Prevention of anxiety disorders and depression by targeting excessive worry and rumination in adolescents and young adults: A randomized controlled trial

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Background: This randomized controlled trial evaluated the efficacy of a preventive intervention for anxiety disorders and depression by targeting excessive levels of repetitive negative thinking (RNT; worry and rumination) in adolescents and young adults.

Methods: Participants (N = 251, 83.7% female) showing elevated levels of RNT were randomly allocated to a 6-week cognitive-behavioral training delivered in a group, via the internet, or to a waitlist control condition. Self-report measures were collected at pre-intervention, post-intervention, 3 m and 12 m follow-up.

Results: Both versions of the preventive intervention significantly reduced RNT (d = 0.53 to 0.89), and symptom levels of anxiety and depression (d = 0.36 to 0.72). Effects were maintained until 12 m follow-up. The interventions resulted in a significantly lower 12 m prevalence rate of depression (group intervention: 15.3%, internet intervention: 14.7%) and generalized anxiety disorder (group intervention: 18.0%, internet intervention: 16.0%), compared to the waitlist (32.4% and 42.2%, respectively). Mediation analyses demonstrated that reductions in RNT mediated the effect of the interventions on the prevalence of depression and generalized anxiety disorder.

Conclusions: Results provide evidence for the efficacy of this preventive intervention targeting RNT and support a selective prevention approach that specifically targets a known risk factor to prevent multiple disorders.

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1. Introduction

Anxiety disorders and depression are highly prevalent (Kessler, Chiu, Demler, & Walters, 2005), are associated with reduced quality of life for patients (Olatunji, Cisler, & Tolin, 2007; Strine et al., 2009), and enormous economic costs for society (Simon, VonKorff, & Barlow, 1995). Although evidence-based treatments for anxiety disorders and depression are available, large numbers of people do not seek treatment (Eisenberg, Hunt, Speer, & Zivin, 2011), do not respond to treatment (Griffiths & Griffiths, 2015), or experience a new episode over time (Bruce et al., 2008; Curry et al., 2011). Therefore, it is increasingly being argued that treatment alone is not sufficient to alleviate the individual and societal burden associated with these disorders, but that this needs to be complemented by prevention (Topper, Emmelkamp, & Ehring, 2010).

A growing number of programs for the prevention of depression and anxiety disorders have been developed and evaluated. Recent meta-analytic studies have focused on the effects of universal prevention programs (i.e. interventions offered to all individuals without pre-selection) on depressive symptom severities relative to randomized control groups. Results demonstrate small effect sizes at post-intervention (d = 0.04–12) (Horowitz & Garber, 2006; Merry et al., 2012; Stice, Shaw, Bohon, Marti, & Rohde, 2009) and

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follow-up \( (d = 0.02-0.12) \) (Horowitz & Garber, 2006; Merry et al., 2012; Stice et al., 2009). Similarly, meta-analyses evaluating universal prevention programs for anxiety demonstrate small effect sizes at post-treatment \( (d = 0.12-0.29) \) (Fisak, Richard, & Mann, 2011; Teubert & Pinquart, 2011; Zalta, 2011) and follow-up \( (d = 0.15) \) (Teubert & Pinquart, 2011). Evidence for efficacy of selective (i.e., provided for individuals at risk of psychopathology) and indicated prevention programs (i.e., offered to individuals showing early symptoms of a disorder) is somewhat more favorable. Programs focusing on the prevention of depression have been found to produce small to moderate effect sizes in the reduction of depressive symptoms levels at post-intervention \( (d = 0.23-0.31) \) (Horowitz & Garber, 2006; Merry et al., 2012; Stice et al., 2009), and follow-up \( (d = 0.22-0.34) \) (Horowitz & Garber, 2006; Merry et al., 2012; Stice et al., 2009). For anxiety, meta-analytic studies demonstrate small to moderate effect sizes for these programs at post-intervention \( (d = 0.21-0.32) \) (Fisak et al., 2011; Teubert & Pinquart, 2011; Zalta, 2011), and follow-up \( (d = 0.23) \) (Teubert & Pinquart, 2011).

Several researchers have argued that the comparison of symptom levels as described above does not reflect true prevention effects (Cuipers, van Straten, Smit, Mihalopoulou, & Beekman, 2008; Horowitz & Garber, 2006). Instead, it has been proposed that the incidence rates of disorders across intervention and control groups should be compared (Cuipers et al., 2008). Following up on this recommendation, Garber et al. (2009) conducted an indicated prevention study comparing a group cognitive behavioral prevention program to usual care in 316 adolescents of parents with depression. At 9 months follow-up, the prevention program resulted in a 34% reduction of the risk of developing a depressive disorder. In a recent meta-analysis, Merry et al. (2012) demonstrated that both universal and targeted (selective and indicated) prevention programs significantly reduced incidence rates of depression at post-treatment and 3–9 months follow-up. At 1 year follow-up, this effect disappeared for universal programs, but remained evident for targeted programs. However, a more recent meta-analysis did not find significant differences in the reduction of incidence rates of depression between universal, selective and indicated prevention programs (Van Zoonen et al., 2014), with an average incidence reduction of 21%. Only a few studies have investigated the effect of preventive interventions on the reduction of the incidence of anxiety disorders. For example, Seligman, Schulman, DeRubeis, and Hollon (1999) evaluated the effects of a selective prevention program targeting a maladaptive attributional style in 231 college students. Participants assigned to a group cognitive behavioral prevention program were less likely (14%) to develop a diagnosis of generalized anxiety disorder than participants assigned to a no-intervention control group (21%).

When conducting a systematic literature search, Stockings et al. (2016) were able to identify only seven studies testing universal prevention, and one study testing selective and indicated prevention, respectively. Although the incidence of anxiety disorders was significantly reduced when compared to control groups at post-intervention, this effect was only maintained at longer-term follow-up for indicated prevention. In sum, although the provision of prevention for depression and anxiety disorders appears generally promising, there is clearly room for improvement in this area. Moreover, despite the high levels of co-morbidity between anxiety and depression (Kessler et al., 2003), relatively few studies have tested preventive interventions for both symptom clusters simultaneously.

For example, in their systematic review and meta-analysis, Stockings et al. (2016) identified 12 studies testing universal prevention, 6 studies on selective prevention and 9 studies on indicated prevention targeting both depressive and anxiety symptoms. Results of these studies mostly showed that the preventive interventions are efficacious in reducing both symptom clusters. Importantly, however, these effects were not maintained at the 12 months assessment (universal prevention) or were not assessed (selective and indicated prevention).

A number of suggestions have been proposed in the literature to increase the efficacy of preventive interventions. Many authors have interpreted the findings described above as evidence that the effects of universal prevention fall behind that of selective and indicated prevention and that prevention should therefore mainly focus on high risk individuals (Bienvenu & Ginsburg, 2007; Craske & Zucker, 2001; Horowitz & Garber, 2006). In addition, it appears promising to select participants based on risk factors that are modifiable, and to then specifically target these risk factors in the preventive intervention (Craske & Zucker, 2001; Zvolensky, Schmidt, Bernstein, & Keough, 2006). In contrast to prevention programs consisting of broadband cognitive behavioral therapy (CBT) strategies, a focus on modifiable risk factors may ensure a more individualized approach that is tailored to the needs of an individual and is thereby likely to boost motivation and engagement (Vitiello, 2011). Studies using this strategy in the past have targeted factors such as maladaptive attributional style (Seligman et al., 1999), anxiety sensitivity (Balle & Tortella-Feliu, 2010), body dissatisfaction (Stice, Mazotti, Weibel, & Agras, 2000) or behavioral inhibition (Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2005). Finally, the efficacy of prevention may be increased by focusing on preventive interventions that target transdiagnostic risk factors that predispose for the development of a range of disorders (Dozois, Seeds, & Collins, 2009; Nehmy, 2010). There is some evidence that targeting transdiagnostic risk factors, such as body dissatisfaction (Stice & Shaw, 2002), attributional style (Seligman et al., 1999), and perfectionism (Musiat et al., 2014) can reduce the risk for different types of psychopathology.

In the current study, we applied the general strategy outlined above to develop a novel prevention program for depression and generalized anxiety disorder targeting repetitive negative thinking (RNT; e.g., worry, rumination). RNT appears to be a promising target for prevention for a number of reasons (see also Topper et al., 2010). First, there is substantial evidence showing that RNT is a transdiagnostic risk factor. Longitudinal studies have shown that rumination predicts future onset of major depressive episodes, diagnosis and symptom severities of PTSD, levels of anxiety, and bulimic as well as substance abuse symptoms (Ehring & Watkins, 2008; Watkins, 2008). Similarly, worry has been found to predict future levels of anxiety and depressive symptoms. A relationship between RNT and emotional disorders is also found in childhood and adolescence (Abela, Brozina, & Haigh, 2002; McLaughlin & Hatzenbuehler, 2009; Nolen-Hoeksema, Stice, Wade, & Bohon, 2007; Schwartz & Koenig, 1996), with increased RNT predicting the onset of depression (Wilkinson, Croudace, & Goodyer, 2013). Due to the early onset of depression (Fergusson, Horwood, Ridder, & Beautrais, 2005) and anxiety disorders (McEvoy, Grove, & Slade, 2011), preventive interventions are typically targeted at this period of development. In experimental studies, the induction of rumination has been shown to exacerbate already existing dysphoric mood and negatively impacts depressogenic processes such as increased negative thinking and poorer problem solving (Hubbard, Faso, Krawczyk, & Rypma, 2015; Lyubomirsky & Nolen-Hoeksema, 1995). Experimental induction of worry has been

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2 One methodological issue to consider when comparing the different types of preventive interventions is that greater power is needed to demonstrate the effects of universal interventions because a larger number of participants are not at risk of developing emotional problems, and there is a lower base-rate of incidence.
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