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Challenged by cognition : toward optimal measurement and greater understanding of youth cognition in school refusal and cognitive behavioural therapy outcome

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CHAPTER 5

General Discussion

The studies presented in this dissertation addressed seven important challenges associated with three major themes: (a) the measurement of youth cognition, including empirically valid measurement of cognitive constructs in youth coming from Beck et al.'s cognitive theory; (b) the conceptual issues of cognitive constructs in youth, including both negative cognitions and positive cognitions, and both cognitive products and cognitive processes; and (c) the mechanisms of CBT, including investigation of mediators of CBT in youth. In this final chapter, the findings from the studies presented in Chapters 2 to 4 are summarized and discussed in the context of the seven challenges. Consideration is also given to the extent to which each challenge has been resolved. Furthermore, implications of the findings for theory, research, and clinical practice are presented, and suggestions are made for future research.

Summary of the Findings

Challenge 1: Absence of Items in the CNCEQ to Assess Negative Cognitive Errors Implicated in Cognitive Theory of Anxiety

The Children's Negative Cognitive Error Questionnaire (CNCEQ; Leitenberg et al., 1986) is a measure of negative cognitive errors in youth based on Beck et al.'s (1979) cognitive theory of depression and has also frequently been used to investigate negative cognitive errors in anxious youth. In the study reported in Chapter 2, the CNCEQ was extended by two new subscales measuring negative cognitive errors presumably present in anxious youth: 'threat conclusion' and 'underestimation of the ability to cope'. The relation between the five negative cognitive errors and anxiety in youth was investigated. It was anticipated that two newly developed subscales would be the strongest predictors of anxiety. In line with expectations, it was found that the two strongest predictors of anxiety were indeed 'underestimation of the ability to cope' and 'mind reading' (which contained 'threat conclusion' items). This fits with Beck and colleagues' (1985) cognitive model of anxiety and with recent studies in which an 'underestimation of the ability to cope' (e.g., Weems, Costa,

Watts, Taylor, & Cannon, 2007) and an 'interpretation of ambiguous information as threatening' (e.g., Creswell, Schniering, & Rapee, 2005) have been found to be prominent among anxious youth. Further, in line with previous research (Epkins, 1996; Weems, Berman, Silverman, & Saavedra, 2001), 'overgeneralizing' was found to be a significant predictor of anxiety. All of the negative cognitive error subscales were correlated with anxiety except for 'selective abstraction'. This finding is in accordance with previous findings in which selectively attending to negative events was found to be unrelated to anxiety, and to be more related to depression (e.g., Leitenberg, Yost, & Carroll-Wilson, 1986; Weems et al., 2001, 2007).

Is Challenge 1 Resolved?

The challenge is considered resolved inasmuch as empirical evidence was found for a relationship between anxiety in youth, and two newly-developed subscales aimed at measuring cognitive errors presumably related to anxiety in youth. Indeed, the two new subscales – 'underestimation of ability to cope' and 'mind reading' (which contained 'threat conclusion' items) – were found to be the two strongest predictors of youth anxiety. That is, they were stronger predictors of anxiety than original CNCEQ subscales developed on the basis of a cognitive theory of depression.

Challenge 2: Lacking Empirical Support for the Theoretically-Defined Negative Cognitive Error Categories of the CNCEQ

Since the initial Leitenberg et al.'s (1986) study on the development of the CNCEQ, four studies have attempted to find the factorial validity of the CNCEQ. All four studies failed to find empirical evidence for the presence of distinct negative cognitive errors in the CNCEQ. The study reported in Chapter 2 investigated the factor structure of the Children's Negative Cognitive Error Questionnaire-Revised (CNCEQ-R), a refined and extended version of the CNCEQ. Items which were clear representations of negative cognitive errors (Yurica & DiTomasso, 2005) were retained in the questionnaire, and as mentioned above in Challenge 1, items measuring two cognitive errors frequently identified in anxious youth were added to the questionnaire. Via exploratory factor analysis, it was

found that the items in the CNCEQ-R assessed distinct negative cognitive errors, given that items were found to load on five separate components, namely: 'underestimation of the ability to cope', 'personalizing without mind reading', 'selective abstraction', 'overgeneralizing', and 'mind reading'. Confirmatory factor analysis in an independent sample yielded further support for the differentiation among the five components. After four previous efforts this is the first effort to factor analysis of the CNCEQ items which has yielded sound empirical support for the distinct negative cognitive error categories. This is probably because of the efforts to improve the items so as to have items which are more pure measures of respective cognitive errors.

Very recently, Kingery and colleagues (2009) also conducted a factor analysis of the items in the original CNCEQ, based on a sample of 427 depressed children and adolescents who had participated in the TADS study (2003). A four factor solution was considered superior: one general negative cognitive error factor including all 24 items of the CNCEQ, and three factors related to three domains represented in items in the CNCEQ (i.e., social domain, academic domain, and athletic domain). Their finding that all items loaded on a general factor of negative cognitive errors is consistent with previous studies investigating the factor structure of the CNCEQ (Cole and Turner, 1993; Messer, Kempton, Van Hasselt, Null, & Bukstein, 1994; Stewart et al., 2004). This is not surprising, given that their factor analysis was conducted on the original items of the CNCEQ, which, as indicated in Chapter 2, are often impure reflections of distinct cognitive errors. As described in Chapter 2, only one study (i.e., Karakaya et al., 2007) found some support for the factor structure of a Turkish version of the CNCEQ. In the Karakaya et al. study, three components were identified (i.e., 'catastrophizing', 'personalizing', 'selective abstraction'). The items associated with the fourth error, 'overgeneralizing', loaded on the other three components. The items had loadings below the allowed minimal levels and insufficient information about the cross-loadings was provided. Thus, the study reported in Chapter 2 is still the only study that has found sound empirical support for differentiation among the cognitive errors which were intended to be measured via the CNCEQ.

Is Challenge 2 Resolved?

The procedure used in the study reported in Chapter 2 to refine and extend the CNCEQ has led to strong empirical evidence for the existence of distinct negative cognitive error categories in youth. Evidence for the existence of distinct negative cognitive error categories was found in the exploratory factor analysis and was further replicated in the confirmatory factor analysis in a new sample. Until now, the differentiation among cognitive errors was essentially present only in theory. Given these results, the challenge can be considered resolved. At the same time, the CNCEQ-R still only addresses five negative cognitive errors, and as observed in Yurica and DiTomasso (2005), there are other negative cognitive errors reported in the literature. It is yet to be shown whether these other negative cognitive errors can be differentiated from each other and from the five negative cognitive errors currently present in the CNCEQ-R.

Challenge 3: Understanding Cognitive Factors Related to School Refusal

Though cognitive therapy is indicated as one of the key components of treatment for school refusal, almost nothing is known about the cognitions of school-refusing youth. Two dimensions of cognition (i.e., cognitive products and cognitive processes) implicated in Beck et al.'s cognitive theories of depression (1979) and anxiety (1985) were investigated in youth with school refusal and youth without school refusal in the study reported in Chapter 3. The findings revealed that school refusal is characterized by the presence of the negative cognitive error of 'overgeneralizing'. The negative cognitive error of 'overgeneralizing' was found to be the only significant predictor of school refusal with regard to cognitive processing, indicating that school refusers tend to generalize negative experiences across situations. It is plausible that school refusers have a tendency to generalize past negative experiences to the future experiences and that this can lead to the prolongation of school refusal. The study results pertaining to cognitive products (i.e., negative automatic thoughts) revealed that thoughts of 'personal failure' were associated with, and predictive of school refusal. In the same way that several authors

proposed that cognitive products and cognitive processes influence each other (Beck, 1995; Beck, Rush, Shaw, & Emery, 1979; Daleiden & Vasey, 1997; Friedberg & McClure, 2002; Merrell, 2001), negative cognitive error of 'overgeneralizing' and negative automatic thoughts of 'personal failure' may be influencing each other. That is, the negative cognitive error of 'overgeneralizing' may influence the development and maintenance of negative automatic thoughts of 'personal failure', and thoughts of 'personal failure' may transform the upcoming information to the deeper level of cognitive process (i.e., the cognitive error of 'overgeneralizing'). Another result emerging from the study was that lower levels of negative automatic thoughts of 'hostility' were associated with and predictive of school refusal, perhaps indicating that school-refusing youth are a particularly vulnerable group of young people not able to show resistance to external stressors. The combination of thoughts of personal failure and a tendency to overgeneralize negative experiences may lead to school-refusing youth experiencing a kind of impasse; they may have a sense of hopelessness regarding the future, which may disincline them towards efforts to return to regular school attendance.

Is Challenge 3 Resolved?

The study described in Chapter 3 was the first to systematically examine cognitive products and cognitive processes in school-refusing youth. The knowledge gained from the results of the study contributes to the understanding of school refusal and of the factors potentially contributing to the maintenance of school refusal. At the same time, the challenge is considered to be partially resolved. More research is needed to investigate the potential causal role of cognition in school refusal by examining the temporal relations between cognitions and school refusal.

Challenge 4: Determining the Role of Positive Cognitions in School Refusal

Theoretically, there is still a lot of uncertainty about the role of positive cognition in youth psychopathology. Via use of the Children's Automatic Thoughts Scale-Negative/Positive (Hogendoorn et al., 2010), which includes a new subscale for measuring positive automatic thoughts among

young people, positive thoughts in youth with and without school refusal were investigated. Positive thoughts as predictors of school refusal were also investigated. The results revealed that school-refusing youth had lower levels of positive thoughts relative to youth without school refusal. Recently, Hogendoorn et al. (2010) also found that fewer positive automatic thoughts were related to anxiety and depression in youth. The results from logistic regression reported in Chapter 3 revealed that whether a young person is a school refuser or not could not be predicted by the levels of positive automatic thoughts. But being a school refuser could be predicted by the levels of negative thoughts. These findings provide support for the 'power of non-negative thinking' perspective (Kendall & Chansky, 1991; Kendall & Korgeski, 1979), which states that the negative thoughts play a more important role in youth psychopathology than the positive thoughts. That is, positive cognitions appeared to play a less important role in the explanation of school refusal than negative cognitions.

Is Challenge 4 Resolved?

The challenge is considered to be partially resolved. The knowledge was gained that school-refusing youth have lower levels of positive thoughts than youth without school refusal. Further, positive thoughts were not found to be predictive of school refusal. At the same time, it remains unknown whether low levels of positive thoughts are a cause or consequence of school refusal, and whether they are perhaps moderators or mediators of school refusal.

Challenge 5: Identifying Constructs to Be Studied as Potential Mediators of CBT Outcomes

When designing a study to test for mediators of CBT outcome in youth, one of the conceptual challenges is the choice of constructs to include as potential mediators of treatment outcome. As described in Chapter 4, self-efficacy was selected as a potential mediator of CBT for school refusal. The choice for this construct was based on five decision points: (i) self-efficacy has previously been hypothesized to be involved in the theories of behaviour change (Bandura, 1994), and in cognitive theories of internalizing disorders (Beck, 1976; Beck, Emery, & Greenberg, 1985);

(ii) previously, it has been found that school refusers underestimate their ability to cope with stressful or anxiety-provoking situations (e.g., Heyne, 2006); (iii) self-efficacy was also frequently investigated in studies of CBT with youth (e.g., Barrett, Dadds, & Rapee, 1996; Flannery-Schroeder & Kendall, 2000; Melvin et al., 2006); (iv) self-efficacy was included as a key target in CBT for school refusal (Heyne & Rollings, 2002); and (v) CBT studies with school-refusing youth indicated that an increase in self-efficacy was accompanied by an increase in school attendance and a reduction in internalizing behaviour (Heyne et al., 2002; King, et al., 1998).

The results of the study in Chapter 4 indicated that increases in self-efficacy at post-treatment mediated increases in school attendance and decreases in school fear at post-treatment. Temporal precedence with respect to changes in self-efficacy at post-treatment leading to changes in treatment outcomes at follow-up was also tested, but this model was found not to be significant. Changes in self-efficacy at follow-up were also not related to changes in treatment outcome at follow-up. In a recent study of CBT for youth anxiety (Kendall & Treadwell, 2007) cognitive constructs were also chosen as potential mediators of CBT outcomes. In this study it was found that changes in negative self-statements at post-treatment mediated CBT effects on anxious symptoms at post-treatment.

Is Challenge 5 Resolved?

The challenge is considered to be partially resolved, in regard to self-efficacy as mediator of treatment outcome. Evidence was found for changes in self-efficacy at post-treatment mediating two of the CBT outcomes at post-treatment. At the same time, there was no support for self-efficacy as a mediator of CBT outcomes at follow-up. Although it is difficult to determine whether self-efficacy was the most important construct to be measured as a potential mediator of CBT for school refusal based on the results at follow-up, it is clear that self-efficacy was an important construct to be measured as a potential mediator of CBT outcomes at post-treatment.

Challenge 6: Determining Mediator Assessment Points for Investigating the Temporal Precedence Requirement

Temporal precedence is one of the most important requirements for establishing mediation of treatment outcome, that is, following treatment, changes in the mediator must occur before changes in the treatment outcome. This requirement implies that the assessment points are designed so to capture these changes in the mediator and treatment outcome variables. The longitudinal design of the study reported in Chapter 4 allowed for a test of the temporal precedence of the mediator to the treatment outcome; that is, there were three assessment points, and at each point the mediating variable and the treatment outcome variables were measured. The results of the study indicated that increases in self-efficacy at post-treatment did not mediate increases in school attendance and decreases in internalizing problems at follow-up. The two most recent studies of the mediators of CBT for youth internalizing disorders (Alfano et al., 2009; Kendall & Treadwell, 2007) incorporated only two assessment points (pre- to post-treatment), and therefore did not facilitate investigation of the temporal precedence requirement of the changes in the mediator to the changes in the treatment outcomes.

Is Challenge 6 Resolved?

As described in Chapter 1, three aspects are important in order to address the temporal precedence requirement of mediation: (1) the study design should incorporate more than two assessment points; (2) measures of all variables (mediators and treatment outcomes) should be taken at all assessment points; and (3) assessment should be conducted at the moments when changes in the mediator are expected to cause changes in the treatment outcome. The first two, more practical issues, were addressed in the study described in Chapter 4 – three assessment points were incorporated in the study design and all measures were taken at all three assessment points. The results of the first mediation model which was tested in the study indicated that the changes in self-efficacy at post-treatment did not mediate changes in treatment outcomes at follow-up. Thus, the third aspect necessary to capture the temporal precedence's in the constructs (changes in mediator to

changes in treatment outcome) was insufficiently addressed. Although it is possible that some other construct than self-efficacy is a mediator of CBT outcomes for school refusal at follow-up, it is plausible that the designing more frequent assessment points before, during, and after the treatment would better facilitate the investigation of the temporal precedence requirement of mediation. Assessments are thus still necessary at time points when the changes in self-efficacy are believed to causally affect the changes in the CBT outcomes.

Challenge 7: Choosing a Statistical Approach to Study Mediators of CBT Outcomes

Lack of knowledge about statistical methods is one of the key obstacles to investigation of mediators of CBT outcomes in youth. Based on several advantages mentioned in Chapter 1 (i.e., higher power and appropriate Type I error rate), a method of product of coefficient test (MacKinnon, 2008; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) was chosen as a statistical approach in the study in Chapter 4. During personal communications with professor David MacKinnon, this method was further adjusted to facilitate tests of mediation of CBT outcomes in a single condition design with small samples. Despite the advantages of the product of coefficient test method over other methods (e.g., Baron & Kenny method) to test for mediation, a recent study of mediators of CBT outcome for anxious youth (Kendall & Treadwell, 2007) still utilized Baron and Kenny method. However, Alfano et al. (2009) study implemented product of coefficient test method (MacKinnon, Lockwood, & Williams, 2004) to test for mediators of behavioural treatment outcomes for childhood social phobia. Based on only one study (i.e., Alfano et al., 2009), it may be premature to speak about a shift in the use of statistical methods to test for mediation of youth psychotherapy outcomes. But it is possible that Alfano et al. (2009) study and the study in Chapter 4 of this dissertation will prompt youth psychotherapy researchers to think about and utilize different types of statistical methods, suitable for their own studies of mediators of treatment outcomes.

Is Challenge 7 Resolved?

The statistical approach used in the study presented in Chapter 4 was carefully chosen to meet the situation of a single condition design and small sample size. As mentioned earlier, the results in this study indicated that self-efficacy mediated school attendance and school fear at post-treatment. At the same time, no evidence was found for self-efficacy mediating CBT outcomes at follow-up. Several explanations are possible for not finding significant results at follow-up such as the working of other potential mediators at follow-up or spacing of the assessment points in the study. With regard to the statistical method, it is also plausible that some other statistical approach (e.g., single subjects analyses) was needed to find mediating effects at follow-up given the fact that the sample size was even smaller at follow-up (i.e., $n=15$) in comparison to the sample size at post-treatment.

Implications

Theoretical Implications

The findings from the studies in this dissertation help to bridge cognitive theory and cognitive science. In the context of their cognitive theory of depression Beck et al. (1979) proposed different types of negative cognitive errors to be involved in the development and maintenance of depression. In the study in Chapter 2, psychometric evidence was found for the existence of negative cognitive error categories in youth which, until now, were only present in theory. Further, in the same chapter, the CNCEQ (Leitenberg et al., 1986) was extended to also measure negative cognitive errors in youth coming from Beck et al.'s (1985) cognitive theory of anxiety: 'threat conclusion' and 'underestimation of the ability to cope'. Now, these two empirically distinct negative cognitive errors coming from Beck et al.'s (1985) cognitive theory of anxiety - 'mind reading' (including 'threat conclusion' items) and 'underestimation of the ability to cope' - have also been found to be related to youth anxiety. In the study in Chapter 3, cognitive constructs related to dimensions of cognitive products and cognitive processes reported in Beck and

colleagues (1976, 1985) cognitive theories were investigated. It was found that school refusal seems to be characterized by both negative cognitive products and negative cognitive processes. More specifically, heightened levels of thoughts of personal failure and negative cognitive error of 'overgeneralizing' of negative experiences appeared to be characteristic of school refusal. A unique aspect of school refusal seems also to be the lower levels of cognitions of hostility. Until now, this type of cognition has been found to be either unrelated to internalizing problems or to be related to externalizing problems in youth (e.g., Schniering & Rapee, 2004b). Finding the presence of cognitive dimensions of products and processes in youth with school refusal is initial evidence that the cognitive theory of Beck and colleagues (1976, 1985) could be extended to the problem of school refusal, alongside that of youth depression and anxiety.

As indicated by the prediction analyses in the study in Chapter 3, positive thoughts appeared to play a less important role in the explanation of school refusal than negative cognitions and this result fits with the perspective of the 'power of non-negative thinking' (Kendall & Chansky, 1991; Kendall & Korgeski, 1979). At the same time, the group differences analyses indicated that school refusers do have lower levels of positive thoughts in comparison to youth who do not refuse school. Thus, positive thinking does seem to play a role in the etiology of school refusal, but it is at this moment unclear what the exact role of these types of cognitions is in youth with school refusal.

In Chapter 4 increases in self-efficacy mediated increases in school attendance and decreases in school fear at post-treatment, and this finding has two important theoretical implications. First, since self-efficacy was found to be a mediator of CBT for school refusal at post-treatment, it might be suggested that self-efficacy plays a role in the etiology of school refusal (Kraemer, Wilson, Fairburn, & Agras, 2002). Second, it has been theorised that self-efficacy is involved in the behaviour change theory (Bandura, 1994) and cognitive theories (Beck and colleagues, 1976, 1985), and several studies provided empirical evidence for the enhancement of self-efficacy following CBT (e.g., Barrett, Dadds, & Rapee, 1996; Flannery-Schroeder & Kendall, 2000; Heyne et al., 2002). The results in Chapter 4 on the self-efficacy mediating CBT outcomes for school refusal provide further confirmation for the important role of self-efficacy in the theories

of behaviour change and cognitive theories of internalizing problems.

Research Implications

The method used to refine the CNCEQ measure in Chapter 2 is a useful one for researchers of youth cognition who want to develop and design instruments to assess cognitions in youth. Items based on careful considerations of cognitive theories should be constructed and, when available, the results from previous research on the cognition measures should be taken into account. For example, a measure of rumination known to be confounded with depression content was adapted by Treynor, Gonzalez, and Nolen-Hoeksema (2003) resulting in a purer measure of rumination. In this way, the authors could better understand the role of rumination in depressive adults. In Chapter 2 empirical evidence has been found to support that the CNCEQ-R measures distinct negative cognitive errors. The CNCEQ-R is therefore a useful tool to employ in future studies investigating negative cognitive errors of youth with internalizing disorders. It is advantageous that the CNCEQ-R now includes two extra subscales: 'underestimation of the ability to cope' and 'mind reading' (including 'threat conclusion' items) because researchers and clinicians can now employ a single instrument to investigate whether specific anxiety- or depression-related cognitive errors have decreased as a result of their intervention.

In Chapter 3, cognitive products (i.e., automatic thoughts) and cognitive processes (i.e., negative cognitive errors) were found to be related to school refusal. The results indicate that it would be helpful for the understanding of school refusal and designing the treatment for school refusal to continue investigations of different dimensions of cognitions (i.e., cognitive products and cognitive processes) in school refusal. Most studies until now have focused on the investigation of one dimension of cognitive constructs while, based on theory, different types of cognitions (i.e., automatic thoughts and negative cognitive errors) are proposed to mediate internalizing problems in youth. Further, the importance of knowledge on the role of different dimensions of cognitions in youth psychopathology is underscored by the fact that CBTs with youth often implement interventions to address both products and processes (Alfano, Beidel, & Turner, 2002; Silverman & DiGiuseppe, 2001). Future

research could also be concentrated around investigation of the 'cognitive content-specificity hypothesis' (Beck, 1967, 1976), an assumption that distinct content of thoughts is uniquely related to the expression of different forms of psychopathology. According to this assumption, beliefs of personal failure, loss, and hopelessness are associated with depression, thoughts of physical or psychological threat are associated with anxiety, and thoughts of being wronged or transgressed are associated with anger. To better understand school refusal and inform the treatment of it, cognitions of school-refusing youth could be compared to cognitions of anxious, depressed, aggressive, and normal youth, and they could be compared to cognitions of the youth who truant.

In Chapter 4, increases in self-efficacy at post-treatment were found to mediate increases in school attendance and decreases in school fear at post-treatment. These results point to the importance of the investigation of the construct of self-efficacy in future CBT trials for school refusal. In these trials, self-efficacy should not only be included as a treatment outcome variable, but should be tested as a potential mediator of treatment outcome. Assessment of this important construct frequently during the treatment would facilitate the investigation of temporal precedence of changes in self-efficacy to changes in treatment outcome. This would not only inform us whether self-efficacy is a mediator of CBT outcomes, but also whether it is a causal mechanism behind CBT for school refusal.

Clinical Implications

Weersing, Rozenman, and Gonzalez (2009) state in their review of issues related to bridging the gap between evidence-based treatments and those employed in practice, that one of the greatest challenges for youth psychotherapy these days is that we simply do not know what to disseminate from efficacy studies to clinical practice. The study of mediators of treatment outcome can facilitate decisions in this regard. The results presented in Chapter 4 can be used to inform treatment of youth with school refusal. Based on the results and results from previous studies on the efficacy of CBT for school refusal (e.g., Heyne, et al., 2002; King et al., 1998) it can be concluded that CBT is an effective

treatment for school refusal. But whether changes in self-efficacy can best be achieved via cognitive therapy or via exposure to school (or even some other specific CBT component such as problem solving) remains to be determined. At this point, the results presented in Chapter 4 help to justify the choice for CBT techniques which can enhance self-efficacy in school refusers, given that self-efficacy was enhanced following CBT, and this was associated with increased school attendance and decreased school fear. It is likely that youth with other internalizing problems would also profit from targeting self-efficacy during CBTs. Targeting self-efficacy related to disorder specific situations (i.e., school situations in the case of school refusal) may lead to more positive treatment outcomes for youth with school refusal.

The results reported in Chapter 2 (factorial validity of the CNCEQ and relation of the two newly-developed errors to anxiety) and Chapter 3 (relation between negative cognitive error of 'overgeneralizing' and school refusal) suggest that the CNCEQ-R is a measure which therapists could use to assess negative cognitive errors before planning a treatment for youth with anxiety and school refusal. This would lead to better informed choice for therapeutic techniques aimed at targeting these errors in young client's thinking. In the same way the CNCEQ was used to monitor progress during the treatment, the CNCEQ-R can also be used with the same aim.

The results presented in Chapter 3 indicating that cognitive products and cognitive processes play a role in school refusal imply that for an optimal treatment result to be achieved different dimensions of cognitions should be addressed during cognitive therapy with youth. While some theorists (e.g., Hope, Burns, Hayes, Herbert, & Warner, 2010) suggest that it would be better to address deeper levels of cognition (i.e., schemata), others (e.g., Beck et al., 1979; Curry & Wells, 2005) suggest that any type of cognition is important to address in order to break the circle of interrelations between automatic thoughts, negative cognitive errors, and schemata. This can also be applicable to work with youth. Preventive interventions at schools may also need to be employed to address negative cognitions related to personal failure and 'overgeneralizing' of negative experiences at school. School refusers were found to have more of these cognitions relative to youth who do not refuse to attend school.

Since school-refusing youth appeared to have lower levels of positive cognitions relative to youth without school refusal, it may be worthwhile to design and implement programs at schools to specifically enhance positive thinking in youth. These programs can make youth feel more resilient to face challenging situations at school. Because cognitions were not investigated as causal factors in school refusal, conclusions cannot be made that preventing the development of negative cognitions would help reduce school refusal. However, it might be expected that by reducing the likelihood of young people thinking in negative ways and enhancing the likelihood of young people thinking in more positive ways, a contribution can be made to a reduction in the emergence of school refusal.

Directions for Future Research

Further Development of the CNCEQ-R

In Chapter 2 a recommendation was made that the CNCEQ-R be further developed so as to incorporate more items. For example, the items measuring 'catastrophizing' were excluded from the CNCEQ-R during refinement of the CNCEQ, and new items need to be added to the CNCEQ-R to permit assessment of this cognitive error. Indeed, catastrophizing has been found to predict anxiety and depression in children (Langer, Romano, Levy, Walker, & Whitehead, 2009), and anxiety-disordered children have been found shown to employ significantly more maladaptive cognitive coping strategies such as catastrophizing in response to negative life events, relative to nonanxious children (Legerstee, Garnefski, Jellesma, Verhulst, & Utens, 2010). Further, the subscales of the CNCEQ-R now incorporate 3 to 4 items per subscale. To enhance the reliability of the subscales in the CNCEQ-R, more items need to be added to the existing subscales. Three different domains (i.e., social, academic, and athletic) present in the original CNCEQ should be represented in the items of the CNCEQ-R.

In the study in Chapter 3 it was found that school refusers reported the highest levels of negative cognitive error of 'overgeneralizing'. This error was also the only significant predictor of school refusal. Further inspection

of the items included in the 'overgeneralizing' subscale revealed that all of the items in this subscale represent domains related to school (i.e., sport and academic situations at school). Based only on this result, it would seem premature to suggest that the CNCEQ-R items should include only items related to school domains to assess cognitive processing in school refusers. As suggested in previous paragraph, three different domains of youth functioning present in the original CNCEQ (social, academic, and athletic) should be represented in the items of the CNCEQ-R. Perhaps that more school-related items can be constructed per negative cognitive error subscale (e.g., 4 school-related items as opposed to 2 social- and 2 athletic-related items).

Items measuring positive cognitive errors (Candido, 1988; Henriques & Leitenberg, 2002) could also be added to the CNCEQ-R, since Leitenberg et al. (1986) suggested that it may be possible that nonanxious, nondepressed, and high self-esteem children distort just as much, but in a positive direction. In the study in Chapter 3 it was found that school-refusing youth has less positive thoughts than youth without school refusal. Adding items to the CNCEQ-R to measure positive cognitive errors would facilitate the investigation of the question whether school refusers process information in an (overly) positive manner.

Continuing to Bridge the Gap between Cognitive Theory and Cognitive Science

While much research with adults has found support for Beckian cognitive theories of internalizing problems, there are fewer studies in youth examining links between cognitive constructs underlying these cognitive theories and psychopathology. Therefore, more research should be done with youth with school refusal and other internalizing problems to further test cognitive constructs (i.e., cognitive products, cognitive processes, and schemata) underlying cognitive theories of psychopathology. Further, research efforts should be directed toward simultaneous investigation of these different cognitive constructs relevant to cognitive theories (Wisco, 2009). An example of a study which has incorporated the study of different cognitive constructs simultaneously is Alfano et al. (2006). In this study, cognitive products (i.e., self-talk) and cognitive processes (i.e., performance

expectations) were investigated in social phobic youth. In the Alfano et al. study, no analyses were conducted to determine the relative contribution of cognitive products and cognitive process in explaining social phobia. It is important to know what the differential contribution is of cognitive products vis-à-vis cognitive process with respect to psychopathology in youth. This would further our understanding of the etiology of youth disorders, and would also inform us about the most appropriate targets in treatments for youth (Alfano et al., 2002; Silverman & DiGiuseppe, 2001; Watts & Weems, 2006; Weems & Watts, 2004).

Besides cross-sectional designs such as the one employed in the study reported in Chapter 3, investigation of cognitive risk factors would require longitudinal studies to delineate the temporal associations between, for example, cognition and school refusal: do negative cognitions lead to increased levels of school non-attendance or does school non-attendance contribute to the development of negative cognition? The studies of Hankin (2008) and Timbremont and Braet (2006) include useful examples of such a design. In the first study, ruminative thinking style in adolescents at baseline was found to predict depression five months later. The other study found that in childhood the negative cognitive triad appeared to be more a consequence of depressive symptoms after one year than a predictor of depressive symptoms. In adolescence, a negative view of the future was predictive of depressive symptoms after one year. Knowing that negative cognition influences future development of depressive symptoms may inform implementation of interventions to address these negative cognitions and in this way to prevent the development of depression in youth.

Further Investigation of the Role of Positive Cognition in Youth

In the study reported in Chapter 3 it was found that school-refusing youth that sought treatment had less positive thoughts than youth in the community without school refusal. On the other hand, positive thoughts were not found to be a predictor of school refusal. These results may point to the need for awareness of what kind of relation between psychopathology and positive cognition is exactly being tested (i.e., presence of thoughts in one group against the presence of thoughts in other group, and thoughts

as predictors of behaviour). The conclusions that are drawn from these two different results may also have differential implications for, for example, clinical practice. Researchers should be aware of the exact relations that are being tested between psychopathology and positive cognitions, and maybe that this will bring some parsimony in the mixed evidence currently available on the role that positive cognitions play in youth psychopathology. For example, some authors suggest that positive cognition can better be conceptualized as a buffer (i.e., moderator) between stressful events and child psychopathology (e.g., Mazur, Wolchik, & Sandler, 1992; Mazur, Wolchik, Virdin, Sandler, & West, 1999).

The 'cognitive-content specificity hypothesis' (Beck, 1967, 1976) may not only apply to the role of negative cognitions, but also to the role of positive cognitions in psychopathology. That is, positive cognition may be more important in the etiology of certain youth disorders than in the etiology of other youth disorders. For example, it was found that high-depressed children and adolescents demonstrated a significantly lower amount of positive cognitions than the low-depressed children and adolescents (Candido, 1988; Jolly & Wiesner, 1996). Conversely, depressed children have been found to endorse negative cognitions to a greater extent than positive cognitions, and to endorse negative cognitions to a greater extent than nondepressed children (Candido, 1988). On the other hand, several researchers have found that youth with anxiety disorders are characterized by a higher frequency of negative cognitions but not by a lower frequency of positive cognitions, compared to youth without anxiety disorders (Bögels & Zigterman, 2000; Kendall and colleagues, 2007, 1996; Prins & Hanewald, 1997; Ronan, Kendall, & Rowe, 1994). Recently, Sood and Kendall (2007) found that positive self-statements were not related to anxiety. Thus, it is plausible that the absence of positive thinking may show more relations with the themes of pessimism, failure, and loss, which are characteristic of depression, than with themes of threat and danger, which are more characteristic of anxiety. This hypothesis should be further investigated.

Investigating Mediators and Moderators of CBT Outcomes for Youth Internalizing Problems

The investigation of treatment mediators has been recognized as one of the most important steps towards the development and dissemination of effective youth psychotherapies (e.g., Kazdin, 2007; Kendall, 2009). It is strongly recommended that research continues to focus on the working mechanisms associated with CBT for school refusal. It is likely that studies of efficacy of CBT for other youth internalizing problems such as anxiety and depression would also profit from investigations of mediators of treatment outcome. Currently, many directions exist which can facilitate the study of mediators of youth psychotherapies, which can help with both conceptual (e.g., Holmbeck, 1997; Kazdin, 2009; Kazdin & Nock, 2003) and statistical challenges (e.g., Fairchild & MacKinnon, 2009; Fritz & MacKinnon, 2007; MacKinnon, 2008; MacKinnon & Fairchild, 2009). A next step for the researchers is to undertake the challenges of designing mediation studies and testing mediators of youth treatment outcomes.

It is further recommended that other CBT theory-related constructs also be investigated as mediators of treatment outcomes. By investigating these constructs together with cognition constructs more could be learned about the relative contribution of cognitive constructs in the mediation of CBT outcomes relative to these other constructs. For example, in CBT for school refusal other potential mediators could be school attendance and symptoms of anxiety. Future research could investigate whether increased school attendance leads to decreased anxiety following CBT or if it is the case that decreases in anxiety lead to increased school attendance. Treatment relevant accomplishments of the young client, such as the use of specific skills, strategies, knowledge, or ideas acquired during treatment (Kaufman, Rohde, Seeley, Clarke, & Stice, 2005; Maric & Heyne, 2007) may also impact treatment outcome. Finally, non-specific treatment factors such as the therapeutic alliance (Chu, et al., 2004) should be investigated as a treatment mediator. To draw firmer conclusions about the role of the CBT specific mediators (i.e., cognitions), comparison constructs which are presumed not to be mediators of CBT outcome, but to be mediators of some other treatment outcome, should be included in the studies. For example, in the study in Chapter 4, the

construct of experiential avoidance and fusion in youth (Greco, Lambert, & Baer, 2008) could be included as this construct is more related to the theory behind Acceptance and Commitment Therapy (ACT; Hayes, 2004) than behind the CBT for school refusal.

In addition to treatment mediators, research efforts should also be directed towards investigation of treatment moderators. Identification of the variables which moderate treatment outcome would help identify populations of clients which are most and least responsive to the treatment, thereby indicating which clients probably require an alternative treatment (Kraemer et al., 2002). The cognitive constructs examined in the studies reported in Chapters 3 and 4 of this dissertation could also be investigated as moderators of CBT outcome. Negative cognitive errors have previously been found to moderate CBT outcome for depressed youth (Curry et al., 2006), and negative cognitive products and process have been found to moderate CBT outcomes with adult populations (Dow, et al., 2007; Spangler, Simons, Monroe, & Thase, 1997). Other moderators of CBT outcomes could also be taken into account. Developmental level has been proposed to have an impact on the design and utilization of CBT for anxious youth (Sauter, Heyne, & Westenberg, 2009). Future efforts should be directed towards investigation of developmental level constructs (e.g., cognitive level capacities necessary to engage in CBT) as moderators of CBT trials for youth with school refusal and other internalizing problems. Further, studies of CBT for school refusal and other internalizing problems mostly target children and adolescents from a single ethnic group. One of the exceptions to this is the study of Weersing and Weisz (2002a) in which it was found that ethnicity minority status was related to worse treatment outcomes for youth depression. Efforts such as this one to include groups of youth with different ethnic backgrounds are often unpractical and more expensive, but they would very much contribute to the understanding of which treatments work for whom and under what conditions. This would furthermore more quickly lead to the availability of effective treatments for ethnic minority populations.

Further, research efforts should also be directed towards simultaneous analysis of *how* a treatment works and *for whom* it works (i.e., *moderated mediation* and *mediated moderation* of treatment outcomes; Edwards & Lambert, 2007; Fairchild & MacKinnon, 2009; Muller, Judd, &

Yzerbyt, 2005). For example, in relation to the study reported in Chapter 4, it would be valuable to know whether self-efficacy mediates CBT outcomes for both children and adolescents (i.e., an example of mediation of treatment outcomes moderated by age). It would also be important to know whether the effect of CBT for school refusal depends on age of the client, and whether this interaction influences changes in the self-efficacy (i.e., mediator) which leads to changes in treatment outcomes (i.e., mediated moderation). Understanding how an intervention works and for whom it works informs more efficient utilization of the treatment. That is, if it is known that increasing self-efficacy leads to increases in school attendance in adolescents, but not in children then: (a) CBT techniques could be chosen directed towards increasing self-efficacy in adolescents, but not in children; (b) in children, other treatment targets may be more relevant such as for example parental support. The research on the efficacy of CBT with adults (e.g., Hofmann, et al., 2007) and on the efficacy of youth prevention interventions (e.g., Gottschall, et al., 2010) has already moved towards investigation of these more complex mediation and moderation models. Given the important implications these investigations can have for evidence-based treatments and for the clinical practice, it is timely that the field of youth psychotherapy also starts giving more attention to the investigations of mediators and moderators of treatment outcomes, and to the models which combine the investigations of mediators and moderators of treatment outcome simultaneously.

Moving Beyond Single Condition Design and Waitlist Control Condition to Study Mediators and Moderators of CBT Outcomes

As indicated in Chapter 4, a better test of mediation of CBT outcomes would be in the case where a control condition is also included in the design of the study. To date, few studies of mediation of CBT outcome in youth have included a waitlist control condition (for exceptions, see Kendall & Treadwell, 2007; Treadwell & Kendall, 1996). An option for the control condition in the case of mediation of CBT outcomes is to include a condition which is devoid of CBT specific elements such as cognitive restructuring and behavioural techniques while still providing the human relationship (Brent & Kolko, 1989, 1991; Last, Hansen, & Franco, 1998). Such a condition would

control for the non-specific aspects of the CBT such as therapeutic alliance and therapists warmth. Designs comparing CBT and non-specific treatment conditions are very useful because if cognitions were observed to change for those in the CBT condition and not for those in the non-specific condition and this led to decreased anxiety after the CBT, then more evidence is gained for the role of cognitions in mediating CBT outcomes. Further, we would have more certainty that specific CBT components led to these changes in cognitions and not, for example, therapeutic alliance. Heyne and Maric (2007) developed such a treatment which can be utilized alongside the CBT described in Chapter 4. This treatment, named Educational Support Therapy (EST), encompasses educational presentations, excluding themes related to CBT theory (e.g., relations between emotion-cognition-behaviour), discussions about what cognitive restructuring is or how exposure works. A second component of the treatment is supportive therapy which has much similarity to Rogers' (1942) non-directive therapy. When comparing a non-specific treatment condition to CBT, structural equivalence with CBT condition has to be achieved such as the same amount of sessions, modules, and training sessions for the therapists. Unfortunately, most designs used in clinical trials of CBT for youth internalizing disorders have not included a non-specific treatment condition to CBT. Several studies with anxious youth (Hudson et al., 2009; Silverman et al., 1999) and youth with school refusal (Last et al., 1998) have developed and utilized such a control condition to investigate the efficacy of CBT, but they did not take advantage of the comparative study design to also investigate the mediators of CBT outcomes. It is recommended that future efficacy studies for school refusal and other internalizing problems also include such a non-specific treatment condition while investigating mediators of CBT outcomes. However, gathering evidence for the mediation of CBT outcomes via changes in cognitions does not inform us about which CBT components lead to the changes in the mediator; was it cognitive therapy that leads to changes in cognitions or perhaps exposure to threatening situations. Therefore, dismantling designs (e.g., Silverman et al., 1999) incorporating, for example, cognitive therapy as one condition and behavioural therapy as another condition would help shed light on the questions of which specific CBT components are active in bringing up the change in the mediator which in turn leads to changes in the treatment outcome.

Conclusion

In recent years there has been considerable progress in understanding the role of cognition in youth internalizing disorders and in cognitive-behavioural treatments. At the same time, however, numerous important issues have remained unresolved. The main purpose of this dissertation was to highlight and address seven challenges related to the measurement of youth cognition, understanding the role of cognitive constructs in anxiety and school refusal, and the examination of cognitive mediators of cognitive-behavioural treatment. One of the challenges can be considered resolved, and the remaining six challenges can be considered resolved to a large extent. That is, the studies presented in this dissertation contributed to the empirically valid assessment of constructs of cognitive processing in youth which were until now only present in cognitive theories of Beck et al. (1979, 1985). Now, constructs of cognitive processing coming from the cognitive theories of depression and anxiety of Beck et al. (1979, 1985) can be assessed in youth using one single measure. Further, cognitive dimensions of cognitive products and cognitive processes from Beck et al.'s (1979, 1985) cognitive theories of emotional disorders were found to be important in the etiology of school refusal. The belief that positive treatment outcomes can be achieved through changes in cognition received support. Using innovative statistical approaches to mediation, it was found that enhanced levels of self-efficacy following cognitive-behavioural treatment for school refusal were associated with increased levels of school attendance and decreased levels of school fear.

Future efforts are needed to simultaneously investigate differential contributions of the cognitive dimensions of products, processes, and schemata in youth with school refusal and other internalizing problems as this may inform decision-making with respect to the most appropriate treatment targets. The 'cognitive-content specificity hypothesis' (Beck, 1967, 1976) could be investigated with regard to both negative and positive cognitions in youth with school refusal, truants, anxious, depressive, and normal youth. Finally, research efforts are needed to determine the mediators of long term CBT outcomes for school refusal, and to determine temporal associations between changes in self-efficacy and changes in the CBT outcomes for school refusal. Research on the mediators and moderators

of youth treatment outcomes for school refusal and internalizing problems is essential to understanding effective treatment components, enhancing treatment effectiveness, and facilitating the dissemination of treatment (components) that work.