or other), marital status (married/living together, single, widower/widow), years of education, paid work (yes/no) and economic costs. For economic evaluation the following costs were examined, using parts of the Trimbos and Institute of Medical Technology Assessment Questionnaire on Costs Associated with Psychiatric Illness (TIC-P) (Hakkaart- van Roijen, Van Straten & Donker, 2002): costs directly related to health care, indirect health care related costs, costs of medication, direct costs outside health care. The costs were calculated in accordance with the pertinent guideline and reflect integral cost prices. The sum of all costs is called ‘total costs’. These are expressed as monthly per capita costs in Euro. The reference year is 2003.

#### Personal variables

In order to measure the participants’ attitude and behavior, the following variables were examined:

*Cognitive measure for panic disorder* was assessed by the Dutch version of the Panic Appraisal Inventory (PAI; Beurs, Smit & Comijs, 2005). The PAI measures cognitive aspects of panic disorder, such as (PAI-anticipation) perceived likelihood of panic occurrence, (PAI-consequences) perceived negative consequences of panic occurrence, and (PAI-coping) perceived self-efficacy in coping with panic. Each of the three subscales of the PAI consists of 15 items; the scale score ranges from 0 to 100, and a higher score indicates a more negative cognitive state.

*Perceived control* is assessed by the Dutch version of the Mastery-Scale (Pearlin & Schooler, 1996). The scale was used to assess locus of control: a higher rating means greater internal locus of control, indicating more feelings of mastery. The total score ranges from 5 to 25.

*Treatment credibility/attitude* was assessed by the TCQ (Treatment Credibility Questionnaire; Meyer, Pilkonis, Krupnick, Egan, Simmens & Sotsky, 2002) which was only used at baseline. The scale measures treatment expectancy and rationale credibility. This variable is used to assess the participant's attitude towards treatment.

### **Illness variables**

For the *DSM-IV diagnosis panic disorder* and *agoraphobia status* the Dutch version of MINI-Plus was used. Furthermore, the presence of the following psychiatric disorders were evaluated: social phobia, generalized anxiety disorder and major depression. In order to simplify statistical analysis, these co-morbid disorders were combined into one variable called 'co-morbidity'. The MINI-Plus was also used to gather the number of panic symptoms. The MINI-Plus is a short, structured, diagnostic interview for DSM-IV and ICD-10 psychiatric disorders, designed for use by professional interviewers. To exclude serious major depressive disorder this section was supplemented with the Sheehan Disability Scale (Sheehan, Lecrubier, Sheehan, Amorim, Janavs & Weiller, 1998). Subjects, who reported at least two areas of role functioning with severe role impairment due to a depressive disorder, were excluded from the study.

*Severity of panic symptoms* was assessed by the Dutch adaptation of the Panic disorder severity scale (PDSS-SR). The instrument consists of seven items that assess the severity of seven dimensions of panic disorder and associated symptoms. The PDSS-SR generates a total score ranging from 0 to 28, with a higher score indicating more severe panic symptoms. A cut-off score of eight may discriminate between the presence or absence of current DSM-IV panic disorder and a cut-off score of thirteen may discriminate between mild and severe panic disorder.

*Depressive symptoms*: The Dutch version of the Beck Depression Inventory, second edition, (BDI-II, Beck, Steer & Brown, 1996) was used to assess depressive symptoms. The BDI-II is a 21-item self-report questionnaire for assessing the severity of depressive symptoms during the past week. The total score ranges from 0 to 63. A high score reflects a higher depression level.

*Anxiety symptoms:* The subscale for anxiety of the Dutch version of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Sniata, 1983; Spinhoven, Ormel, Sloekers, Kempen, Speckens & van Hemert, 1993) was used to indicate the possible presence of anxiety states. The subscale for anxiety consists of seven items with a score range of 0-21. A high score indicates a higher state of anxiety.

*Symptoms of agoraphobia* were assessed by the Dutch adaptation of the Mobility Inventory (MI; Chambless, Caputo, Jasin, Gracely & Williams, 1985). The MI assesses agoraphobic avoidance. The total score ranges from 1 to 5, with a higher score indicating more avoidance. Furthermore, the AUDIT (Alcohol Use Disorders Identification Test; Saunders, Aasland, Babor, Fuente, de la & Grant, 1993) was used to assess alcohol use, which was used only at baseline.

*Quality of life* was measured by the Dutch version of the EuroQol Questionnaire (EQ-5D; Brazier, Jones & Kind, 1993). The scale contains five dimensions (mobility, self-care, usual activities, pain/discomfort and anxiety/depression); each is rated by the respondent as causing 'no problems', 'some problems', or 'extreme problems'. The EQ-5D generates a total of 243 unique health states, each of which is associated with a utility score ranging from 0 (poor health) to 1 (perfect health).

## 2.4. Analysis

In order to maximize power, the data of the experimental and control groups were combined for the analyses ( $N= 217$ ; i.e., after both groups underwent the intervention and the post-intervention and follow-up measurement: T0 = pre-intervention measurement; T1 = post-intervention measurement; T2 = follow-up measurement six months after intervention). The predictors for dropout were analyzed for the whole dropout group first. The characteristics for pretreatment dropout and regular dropout were also obtained in order to analyze dropout data more completely. The sample was split into four subgroups: pretreatment dropout (attending 0 group sessions), regular dropouts (attending at least 1 up to 5 group sessions), the total dropout group (attending 0-5 sessions) and completers as reference group (attending 6-8 sessions). The cut off presence of at least 6 times to complete the course, was based on the content of the course. Participating less than 6 times meant missing essential parts of the course and increasing the risk of experiencing less benefits of the treatment.

The baseline differences in socio-demographic characteristics and clinical status variables were analyzed for the four subgroups. The data were analyzed with SPSS 18.0.



Frequency and descriptive analyses were performed to give an impression of the sample and the subgroups. Variables out of three possible predictor groups were analyzed: demographic, personal and illness variables. Demographic variables were: gender, age, country of birth, marital status, paid work, years of education and psychiatric illness related costs. For personal variables, panic appraisals, quality of life, internal locus of control and treatment credibility were analyzed. The subgroup of illness variables contained diagnosis panic disorder and agoraphobia status based on MINI-Plus, frequency and severity of symptoms, number of comorbid disorders (social phobia, general anxiety disorder and major depression) and alcohol use. Differences between dropouts and completers, as well as between the pretreatment dropout versus completers and regular dropout group versus completers were examined first. Independent t- tests were applied for univariate statistics to compare the means of the groups on continuous variables such as age and education and Chi-square analyses were used for categorical variables such as marital status, gender or ethnicity. For univariate analyses, a two-sided significance level at  $p < 0.05$  was applied. Considering that regular dropouts attended at least one session or even more, it is interesting to compare the two groups also at measure moments T1, three months after baseline and T2 follow-up, six months after the intervention, in order to see if there are gradually differences between these two groups occur during the intervention and last even after the end of the course. Therefore the effect scores are examined for univariate and multivariate statistics.

For univariate factors entering regression analysis at a two-sided marginal significance level at  $p < 0.2$  level was used (Moore & McCabe, 1994) in the context of explorative research. In the context of dropout prediction, it was examined if socio-demographic, personal and illness variables were related to dropout. In order to examine the factors predicting dropout from the preventive course 'Don't panic', logistic regression measures were assessed with 'dropout total' versus completers, 'pretreatment dropout' versus completers and 'dropout regular' versus completers, since the dependent dropout variables were dichotomy of nature. For regression analysis, a two-sided significance level at  $p < 0.05$  was applied for the dropout predictors.

### 3. Results

The sample consisted of 217 patients diagnosed with sub-threshold or mild panic disorder with or without agoraphobia. A total of 51 participants (23.5%) was classified as dropouts. The dropout group consists of 34 participants attending 1-5 group sessions (regular dropout) and 17 participants who did not attend any group session at all (pretreatment dropout).

The regular dropout group terminated among the 1<sup>st</sup> to the 5<sup>th</sup> session, with an average number of 3.3 ( $SD= 1.51$ ) attended sessions. In accordance with standard procedure, patients' primary reasons for terminating treatment were reported. Twenty-six (51%) of the fifty-one dropouts reported why they discontinued the early intervention program. Sixteen participants (31.4%) had changing living conditions like moving, a new job or divorce; some started another therapy or suffered from physical issues. Seven participants (13.7%) had other circumstances like travel distance or problems with other participants in the group. Three participants (5.9%) decided not to start or continue with the course because they were doing well or were improving and thought there is no need for further help. The remaining 25 dropouts (49.0%) did not report why they left the intervention program early.

The univariate statistics for socio-demographic, personal and illness variables of the total dropout group and completers are presented in Table 1.

Table 1 shows no significant findings, applying the level of significance at  $p<0.05$ . There are five variables found on which the total dropout group differ from completers at marginal significance  $p<0.2$ . Dropouts tend to be younger (39.82 years,  $SD=12.79$ ) than completers (42.78,  $SD=12.17$ ). Dropouts also tend to be less educated (13.37,  $SD= 3.09$ ) when compared to completers (14.25 years,  $SD=3.29$ ). Besides that, the dropout group caused higher direct and indirect health care related costs with average annual per capita costs of 509.57€ ( $SD= 646.94$ €) when compared to completers 322.31€ ( $SD=593.20$ €). Participants of the dropout group reported to drink more alcohol (5.29,  $SD= 4.73$ ) than completers (4.20,  $SD= 4.35$ ). Dropouts (0.789,  $SD=0.20$ ) tended to rate the quality of their life significantly lower than completers did (0.828,  $SD=0.18$ ). Other findings were not significant.

Table 2 shows the univariate data for the pretreatment dropout and completers. Table 2 shows one significant finding, applying the level of significance at  $p< 0.05$ . Pretreatment dropouts differ from completers, when it comes to gender. In the pretreatment dropout group there are significantly more men (52.9%) than in the completers group (28.3%).

**Table 1:** Univariate statistics for socio-demographic, personal and illness variables of the total dropout group and the completers

|                                     | Dropout total<br>( <i>n</i> = 51) | Completers<br>( <i>n</i> =166) | Test<br>Value <sup>1</sup> | df    | Sign. |
|-------------------------------------|-----------------------------------|--------------------------------|----------------------------|-------|-------|
| <i>Socio- demographic variables</i> |                                   |                                |                            |       |       |
| Male <sup>2</sup>                   | 16 (31.4)                         | 47 (28.3)                      | 0.18                       | 1     | 0.67  |
| Mean age                            | 39.82 (12.79)                     | 42.78 (12.17)                  | 1.50                       | 215   | 0.14  |
| Netherlands as country of birth     | 46 (90.2)                         | 156 (94.0)                     | 2.47                       | 4     | 0.65  |
| Married/living with partner         | 39 (76.5)                         | 130 (78.3)                     | 1.03                       | 3     | 0.80  |
| Employed (paid)                     | 39 (76.5)                         | 112 (67.5)                     | 1.49                       | 1     | 0.22  |
| Years of education                  | 13.37 (3.09)                      | 14.25 (3.29)                   | 1.68                       | 215   | 0.09  |
| TIC-P                               | 509.57 (646.94)                   | 322.31 (593.20)                | -1.93                      | 215   | 0.06  |
| <i>Personal variables</i>           |                                   |                                |                            |       |       |
| PAI-1, (range: 0-100)               | 32.75 (20.23)                     | 31.92 (18.06)                  | -0.28                      | 215   | 0.78  |
| PAI-2, (range: 0-100)               | 25.89 (19.20)                     | 24.51 (15.29)                  | -0.47                      | 70.55 | 0.64  |
| PAI-3, (range: 0-100)               | 54.47 (17.66)                     | 54.53 (18.65)                  | 0.19                       | 215   | 0.99  |
| Mastery, (range: 5-25)              | 16.84 (3.34)                      | 17.14 (3.20)                   | 0.58                       | 215   | 0.56  |
| TCQ, (range 1-49)                   | 36.94 (6.43)                      | 37.61 (5.28)                   | 0.75                       | 215   | 0.45  |
| <i>Illness variables</i>            |                                   |                                |                            |       |       |
| PD, lifetime                        | 41 (80.4)                         | 136 (81.9)                     | 0.11                       | 1     | 0.74  |
| PD, recent episode                  | 25 (49.0)                         | 75 (45.2)                      | 0.20                       | 1     | 0.65  |
| Agoraphobia, lifetime               | 41 (80.4)                         | 141 (84.9)                     | 0.60                       | 1     | 0.44  |
| Agoraphobia, recent episode         | 31. (60.8)                        | 104 (62.7)                     | 0.06                       | 1     | 0.81  |
| Co-morbidity, (range 0-3)           | 0.62 (0.75)                       | 0.43 (0.66)                    | 1.12                       | 68.41 | 0.27  |
| # of symptoms, (range: 0-13)        | 8.65 (2.39)                       | 8.46 (2.01)                    | -0.55                      | 214   | 0.58  |
| PDSS-SR, (range: 0-28)              | 7.69 (3.64)                       | 7.03 (3.09)                    | -1.18                      | 73.36 | 0.24  |
| BDI-II, (range: 0-63)               | 13.19 (7.02)                      | 12.23 (7.83)                   | -0.79                      | 215   | 0.43  |
| HADS-Anx., (range: 0-21)            | 9.63 (4.20)                       | 9.51 (3.72)                    | 0.20                       | 215   | 0.85  |
| MI, (range: 1-5)                    | 1.92 (0.61)                       | 1.97 (0.67)                    | 0.43                       | 215   | 0.67  |
| Audit, (range 0-40)                 | 5.29 (4.73)                       | 4.20 (4.35)                    | -1.54                      | 215   | 0.13  |
| EQ-5D, (0-1)                        | 0.789 (0.20)                      | 0.828 (0.18)                   | -1.33                      | 215   | 0.19  |

Notes: <sup>1</sup> Either t-test for independent samples or Pearson chi square statistic was applied

<sup>2</sup> Values: mean, *SD* or respectively *n*, %

Notes: TIC-P= Costs Associated with Psychiatric Illness; PAI-1 = Panic Appraisal Inventory, subscale anticipation; PAI-2 = Panic Appraisal Inventory, subscale consequences; PAI-3 = Panic Appraisal Inventory, subscale coping; Mastery = Mastery-scale; TCQ= Treatment Credibility Questionnaire; Number of symptoms = number of symptoms during a panic attack; PDSS-SR = Panic Disorder Severity Scale-Self Report; Co-morbidity= number of co morbid disorders including: social phobia, general anxiety disorder and major depression; BDI-II = Beck Depression Inventory-second edition; HADS-Anx. = Hospital Anxiety and Depression Scale, subscale Anxiety; MI = Mobility Inventory; AUDIT (Alcohol Use Disorders Identification Test); EQ-5D= EuroQol Questionnaire.

Table 2 shows four significant findings, applying a marginal level of significance at  $p < 0.2$ . Pretreatment dropouts tend to perceive lower levels of self efficacy in coping with panic (61.46, SD= 12.07), compared to completers (54.53, SD= 18.65). Besides that, pretreatment dropouts experience lower feelings of mastery (16.05; SD=3.32) compared to the completers (17.14, SD=3.20). Pretreatment dropouts (35.81, SD=5.05) tend to rate the credibility of the treatment lower than completers do (37.61, SD= 5.28). Results showed that pretreatment dropouts (1.44, SD= 0.81) tend to have more co-morbid disorders than completers (0.43, SD=0.66). Other findings were not significant.

Table 3 shows the univariate data for the regular dropouts and completers. Table 3 shows no significant finding, applying the level of significance at  $p < 0.05$ . There are three variables found on which the regular dropout group differs from completers at marginal significance  $p < 0.2$ . Regular dropouts (39.44, SD=13.55) tend to be younger than completers (42.78, SD=12.17). Regular dropouts tend to be less educated (13.35, SD=2.96) and to cause more mental health care related annual costs (509.02, SD= 657.77) compared to the completers (14.25, SD=3.29; 322.31, SD= 593.20). The results concerning the effect scores at T1, three months after baseline and T2, six months after the end of the course, are not shown in table 3. Regular dropouts differ on marginal significance level ( $p < 0.2$ ) from completers ( $t = -1.06$ ,  $p > 0.11$ ,  $t = -1.32$ ,  $p > 0.19$ ) in quality of life and BDI-II scores at t1 and in perceived negative consequences of panic occurrence at T2 ( $t = -1.65$ ,  $p > 0.10$ ).

**Table 2:** Univariate statistics for socio-demographic, personal and illness variables of the pretreatment dropouts and completers

|                                     | Pretreatment dropout<br>(n= 17) | Completers<br>(n=166) | Test value <sup>1</sup> | Df    | Sign. |
|-------------------------------------|---------------------------------|-----------------------|-------------------------|-------|-------|
| <i>Socio- demographic variables</i> |                                 |                       |                         |       |       |
| Male <sup>2</sup>                   | 9 (52.9)                        | 47 (28.3)             | 4.40                    | 1     | 0.04  |
| Mean age                            | 40.59 (11.48)                   | 42.78 (12.17)         | 0.71                    | 181   | 0.48  |
| Netherlands as country of birth     | 16 (94.1)                       | 156 (94.0)            | 0.41                    | 4     | 0.98  |
| Married/living with partner         | 14 (82.4)                       | 130 (78.3)            | 2.06                    | 3     | 0.56  |
| Employed (paid)                     | 13 (76.5)                       | 112 (67.5)            | 0.58                    | 1     | 0.45  |
| Years of education                  | 13.41 (3.41)                    | 14.25 (3.29)          | 0.99                    | 181   | 0.32  |
| TIC-P,                              | 510.68 (644.65)                 | 322.31 (593.20)       | -1.24                   | 18.88 | 0.26  |
| <i>Personal variables</i>           |                                 |                       |                         |       |       |
| PAI-1 (range: 0-100)                | 32.38 (23.28)                   | 31.92 (18.06)         | -0.10                   | 181   | 0.92  |
| PAI-2 (range: 0-100)                | 26.37 (18.73)                   | 24.51 (15.29)         | -0.49                   | 181   | 0.63  |
| PAI-3 (range: 0-100)                | 61.46 (12.07)                   | 54.53 (18.65)         | -1.50                   | 181   | 0.14  |
| Mastery (range: 5-25)               | 16.05 (3.32)                    | 17.14 (3.20)          | 1.34                    | 181   | 0.18  |
| TCQ (range 1-49)                    | 35.81 (5.05)                    | 37.61 (5.28)          | 1.35                    | 181   | 0.18  |
| <i>Illness variables</i>            |                                 |                       |                         |       |       |
| PD, lifetime                        | 15 (88.2)                       | 136 (81.9)            | 0.37                    | 1     | 0.54  |
| PD, current episode                 | 9 (52.9)                        | 75 (45.2)             | 0.35                    | 1     | 0.56  |
| Agoraphobia, lifetime               | 14 (82.4)                       | 141 (84.9)            | 0.08                    | 1     | 0.78  |
| Agoraphobia, recent episode         | 12 (70.6)                       | 104 (62.7)            | 0.42                    | 1     | 0.52  |
| Co-morbidity, (range 0-3)           | 1.44 (0.81)                     | 0.43 (0.66)           | -1.80                   | 176   | 0.07  |
| # of symptoms , (range: 0-13)       | 8.18 (2.35)                     | 8.46 (2.01)           | 0.55                    | 180   | 0.59  |
| PDSS-SR, (range: 0-28)              | 7.88 (3.35)                     | 7.03 (3.09)           | -1.08                   | 181   | 0.28  |
| BDI-II, (range: 0-63)               | 11.70 (7.13)                    | 12.23 (7.83)          | 0.27                    | 181   | 0.79  |
| HADS-Anx., (range: 0-21)            | 10.15 (4.99)                    | 9.51 (3.72)           | -0.51                   | 17.88 | 0.61  |
| MI, (range: 1-5)                    | 1.94 (0.58)                     | 1.97 (0.67)           | 0.14                    | 181   | 0.89  |
| Audit, (range 0-40)                 | 5.63 (5.60)                     | 4.20 (4.35)           | -1.26                   | 181   | 0.21  |
| EQ-5D, (range 0-1)                  | 0.782 (0.2)                     | 0.828 (0.18)          | 0.98                    | 181   | 0.33  |

Notes: <sup>1</sup>Either t-test for independent samples or Pearson chi square statistic was applied

<sup>2</sup>Values: mean, SD or respectively n, %

Notes: TIC-P= Costs Associated with Psychiatric Illness; PAI-1 = Panic Appraisal Inventory, subscale anticipation; PAI-2 = Panic Appraisal Inventory, subscale consequences; PAI-3 = Panic Appraisal Inventory, subscale coping; Mastery = Mastery-scale; TCQ= Treatment Credibility Questionnaire; Number of symptoms = number of symptoms during a panic attack; PDSS-SR = Panic Disorder Severity Scale-Self Report; Co-morbidity= number of co morbid disorders including: social phobia, general anxiety disorder and major depression; BDI-II = Beck Depression Inventory-second edition; HADS-Anx. = Hospital Anxiety and Depression Scale, subscale Anxiety; MI = Mobility Inventory; AUDIT (Alcohol Use Disorders Identification Test); EQ-5D= EuroQol Questionnaire.

Finally, it was investigated which variables are predictive for dropout total, pretreatment dropout and the regular dropout group respectively. A logistic regression analysis was run, taking all significant variables (applying a level of significance at  $p < 0.2$ ) from table 1, 2 and 3 simultaneously into account. Table 4 shows the results for all dropout groups. Years of education was the only variable predicting significantly dropout total ( $OR = 0.88$ ;  $p = 0.02$ ) at a  $p < 0.05$  level of significance. With each additional year attending school, the chance of dropout decreases with 12%. That means that participants who are lower educated, are more likely to dropout from the early intervention. Taking all five variables into account Nagelkerke's estimated  $R^2$  was 0.09. The predictor age ( $OR = .97$ ,  $p = 0.06$ ) reached marginal significance.

Gender ( $OR = 0.26$ ,  $p = 0.01$ ) was the only variable predicting significantly pretreatment dropout. That means that men have a 74% higher chance to belong to the pretreatment dropout group, which means Nagelkerke's estimated  $R^2$  was 0.13, taking all five predictors into account.

There are no significant predictors found for regular treatment. Years of education ( $OR = 0.88$ ,  $p = 0.07$ ) reached as only predictor marginal significance. Nagelkerke's estimated  $R^2$  was 0.06, taking all three predictors into account. None of the examined effect scores as possible predictors for regular dropout were significant or came close to marginal significance.

**Table 3:** Univariate statistics for socio-demographic, personal and illness variables of the pretreatment and the regular dropout group

|                                     | Regular dropout<br>(n= 34) | Completers<br>(n=166) | Test<br>value <sup>1</sup> | Df    | Sign. |
|-------------------------------------|----------------------------|-----------------------|----------------------------|-------|-------|
| <i>Socio- demographic variables</i> |                            |                       |                            |       |       |
| Male <sup>2</sup>                   | 7 (20.6)                   | 47 (28.3)             | 0.85                       | 1     | 0.36  |
| Mean age                            | 39.44 (13.55)              | 42.78 (12.17)         | 1.43                       | 198   | 0.15  |
| Netherlands as country of birth     | 30 (88.2)                  | 156 (94.0)            | 3.25                       | 4     | 0.52  |
| Married/living with partner         | 25 (73.5)                  | 130 (78.3)            | 1.95                       | 3     | 0.58  |
| Employed (paid)                     | 26 (76.5)                  | 112 (67.5)            | 1.07                       | 1     | 0.30  |
| Years of education,                 | 13.35 (2.96)               | 14.25 (3.29)          | 1.47                       | 198   | 0.14  |
| TIC-P                               | 509.02 (657.77)            | 322.31 (593.20)       | -1.64                      | 198   | 0.10  |
| <i>Personal variables</i>           |                            |                       |                            |       |       |
| PAI-1, (range: 0-100)               | 32.94 (18.90)              | 31.92 (18.06)         | -0.30                      | 198   | 0.77  |
| PAI-2, (range: 0-100)               | 25.63(19.71)               | 24.51 (15.29)         | -0.31                      | 41.50 | 0.76  |
| PAI-3, (range: 0-100)               | 50.98 (19.10)              | 54.53 (18.65)         | 1.00                       | 198   | 0.31  |
| Mastery, (range: 5-25)              | 17.24 (3.3)                | 17.14 (3.20)          | -0.16                      | 198   | 0.87  |
| TCQ, (range 1-49)                   | 35.8 (3.34)                | 37.61 (5.28)          | 0.10                       | 198   | 0.93  |
| <i>Illness variables</i>            |                            |                       |                            |       |       |
| PD, lifetime                        | 26 (76.5)                  | 136 (81.9)            | 0.66                       | 1     | 0.42  |
| PD, current episode                 | 16 (47.1)                  | 75 (45.2)             | 0.03                       | 1     | 0.86  |
| Agoraphobia, lifetime               | 27 (79.4)                  | 141 (84.9)            | 0.64                       | 1     | 0.42  |
| Agoraphobia, recent episode         | 19 (55.9)                  | 104 (62.7)            | 0.55                       | 1     | 0.46  |
| # of symptoms, (range: 0-13)        | 8.88 (2.41)                | 0.43 (0.66)           | -1.10                      | 197   | 0.28  |
| PDSS-SR, (range: 0-28)              | 7.60 (3.85)                | 8.46 (2.01)           | -0.82                      | 42.13 | 0.42  |
| Co-morbidity, (range 0-3)           | 1.15 (1.10)                | 7.03 (3.09)           | -0.41                      | 40.59 | 0.69  |
| BDI-II, (range: 0-63)               | 13.95 (6.95)               | 12.23 (7.83)          | 1.18                       | 198   | 0.24  |
| HADS-Anx., (range: 0-21)            | 9.37 (3.80)                | 9.51 (3.72)           | 0.20                       | 198   | 0.84  |
| MI, (range: 1-5)                    | 1.91 (0.64)                | 1.97 (0.67)           | 0.44                       | 198   | 0.65  |
| Audit, (range 0-40)                 | 5.12 (4.31)                | 4.20 (4.35)           | -1.13                      | 198   | 0.26  |
| EQ-5D, (range 0-1)                  | 0.792 (0.2)                | 0.828 (0.18)          | 0.05                       | 198   | 0.29  |

Notes: <sup>1</sup>Either t-test for independent samples or Pearson chi square statistic was applied

<sup>2</sup>Values: mean, SD or respectively n, %

Notes: TIC-P= Costs Associated with Psychiatric Illness; PAI-1 = Panic Appraisal Inventory, subscale anticipation; PAI-2 = Panic Appraisal Inventory, subscale consequences; PAI-3 = Panic Appraisal Inventory, subscale coping; Mastery = Mastery-scale; TCQ= Treatment Credibility Questionnaire; Number of symptoms = number of symptoms during a panic attack; :PDSS-SR = Panic Disorder Severity Scale-Self Report; Co-morbidity= number of co morbid disorders including: social phobia, general anxiety disorder and major depression; BDI-II = Beck Depression Inventory-second edition; HADS-Anx. = Hospital Anxiety and Depression Scale, subscaleAnxiety; MI = Mobility Inventory; AUDIT (Alcohol Use Disorders Identification Test); EQ-5D= EuroQoI Questionnaire.

**Table 4:** Logistic regression analyses of factors associated with total, pretreatment and regular dropout

|                       | Total dropout |               |       | Pretreatment Dropout |               |       | Regular Dropout |               |      |
|-----------------------|---------------|---------------|-------|----------------------|---------------|-------|-----------------|---------------|------|
|                       | OR            | C.I.          | Sign. | OR                   | C.I.          | Sign. | OR              | C.I.          | Sig. |
| Gender                | -             | -             | -     | 0.24                 | 0.08-<br>0.74 | 0.01  | -               | -             | -    |
| Age                   | 0.97          | 0.95-<br>1.00 | 0.06  | -                    | -             | -     | 0.97            | 0.94-<br>1.00 | 0.10 |
| Years of<br>education | 0.88          | 0.78-<br>0.98 | 0.02  | -                    | -             | -     | 0.88            | 0.77-<br>1.00 | 0.07 |
| TIC-P                 | 1.00          | 1.00-<br>1.00 | 0.11  | -                    | -             | -     | 1.00            | 1.00-<br>1.00 | 0.11 |
| PAI-3                 | -             | -             | -     | 1.02                 | 0.99-<br>1.05 | 0.26  | -               | -             | -    |
| Mastery               | -             | -             | -     | 0.93                 | 0.77-<br>1.12 | 0.43  | -               | -             | -    |
| TCQ                   | -             | -             | -     | 0.97                 | 0.87-<br>1.07 | 0.51  | -               | -             | -    |
| Co-morbidity          | -             | -             | -     | 1.52                 | 0.79-<br>2.93 | 0.22  | -               | -             | -    |
| Audit                 | 1.06          | 1.00-<br>1.14 | 0.07  | -                    | -             | -     | -               | -             | -    |
| EQ-5D                 | 0.66          | 0.12-<br>3.79 | 0.64  | -                    | -             | -     | -               | -             | -    |

*Notes:* TIC-P= Costs Associated with Psychiatric Illness; PAI-3 = Panic Appraisal Inventory, subscale coping; Mastery = Mastery-scale; TCQ= Treatment Credibility Questionnaire; Co-morbidity= number of co morbid disorders including: social phobia, general anxiety disorder and major depression AUDIT (Alcohol Use Disorders Identification Test); EQ-5D= EuroQol Questionnaire.



## 4. Discussion

The aim of the present study was to identify predictors of dropout in a sample of patients with sub-threshold and mild panic disorder treated with an early intervention program based on cognitive-behavioral principles. Studies on the effectiveness of prevention and early intervention programs for anxiety disorders are rare and there are only a few studies focusing on dropout in this context. Therefore, the current study delivers a new perspective concerning research on dropout in early intervention for participants not meeting the DSM-IV criteria for panic disorder.

### Important findings

Three possible predictor groups were analyzed: socio-demographic, personal and illness variables. In order to analyze dropout carefully, the total dropout group was subdivided into pretreatment dropout and regular dropout. By splitting the dropout group, it was possible to ascertain differences among the dropout groups concerning the three groups of possible predictors. Univariate analyses have shown that dropouts indeed differ from completers in variables like age, years of education, mental healthcare related annual costs, perceived self efficacy in coping with panic, feelings of mastery, co-morbidity, drinking behavior and quality of life. Most of these findings were found at marginal significance ( $p > 0.2$ ). Multivariate analyses showed that the two predictors years of education and gender were associated with total dropout and pretreatment dropout, respectively. There is no significant predictor found for regular dropout. Since there are only two predictors found, it remains difficult to outline dropout predictors precisely and sketch a profile of the typical “dropout”. It remains difficult to draw proper conclusions about the findings of the current study because of mixed results, which are found in previous studies concerning the three predictor groups. Besides that, the explanatory variation of the predictors remains small. Therefore, it can be concluded that other factors, circumstances or coincidences might have played a more crucial role in participant’s dropout behavior.

### Consensus and divergence with the literature

*Socio-demographic variables:* The current study found that total dropouts from early interventions are younger and less educated when compared to completers. Besides that, dropouts to caused higher direct and indirect mental health care related costs when compared to completers, as univariate statistics showed. These differences, most of them found at

marginal significance ( $p>0.2$ ), are in line with findings from other studies (White et al., 2010; Waden, Trivedi, Wisniewski, Davis, Nierenberg, Gayness, Zisook, Hollon, et al., 2007; Edlund et al., 2002). Of all possible predictors from socio-demographic variables, years of education was significantly associated with total dropout. With each additional year attending school, the chance of dropout decreases with 12%. That means that participants, who are lower educated, are more likely to dropout from the intervention program. This finding is in line with previous findings for cognitive behavioral therapy (Warden et al., 2007; Keijsers & Kampman, 2001), and for psychotherapy (Wierzbicki & Pekarik, 1993) and in contrast with other studies, which found no association (Grilo et al., 1998). In the regression analysis, age showed tendencies of predicting total dropout significantly at a marginal level. This finding is in line with White, Allen, Barlow, Gorman, Shear and Woods (2010), who found that younger age is a predictor for dropout in a multisite clinical trial for panic disorder.

Concerning socio-demographic variables, male gender was the only significant difference found between pretreatment dropout and completers. There are significantly more men identified as pretreatment dropouts. At the same time, male gender is also identified as significant predictor for pretreatment dropout. The risk (OR) that a man drops out before the intervention program starts, is 73% compared to woman. These findings are in line with Renses, Munoz and Lopze- Ibor (2007) and in contrast to Baekeland and Lundwall (1975) and Wierzbicki and Pekarik (1986), who found a relationship between female gender and dropout in psychotherapy. Other studies in turn found no relationship between gender and dropout (e.g. White et al., 2010).

For regular dropouts, similar results as for total dropouts are found. Regular dropouts are more likely to be younger, to be less educated and to cause more healthcare related costs, compared to completers. These differences were found at marginal significance level ( $p<0.2$ ). There are no effect scores examined concerning socio-demographic variables.

*Personal variables:* The current study found no significant differences between total dropouts and completers concerning personal variables. It was expected that dropouts and completers would differ in attitude concerning treatment, since attitude influences the intention to engage in a certain (health risk) behavior, according to the theory of planned behavior (Ajzen, 1985; Bandura, 1986). Besides that, according to Grilo, Money, Barlow, Goddard, Gorman, Hofman, Papp, et al. (1998), a negative treatment attitude is related to dropout. The results of the current study cannot support these findings and they are standing therefore in contrast to the findings from Keijsers, Kampan and Hoogduin (2001) and

Baekeland and Lundwall (1993) as well. Earlier research showed that cognitive appraisals play a role in self efficacy concerning dealing with panic attacks and panic disturbances (Telch, Brouillard, Telch, Agras, & Taylor, 2002). The current study did not find significant differences between total dropouts and completers as well as multivariate statistics show no significant predictors. Therefore the current study cannot confirm this finding.

Pretreatment dropouts are more likely to experience lower levels of self efficacy in coping with panic, to experience less feelings of mastery and to rate the credibility of the treatment lower, as univariate statistics show when compared to completers. Therefore, cognitive appraisals which play a role in self efficacy concerning dealing with panic attacks and panic disturbances (Meulenbeek et al., 2010; Telch et al., 2002) might also play a role in pretreatment dropout behavior. When it comes to multivariate analyses, there are no significant predictors found for pretreatment dropout. Self efficacy in coping with panic and treatment credibility came close to marginal significance.

There are no significant differences found for regular dropout and completers concerning personal variables, less one effect score at T2: perceived negative consequences of panic occurrence, which was found at marginal significance level ( $p>0.2$ ). There are no significant results found for multivariate statistics, which is in contrast to Keijsers, Kampan and Hoogduin (2001) and Baekeland and Lundwall (1993) as well, who stated that attitude and motivation are related to dropout.

*Illness related variables:* The current study found that total dropouts and completers differ at marginal significance levels in drinking behavior and rating their quality of life. According to Barlow (2002), a panic disorder is significantly characterized by co-morbidity and alcohol use. Baekeland & Lundwall (1975) found a relationship between alcoholism and dropout. The current study cannot confirm these findings concerning alcohol use with significant results, but multivariate results showed tendencies at marginal significance that drinking behavior also might be a predictor for dropout. In the current study, there is no relationship found between co-morbidity and total dropout, but well for pretreatment dropout. Pretreatment dropouts differ from completers at marginal significance level in co-morbid disorders. According to Gonzales, Weersing, Warnick, Scahill, and Wooston (2010), co-morbid depression and agoraphobia are related to dropout. The current study cannot confirm these findings, but found tendencies for co-morbidity, which might support the hypothesis when analyzed with a larger sample.

For regular dropout, there are no significant differences found between regular dropouts and completers. Effect scores showed two differences at marginal significance level ( $p>0.2$ ). Regular dropouts and completers differ in scores on the BDI-II and on ratings for quality of life at T1, three months after baseline (T0). For multivariate statistics, there are no significant predictors found, which is not in line with previous studies, which found several illness related predictors for dropout, such as symptom severity, co-morbidity and drinking behavior (Gonzales et al., 2010; Grilo et al., 1998; Brown & Barlow, 1992; Baekeland & Lundwall, 1975).

The dropout rate of 23,5% in the recent study, is considerably lower than the rate of 47% found in various treatment settings and therapy modes (Wierzbicki & Pekarik, 1993) and lower than the 30% to 60% range reported in the psychotherapy literature (Baekeland & Lundwall, 1975, Garfield 1986). Factors that might account for this finding is the short duration of the intervention program and the voluntary participation. Besides that, the course is easy accessible and symptom severity is less severe, since the participants do not suffer from full blown panic disorder. The reasons for dropout reported by the patients in the current study were for the most part in line with those reported in previous studies (White et al., 2010; Keijsers et al., 2001, Waden et al, 2000). Reasons were: feeling better, suffering from physical issues, practical reasons such as long travel distance or changing living conditions like moving or getting divorced. There are also other reasons for patients to terminate treatment prematurely, such as feeling dissatisfied with the type of treatment, the treatment procedures, the therapeutic relationship, or the gain received from treatment up to the point of termination (White et al., 2010; Nantz et al., 2009).

#### **4.1. Recommendations for the early intervention program**

The early intervention program called 'Don't panic' has proven to be effective and was evaluated positively by participants and course leaders (Meulenbeek et al., 2010). Additionally, the dropout rate was low compared to other findings in CBT research. Despite the feasibility and acceptability of the intervention program, there are one predictor found for pretreatment dropout and one predictor for dropout in general, which should be taken into account to improve the process of the intervention program. The results of the current study showed that the years of education plays a role when it comes to dropout. Furthermore, male gender sticks out as predictor for pretreatment dropout. Therefore, it might be useful to pay eminent attention to (prospective) participants who are lower educated and of male gender before and during the early intervention course.

Concerning the significant predictors, the following recommendations are given: Previous research has shown that adjusting the treatment program for needs of different groups such as older people or immigrants, is also a successful way to enhance treatment completion (Cuijpers, Smit, Voordouw & Kramer, 2005, Cuijpers, 1998). In order to make the intervention program fit for less educated participants, an adjusted version might be a solution. Lower educated are usually less motivated and flexible in following courses and further education. They are more likely to lack perseverance because of attributing (school) failure to external circumstances rather than to themselves. Problems and bad experiences in school caused low self esteem and embarrassment. During courses and further education lower educated are more likely to participate less actively in class and ask minder assistance from the teacher (Bossink, 2011). These findings suggest several options that might help to involve and motivate the less educated by reducing pressure through less homework, additional assistance and motivation by the course leader and adjusting the workbook of the course in order to make the treatment a positive experience.

Since the percentage of men not starting with the intervention program is higher compared to women, they deserve more attention in advance. Appropriate and timely information about e.g. treatment duration contribute to the patient's continuation of treatment (Garfield 1994, Rice & Brown, 1999). The same might be true for starting a treatment, since the participant gets a more realistic idea about the duration and the content of the intervention program and is able to estimate better what to expect.

Since other factors like practical problems might play a more important role than the examined predictors (White et.al., 2010; Nantz et.al. 2009; Keijsers et.al. 2001), the following recommendations are given: Practical problems such as timing, transportation, care for the children, etc. should be discussed and clarified with the doctor, therapist or remitter before the course starts in order to facilitate participation. The participant needs to be able to go to the treatment sessions and to do the homework exercises afterwards. Prospective participants should make an appeal to their social environment for support during the early intervention period and doctors, therapists and remitters should stimulate them to do it.

Previous studies have shown that the remitters should take care that the treatment to be chosen is congruent to the participant's views and attitudes, since a negative treatment attitude is related to dropout, according to Grilo, Money, Barlow, Goddard, Gorman, Hofman, Papp, et al., (1998). Doctors, therapists and remitters should also take the participant's concerns seriously and ascertain the nature of concerns in case of negative attitudes towards treatment. Alternatives to the face to face early intervention course, is the online version of "Don't

panic” (Trimbos Instituut, 2011, 2012; RIVM, 2011). Online intervention programs in general show promising effects in reducing disorder disturbances and ask other requests from the participants which might take away barriers which are perceived in face to face interventions. In the context of dropout, the referral to an online course has to be done with caution, since online interventions also struggle with dropout rates (Spek, Nyklicek, Smits, Cuijpers, Riper, Keyzer & Poop, 2007; Christensen, Griffiths, Groves & Korten, 2006).

Concerning the handling of dropout, it is recommended to administrate and manage dropout more precisely during the course. White, Allen, Barlow, Gorman, Shear and Woods (2010) state that the registration of participants leaving the study shed light on the nature of dropout. In their study, participants tended to dropout after uncomfortable sessions like exposure in vivo. For the current study these data are not gathered. When kept pace with participants not showing up, especially after difficult sessions, they can be directly contacted by the course leader and therefore dropout might be prevented.

### **Study limitations**

In literature there is evidence found that other variables are also related to dropout risk. These variables concern treatment and health care provider factors as well as the therapeutic relationship (White et al., 2010; Nantz et al., 2009). Therapeutic response, a good relationship with the mental health care provider, mental health care provider’s characteristics like age and gender (Keijsers et.al. 2001, Nantz et.al, 2009) as well as the kind of treatment (Keijsers et.al. 2001; Mahon, 2000) are crucial to a successful treatment. Therefore it can be concluded that there are possibly many treatment and therapists’ factors also contributing to participants’ dropout behavior. The current study does not take these variables into account. For a complete model of dropout predictors, treatment variables and therapeutic factors should be included into analysis.

The nature of the current study was explorative and lacked in some cases theoretical support from the literature for possible predictors for dropout. This study examined also different dropout groups to discover differences in dropout behavior. The group of pretreatment dropout contains a very small sample. Therefore, conclusions of this study about this particular group have to be interpreted with caution. To verify the results from this study, further research with a larger sample size is recommended.

Researchers and course leaders of the pilot study van Meulenbeek, Willemse, Smit, Smits, Van Balkom and Spinhoven (2009) gathered information from dropouts about their reasons

and motives for early termination. Nevertheless, there is information lacking from twenty-five dropouts. The participants' motive and reasons to stop is valuable information for researchers. This information might help to improve the early intervention in the process of tailoring the course continuously for the target group to enhance recovery and completion. Therefore it is important to know why participants terminate treatment early.

The definition with a dropout limit of 6 sessions was based on the content of the intervention. If a participant missed more than 2 sessions, he or she would miss too many exercises and education elements about panic (Meulenbeek et al., 2010). The dropout limit is well reasoned but still arbitrary chosen. Further research needs to be done to find a suitable and commonly accepted definition of dropout for psychological treatment and to overcome methodological problems in research.

## 5. Conclusions

The early intervention program called 'Don't panic' has proven to be effective, feasible and was accepted and positively evaluated by participants and health care providers. "Don't panic" is a suitable way reducing the chance of sub-threshold and mild panic disorder to develop into a full blown panic disorder. Participants benefited from the 8 week course, which had a low dropout rate compared to other treatments. Even if two predictors for dropout were found in the current study, it remains difficult to identify a profile of "the typical dropout". Socio-demographic variables like *gender* and *years of education* are related to (pretreatment) dropout. Nevertheless, the explanatory variation of these predictors remained small. Taking participants' reasons to terminate treatment into account, there are more practical reasons found such as transportation and lack of time. Like in other studies, it remains unclear what precisely the decisive reasons are for people to terminate a treatment prematurely. Therefore the analysis, interpretation and right conclusions in order to overcome the common problem of dropout, remains difficult.

The current study provided a beginning for research on dropout in early interventions for sub-threshold and mild panic disorder and gives advices to remitters and health care providers as well as to course leaders how to adapt to (pretreatment) dropout based among others on the identified predictors.

## 6. References

- Ajzen, I. (1985). *From intentions to actions: a theory of planned behavior*. In Kuh, J., & Beckman, K., *Action- control: From Cognition to Behavior*. Heidelberg: Springer Verlag.
- Altamura A.C., Dell’Osso, B., Berlin, H.A., Buoli, M., Bassetti, R., & Mundo, E. (2010) Duration of Untreated Illness and Suicide in Bipolar Disorder: a Naturalistic Study. *European Archives of Psychiatry and Clinical Neuroscience*, 260(5), 385–391.
- Altamura, A.C., Buoli, M., Camuri, G., & Dell’osso, B. (2010). *The need for early onset treatments in depression and anxiety*. *International Journal of Psychiatry in Clinical Practice*. Conference: 10<sup>th</sup> International Forum on Mood and Anxiety Disorders Vienna Austria. Conference Start: 20101117 Conference End: 20101119. Conference Publication: (var.pagings). 14 (pp 3-4), 2010. Date of Publication: November 2010.
- Barnhoorn, E., & Adriaanse, H. (1992). In Search of Factors Responsible for Noncompliance among Tuberculosis berculosis Patients in Wardha District, India. *Social Science and Medicine*, 2010 (34), 291–306.
- Bados, A., Balaguer, G., & Saldana, C. (2007). Outcome of Cognitive-Behaviroural Therapy in Training Practice with Anxiety Disorder Patiens. *British Journal of Clinical Psychology*, 2007 (46), 429- 435.
- Baekeland, F., & Lundwall, L. (1975). Dropping out of Treatment: A Critical Review. *Psychological Bulletin*, 82,738-783.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs: Prentice-Hall.
- Barlow, D.H. (2002). *Anxiety and its disorders: the nature of treatment of anxiety and panic*. New York: Guilford Press.
- Barlow, D.H., Rapee, R.M., & Brown, T.A. (1992). Behavioral Treatment for Generalized Anxiety Disorders. *Behavior Therapy*, 23 (4), 551-570
- Batelaan, N.M., De Graaf, R., Van Balkom, A.J.L.M., Vollebergh, W.A.M., & Beekman, A.T.F. (2006). De Epidemiologie van Paniek. *Tijdschrift voor Psychiatrie*, 48, 195-205.



- Batelaan, N., De Graaf, R., Van Balkom, A., Vollebergh, W., & Beekman, A. (2007). Thresholds for Health and Thresholds for Illness: Panic Disorder versus Sub-threshold Panic Disorder. *Psychological Medicine*, 37, 247-256.
- Beck, A.T., Steer, R.A., & Brown, G.K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation.
- Beekman, A.T.F., P. Cuijpers, H.W.J., van Marwijk, F., Smit, R.A., Schoevers, & Hosman, C. (2006). Preventie van Psychiatrische Stoornissen. *Nederlands Tijdschrift voor Geneeskunde*, 150, 419-423.
- Beurs, E., de, Smit, J.H., & Comijs, H.C. (2005). The Panic Opinion List (POL). The Reliability and Validity of a Cognitive Measure for Panic Disorder (in Dutch). *Gedragstherapie. Dutch Journal of Behaviour Therapy*, 2005 (38), 141-154.
- Bienvenu, O.J., Onyike, C.U., Stein, M.B., Chen, L.S., Samuels, J., Nestadt, G., & Eaton, W.W. (2006). Agoraphobia in Adults: Incidence and Longitudinal Relationship with Panic. *British Journal of Psychiatry*, (188), 432–438.
- Bossink, J. (2011). *Duurzame Inzetbaarheid*. Obtained on 26-12-2011 from <<[http://essay.utwente.nl/61194/1/Bossink%2C\\_J.s1026208\\_\(verslag\\_extern\).pdf](http://essay.utwente.nl/61194/1/Bossink%2C_J.s1026208_(verslag_extern).pdf)>>.
- Bijl, R., De Graaf, R., Ravelli, A., Smit, F., & Vollebergh, W. (2002). Gender and Age Specific first Incidence of DSM-III-R Psychiatric Disorders in the General Population. Results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Social Psychiatry Psychiatric Epidemiology*, 37, 372-379.
- Brazier, J., Jones, N., & Kind, P. (1993). Test the Validity of the Euroqol and comparing it with the SF-36 Health Survey Questionnaire. *Quality of Life Research Journal*, 1993 (2), 169- 180.
- Brown, T. A., & Barlow, D. H. (1992). Co-morbidity among Anxiety Disorders: Implications for Treatment and DSM—IV. *Journal of Consulting and Clinical Psychology*, 60, 835-844.
- Brown, R.A., & Lewinsohn, P.M. (1984). A Psychoeducational Approach to The Treatment of Depression: Comparison of Group, Individual and Minimal Contact Procedures. *Journal of Consulting and Clinical Psychology*, 52 (5), 774- 783.
- Christensen, H., Griffiths, K., Groves, C., Korten, A. (2006). Free Range Users and One Hit

- Wonders: Community Users of an Internet-based Cognitive Behaviour Therapy Program. *Australian and New Zealand Journal of Psychiatry*, 40, 59-62.
- Cuijpers, P., Smit, F., Voordouw, I., & Kramer, J. (2005). Outcome of Cognitive Behavior Therapy for Minor Depression in Routine Practice. *Psychology and Psychotherapy: Theory, Research and Practice*, 78, 179-188.
- Cuijpers, P., & Smit, F. (2007). Subklinische depressieve: een klinisch relevante conditie? *Tijdschrift voor Psychiatrie*, 50, 519-528.
- Cuijpers, P. (1998). A Psychoeducational Approach to the Treatment of Depression: A Meta-Analysis of Lewinsohn's "Coping with Depression" Course. *Behavior Therapy*, 29 (3), 521- 533.
- Chambless, D.L., Caputo, G.C., Jasin S.E., Gracely, E.J., & Williams, C. (1985). The Mobility Inventory for Agoraphobia. *Behavioral Response Therapy*, 1985 (23), 35- 44.
- Dadds, M.R., Spence, S.H., Holland, D.E., Barret, P.M., & Laurens, K.R. (1997). Prevention and Early Intervention for Anxiety Disorders: A Controlled Trial. *Journal of Consulting and Clinical Psychology*, 65 (4), 627-635.
- Davis, S., Hooke, G.R., & Page, A.C. (2006). Identifying and Targeting Predictors of Group Cognitive Behavior Therapy. *Australian Journal of Psychology*, 58 (1), 48-56.
- Does, A.J.W. van der, (2002). *The Dutch version of the Beck Depression Inventory-second Edition (BDI-II-NL) (in Dutch)*. Lisse: Swets Test Publishers.
- Edlund, M.J., Wang, P.S., Berglund, P.A., Katz, S.J., Lin, E., & Kessler, R.C.(2002) Dropping out of mental health treatment: patterns and predictors among epidemiological survey respondents in the United States and Ontario. *American Journal of Psychiatry*, 2002 (159), 845 – 851.
- Elwyn, G., Edwards, A., Kinnersley, P., & Grol, R. (2000). Shared Decision Making and the Concept of equipoise: The Competences of Involving Patients in Healthcare Choices. *British Journal of General Practice*, 50, 892-899.

- Feldner, M.T., Zvolensky, J., & Schmidt, B.T. (2004). Prevention of Anxiety Psychopathology: a Critical Review of the Empirical Literature. *Clinical Psychological Scientific Practice*, 2004 (11), 405- 424.
- Fledderus, M., Bohlmeijer, E.T., Smit, F., & Westerhof, G.J. (2010). Mental Health Promotion as a New Goal in Public Mental Health Care: A Randomized Controlled Trial of an Intervention Enhancing Psychological Flexibility. *American Journal of Public Health*, 100 (12) 2372-2372.
- Gardenswartz, C.A., & Craske, M.G.(2001). Prevention of Panic Disorder. *Behavioral Therapy*, 2001 (32), 725- 737.
- Garfield, S. L. (1986). *Research on client variables in psychotherapy*. In S. L. Garfield & A. E. Bergin (Eds.), *Handbook of psychotherapy and behavior change*. New York: Wiley.
- Garfield, S. L. (1994). *Research on client variables in psychotherapy*. In A. E. Bergin & S. L. Garfield (Eds.), *Handbook of psychotherapy and behavior change*. New York: Wiley.
- Gonzales, A., Weersing, R., Warnick, R.M., Scahill, R.D., & Wooston, J.L. (2010). Predictors of Treatment Attrition Among an Out Patient Clinic Sample of Youth with Clinically Significant Anxiety. *Administration and Policy in Mental in Mental Health and Mental Health Services Research*, 38 (5), 356- 367.
- Grilo, M.G., Money, R., Barlow, D.H., Goddard, A.W., Gorman, J.M., Hofman, S.G., Papp, L.A., Shear, M.K., & Woods, S.W. (1998). Pretreatment Patient Factors Predicting Attrition from a Multicenter Randomized Controlled Treatment for Panic Disorder. *Comprehensive Psychiatry*, 39 (6), 323- 332.
- Hakkaart- Van Roijen, L., Straten, A. Van & Donker, M. (2002). *Manual Trimobs/iMTA questionnaire for costs associated with psychiatric illness (TIC-P, in Dutch)*. Rotterdam: Erasmus University, 2002.
- Harvison, K., Woodruff-Borden, J., & Jeffery, S. (2004). Mismanagement of panic disorder in emergency departments: contributors, costs, and implications for integrated models of care. *Journal of Clinical Psychology in Medical Settings*, 2004 (11), 217– 32.

- Hollon, S.D., Shelton, R.C., & Davis, D.D. (1991). Cognitive Therapy of Depression: Conceptual Issues and Clinical Efficacy. *Journal of Consulting and Clinical Psychology, 61*, 270–275.
- Kampman, M., Keijsers, P.J., Hoogduin, C.A.L., & Hendriks, G.J. (2008). Outcome Prediction of Cognitive Behavior Therapy for Panic Disorder: Initial Symptom Severity is Predictive for Treatment Outcome, Co-morbid Anxiety or Depressive disorder, Cluster C Personality Disorder and Initial Motivation are not. *Behavioral and Cognitive Psychotherapy, 36*, 99-112.
- Katerndahl, D.A. Progression of limited symptom attacks. *Depression and Anxiety, 9*, 138-140.
- Keijsers, J.P.G., Kampman, M., & Hoogduin, C.A.L. (2001). Dropout Prediction in Cognitive Behavioral Therapy for Panic Disorder. *Behavior Therapy, 2001* (32) 739- 749.
- King, A.C. & Canada, S.A. (2003). Client- related Predictors of Early Treatment Dropout in a Substance Abuse Clinic Exclusively Employing Individual Therapy. *Journal of Substance Abuse Treatment, 2004* (28), 189-195.
- Mahon, J.(2000). Dropping Out from Psychological Treatment for Eating Disorders: What are the Issues? *European Eating Disorders Review, 2000* (8), 198- 216.
- Meulenbeek, P., Herzmanatus, J., Smit, F., Willemse, G., & Van der Zanden, R. (2005). *Draaiboek en Cursusmap: Geen Paniek, leren omgaan met panieklachten*. Utrecht: Trimbo-instituut/GGNet. [Manual and Workbook: Don't Panic, learn to cope with panic symptoms].
- Meulenbeek, P., Willemse, G., Smit, F., Van Balkom, A., Spinhoven, P., & Cuijpers, P. (2008). *Early Intervention in Panic: Randomized Controlled Trial and Cost-Effectiveness Analysis*. 26-05-2010 from << <http://www.trialsjournal.com/content/9/1/67>>>.
- Meulenbeek, P., Willemse, G., Smit, F., Van Balkom, A., Spinhoven, P., & Cuijpers, P. (2010). Early intervention in panic: pragmatic randomized controlled trial. *The British Journal of Psychiatry, 196*, 326-331.

- Meyer, B., Pilkonis, P.A., Kropnick, J.L., Egan, M.K., Simmens, J.J., & Sotsky, S.M. (2002). Treatment Expectencies, Patient Alliance and Outcome: Further Analysis from the National Institute of Mental Health Treatment of Depression Collaborative Research Program. *Journal of Consulting and Clinical Psychology*, 2002 (70), 1051-1055.
- Moore, D., & McCabe, G., (1994). *Statistiek in de praktijk*. Schoonhoven: Academic Service.
- Nantz, E., Lui-Seifert, H., & Skljaresvski, V. (2009). Predictors of Premature Discontinuation of Treatment in Multiple Disease States. *Patient Preference and Adherence*, 2009 (3), 31-43.
- Ong, L.M.L., de Haes, J.C.J.M., Hoos, A.M., & Lammes, F.B. (1995). Doctor-patient Communication: A Review of the Literature. *Social Science and Medicine*, 40, 903-918.
- Otto, M.W., Tuby, K.S., Gould, R.A., McLean, R.Y.S., & Pollack, M.H. (2001). An Effect-Size Analysis of the Relative Efficacy and Tolerability of Serotonin Selective Reuptake Inhibitors for Panic disorder. *American Journal of Psychiatry*, 158 (12), 1982-1992.
- Pearlin, L.I., & Schooler, C. (1978). The Structure of Coping. *Journal of Health Social Behavior*, 1978 (19), 2-21.
- Pekarik, G. (1985). Coping with dropouts. *Professional Psychology: Research and Practice*, 16, 114-12
- Pekarik, G. (1983). Improvement in Clients Who have Given Different Reasons for Dropping Out of Treatment. *Journal of Clinical Psychology*, 1983 (39), 909-913.
- Pekarik, G., & Wierzbicki, M. (1986). The Relationship between Clients' Expected and Actual Treatment Duration. *Psychotherapy*, 1986 (23), 532-534.
- Reis, B. F., & Brown, L. G. (1999). Reducing Psychotherapy Dropouts: Maximizing Perspective Convergence in the Psychotherapy Dyad. *Psychotherapy*, 1999 (36), 123-136.
- RIVM. (2011). *Geen paniek!* In: Loketgezondleven.nl. obtained on 2012 from <<[http://www.loketgezondleven.nl/Interventie database](http://www.loketgezondleven.nl/Interventie%20database)\G21december >>.
- Shear, M.K., Rucci, P., Williams, J., Frank, E., Grochocinski, V., & Vander Bilt, J. (2001). Reliability and Validity of the Panic Disorder Severity Scale: Replication and Extension. *Journal of Psychiatric Research*, 2001 (35), 293- 296.

- Sheehan, D.V., Lecrubier, Y., Sheehan, K.H., Amorim, P., Janavs, J., & Weiller, E. (1998). The Mini International Neuropsychiatric Interview (MINI): The Development and Validation of Structured Diagnostic Psychiatric Interview for DSM-IV and ICD-10. *Clinical Psychiatry, 1998* (59), 22- 33.
- Saunders, J.B., Aasland, O.G., Barbor, T.F., & Fuente, J.R., de la (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT). WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption. *Addiction, 993* (88), 791-804.
- Simons, A.D., Levine, J.L., Lustman, P.J., & Murphy, G.J. (1984). Patient Attrition in a Comparative Outcome Study of Depression: A Follow- up Report. *Journal of Affective Disorders, 6* (2), 163- 173.
- Smit, F., Cuijpers, P., Oostenbrink, J., Batelaan, N., De Graaf, R., & Beekman, A. (2006). Costs of Nine Common Mental Disorders: Implications for Curative and Preventive Psychiatry. *The Journal of Mental Health Policy and Economics, 9*, 193-200.
- Sonawalla, S.B., Farabaugh, A.H., Leslie, V.M., e.a. (2002). Early Dropouts, late Drop-outs and Completers: Differences in the Continuation Phase of a Clinical Trial. *Progress in Neuropsychopharmacology and Biological Psychiatry, 2002* (26), 1415-1419.
- Spek, V., Nyklicek I., Smits, N., Cuijpers, P., Riper, H., Keyzer, J., & Poop, V. (2007). Internet-based Cognitive Behavioural Therapy for Sub-threshold Depression in People over 50 years old: A Randomized Controlled Clinical Trial. *Psychological Medicine, 37*, 1797-1806.
- Spinhoven, P., Ormel, J., Sloekers, P.P.A., Kempen, G.I.J.M., Speckens, A.E.M., & Van Hemert, A.M. (1997). A validation study of the Hospital Anxiety and Depression Scale (HADS) in different groups of Dutch subjects. *Psychological Medicine, 27*, 363-370.
- Swinson, R.P., & Kuch, K. (1989). Behavioral Psychotherapy of Agoraphobia/Panic Disorder. *International Review of Psychiatry, 1989* (1), 195–206.
- Swinson , R.P., Soulios, C., Cox, B.J., & Kuch, K. (1992). Brief Treatment of Emergency Room Patients with Panic Attacks. *American Journal of Psychiatry, 1992* (149), 944-946.
- Taylor, C.B., King, R., Margraf, J., Ehlers, A., Telch, M., Roth, W.T., & Agras, W.S. (1989). Use of Medication and In Vivo Exposure in Volunteers for Panic Disorder Research. *American Journal of Psychiatry, 146* ,1423–1426.

- Telch, M.J., Brouillard, M. Techl, C.F., Agras, W.S. Taylor, C.B. (1989). Role of cognitive appariasial in panic- related avoidance. *Behavior Research and Therapy*, 27, 373-383.
- Trimbos Instituut (2011). *Geen Paniek De groepscursus 'Geen paniek' is bestemd voor volwassenen van 18-65 jaar die last hebben van licht tot matige paniekklachten met of zonder angorafobische klachten*. Obtained on 12-11-2012 from <<<http://www.trimbos.nl/onderwerpen/preventie/angst/geen-paniek>>>.
- Trimbos Instituut (2012). *Geen paniek online*. Obtained on 05-01-2012 from <<<http://www.trimbos.nl/projecten-en-onderzoek/projecten/64/8/64-806-va-geen-paniek-online>>>.
- Vandermeer, A., & Burgerhout, K. (2004). *Nederlandse versie van de Panic Disorder Severity Scale*. Amsterdam: Universiteit van Amsterdam [Dutch version of the Panic Disorder Severity Scale].
- Veeninga, A.T., & Hafkenscheid, A.J.P.M., (2004). Verwachtingen van Cliënten bij Aanvang van de Psychotherapie: Voorspellers van Drop-out? *Tijdschrift voor Psychotherapie*, 2004 (30), 187-195.
- Visser, S. (2001). Dropouts bij de Behandeling van Hypochondrie: Kenmerken en Aanpak. *Directieve Therapie*, 21 (2), 55- 60.
- Waden, D., Trivedi, M.H., Wisniewski, S.R., Davis, L., Nierenberg, A.A., Gayness, B.N., Zisook, S., & Hollon, S.D., et al. (2007). Predictors of Attrition During Initial (citalopram) Treatment of Depression: A STAR\*D report. *American Journal of Psychiatry*. 2007 (164), 1189–1197.
- Wang, P., Lane, M., Olfson, M., Pincus, H., Wells, K., & Kessler, R. (2005). Twelve-month use of mental health services in the United States: Results from the National Co-morbidity Survey Replication. *Archives of General Psychiatry*, 62, 629–640.
- Warden, W., & Treat, T.A. (1998). Transporting an Empirically Supported Treatment for Panic Disorder to a Service Clinic Setting: A Benchmarking Strategy. *Journal of Consulting and Clinical Psychology*, 66 (2), 231- 239.

- White, K.S., Allen, A.B., Barlow, D.H., Gorman, J.M., Shear, M.K., & Woods, S.W.(2010). Attrition in a Multicenter Clinical Trial for Panic Disorder *The Journal of Nervous and Mental Diseases*, 198 (9), 665-671.
- Wierzbicki, M., & Pekarik, G.(1993). A Meta- Analysis of Psychotherapy Dropout. *Professional Psychology: Research and Practice*, 24 (2), 190- 195.
- Wingerson, D., Sullivan, M., Dager, S., & Flick, S. (1993). Personality Traits and Early Discontinuation from Clinical Trials from Anxious Patients. *Journal of Clinical Psychopharmacology*, 13 (3), 194-197.
- Zigmond, A.S., & Sniath, R.P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 67, 361-370.