Treatment motivation in child anxiety treatment – Factor structure and associations with outcomes

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ABSTRACT

Motivation is associated with cognitive behavioral treatment (CBT) outcomes. We examined the factor structure of a motivation measure, and if motivation factors were differentially associated with CBT outcomes for children with anxiety. The sample comprised 179 children aged 8–15 years (M age = 11.5 years, SD = 2.1; 53.0% girls) with anxiety disorders who received CBT in a randomized controlled community clinic trial. Participants completed the Nijmegen Motivation List – child version (NML-C) at treatment onset. Outcomes were diagnostic recovery, anxiety/depression symptom and clinical severity change from pre-treatment to post-treatment, one-, and 3.9-years follow-up, and treatment dropout. Principal component analysis showed that the NML-C comprised two factors, preparedness (beliefs that CBT is useful and willingness to engage in treatment; 36.4% explained variance) and distress (discomfort from symptoms and perceived urgency to be helped; 12.7% explained variance). Higher preparedness predicted larger clinical severity reduction at post-treatment, alongside pre-treatment clinical severity. Higher distress predicted larger depression reduction at one-year follow-up, alongside pre-treatment depression. Higher preparedness predicted lower dropout. In conclusion, the NML-C comprises two factors that are differentially associated with CBT outcomes, but not above the effects of pre-treatment symptoms. Clinicians' focus on children's distress and preparedness could enhance CBT outcomes and reduce dropout.

1. Introduction

There is well-established evidence that cognitive behavior therapy (CBT) reduces symptoms of anxiety in children (Creswell et al., 2020). Nevertheless, around 40% of children are not in remission following CBT (Wergeland et al., 2021). Because anxiety disorders negatively affect social, academic, and vocational functioning (Cummings et al., 2014), identifying ways to optimize CBT outcomes is essential. The current study is focused on treatment motivation, one of the variables proposed to influence CBT outcomes both with children and adults (Aviram et al., 2016; Keijsers et al., 1999; Wergeland et al., 2016). We aim to provide further insights into the conceptual nature of treatment

motivation and examine relations with pre-treatment and outcome variables in youth anxiety disorders.

A main rationale for empirically investigating treatment motivation, its' components, and relations with other treatment variables is that there are multiple problems in the conceptualization of motivation. The problems encompass ambiguous definitions, including questions about treatment motivation as a state or a trait (e.g., to what extent is it an internal or external factor, and to what extent does motivation fluctuate across time and contexts) (Marker et al., 2019). These difficulties with defining treatment motivation rests on underlying problems with defining motivation per se, which includes conceptual and empirical dilemmas concerning the relations between internal states like hopes

and desires, cognitive dimensions like intentions, and observable actions. With regards to the treatment literature, hundreds of terms have been linked to motivation across the treatment literature, with engagement, readiness, and involvement as just some examples (Drieschner et al., 2004). However, it is unclear which terms are empirically associated with motivation and which terms are synonymous with motivation and further knowledge is needed on conceptualization and how motivation influences outcomes. In the current study, we apply a definition of motivation that is a compromise between internal states and external behavior, i.e., that motivation covers both experience of distress and willingness to seek help and to engage in treatment tasks (Westra and Dozois, 2006).

Several scholars have attempted to conceptualize the role of treatment motivation in relation to other treatment-related variables, patient and context variables, and outcomes. Different models have focused on attributions, emotions, cognitions, and behaviors that affect engagement. For example, Morrissey-Kane and Prinz (1999) proposed that child and parent attributions (e.g., little sense of internal control), emotions (e.g., shame), and expectations (e.g., low belief in change) predicted lower treatment motivation. Drieschner et al. (2004) proposed a model which defined treatment motivation as "motivation to engage in treatment", i.e., a behavior. In their model, they propose that multiple internal determinants, e.g., problem recognition and outcome expectancies, influence client's motivation to engage in treatment, which further influences treatment outcomes (Drieschner et al., 2004). Karver et al. (2005) proposed a therapeutic process model in which willingness to change and participation in treatment interact with other treatment process variables, such as alliance, to influence outcomes. As a final example, Staudt (2007) proposed that both attitudes and behaviors influenced motivation in terms of treatment engagement.

Statistical exploration of underlying motivation dimensions, and their relation to patient, treatment, and outcome variables could contribute to reduce the definitional and conceptual ambiguity regarding treatment motivation. Factor analytic studies with adult clients of the Nijmegen Motivation List (NML) identified three factors, labelled preparedness, distress, and doubt (Keijsers et al., 1999). The preparedness items concerned the client's willingness to engage in treatment. The distress items concerned the level of negative emotions related to the clients' problem presentations. The doubt concerned doubt about the investment in treatment, the treatment itself, and the possibility of gaining from it. Preparedness was associated with treatment outcomes, whereas distress and doubt were not (Keijsers et al., 1999).

The factor structure of the NML has not previously been studied with child clients. If motivation comprises other factors for children than for adults, clinicians may need to target motivation differently with child clients. Lack of motivation is likely to be a more common problem with child clients than with adult clients (Shirk and Russell, 1998). This is because children are most often referred to treatment at the initiative of parents, and the children's wishes and motives may be different from those of adults (Shirk and Karver, 2003). The client's acknowledgement of the problem is believed to be a crucial element in motivation for change (Prochaska et al., 1992). Children may perceive their problems and distress differently from their parents. Thus, children may start treatment without engaging or working towards treatment goals (Becker-Haimes et al., 2018). Low treatment motivation may affect outcomes through lack of collaboration or completion of treatment tasks (Shirk and Russell, 1998).

Previous studies using the current sample have shown that motivation measured at treatment onset was associated with short-term and longer-term outcomes (Kodal et al., 2018b; Wergeland et al., 2016). Importantly, these studies considered motivation a unidimensional construct. In the current study, we examine motivation based on a principal component analysis (PCA) and examine the role of potential factors. Because the factor structure may be different for children than adults, and the NML-C comprises 10 fewer items than the original adult version, there is no proposed factor structure to base a confirmatory factor analysis on, and PCA represents an important initial step to explore factor structure (Kim, 2008). We use intent-to-treat analyses at post-treatment, as well as one- and 3.9-year follow-up. As a purely statistical technique, PCA does not clarify conceptual issues concerning motivation. To contextualize our findings, we therefore also aimed to examine associations between potential motivation factors and other treatment-related terms at pre-treatment and at multiple post-treatment timepoints up to 3.9 years post-treatment. We included pre-treatment anxiety, depression, and clinical severity levels at pre-treatment and post-treatment, as well as at 12-months and 3.9-years follow-up. The outcomes were changes in anxiety, depression, and clinical severity levels from pre-to post-treatment and to 12-months and 3.9-years follow-up. We also examined full diagnostic recovery at the same assessment points and dropout from treatment. We controlled for child age and gender influences, as both may play a role for motivation (Reardon et al., 2018). The main research questions are: 1) What is the factor structure of NML in children with anxiety disorders? 2) Are potential motivation factors associated with pre-treatment anxiety, depression, and clinical severity levels? and 3) What is the association between potential motivation factors and treatment outcomes? Due to very limited previous research, both questions were explored openly without a priori hypotheses.

2. Methods

2.1. Sample and procedures

The sample comprised 179 children aged 8–15 years (M age = 11.5, SD = 2.1; 53% girls). Most were European-White (90.7%), 1.6% were Asian, and 7.7% did not report ethnicity. The participants were regular referrals to public child and adolescent mental health clinics. All met DSM-IV criteria for social anxiety disorder, separation anxiety disorders, and/or generalized anxiety disorder as their primary diagnosis. Therapists ($N = 17$ $M_{age} = 48.2$ years; $SD = 11.0$; 94.0% female) were regular clinic employees who volunteered to participate in the study. All were European-White. On average therapists had 10.0 years of clinical experience ($SD = 6.3$, range 3–27 years).

This study is from a randomized controlled trial (RCT) in which participants were randomized to group (n = 88) or individual (n = 91) CBT; some (n = 35) after waitlist ($M = 10$ weeks). All participants randomized to waitlist received CBT after the waitlist period. The trial was conducted in Western Norway. The main results showed that individual and group CBT were equivalent and outperformed waitlist. Among participants who completed 3.9-year follow-up (n = 139), 53.0% had lost their primary anxiety diagnosis at post-treatment, which increased to 65.0% at one-year follow-up and 71.0% at 3.9-year follow-up. There were significant reductions in clinical severity ratings, anxiety symptoms, and depression symptoms from baseline to all later assessment points (Kodal et al., 2018a; Wergeland et al., 2014). All parents provided written consent on behalf of themselves and their children. Youth aged 12 and above provided assent. The study was approved by the regional committee for ethics in medical health research.

2.2. Treatment and treatment integrity

The treatment program used was the FRIENDS for Life manual (4th ed., Barrett, 2004). This is a 10-week child anxiety program targeting emotional awareness and regulation, cognitive restructuring, and exposure tasks. All therapists demonstrated adequate treatment integrity in terms of adherence and competence (see Bjaastad et al., 2016).

2.3. Measures

2.3.1. Motivation measure

The Nijmegen Motivation List for children (NML-C; Ollendick et al., 2009) was used to measure treatment motivation. The NML was originally developed to assess treatment motivation in adults and comprised 25 items (Keijsers et al., 1999). The NML was revised for use with children and adolescents by Ollendick et al. (2009). The child version comprises 15 items rated from 0 (not at all) to 2 (completely true). The NML-C was completed before the first treatment session. The NML-C has demonstrated acceptable internal consistency with children ($\alpha = 0.73$; Ollendick et al., 2009). In the current study, internal consistency for the. NML-C was $\alpha = 0.86$

2.3.2. Dichotomous outcome measures

The Anxiety Disorder Interview Schedule for DSM-IV (ADIS-C/P; Silverman and Albano, 1996) was used to determine diagnostic status (social anxiety disorder (SOP), separation anxiety disorder (SAD), generalized anxiety disorder (GAD)) and clinician severity ratings (CSR), based on combined child and parent report. Diagnostic status was assessed by independent clinician assessors at pre- and post-treatment, and at the one-year and 3.9-years follow-ups.

Treatment dropout was defined as failure to complete the FRIENDS program. We defined youth as treatment completers if they participated in at least seven sessions of the 10 treatment sessions, including the final treatment session and the post treatment assessment. Youth absent from more than three sessions were considered as dropouts. There were 26 dropouts (14.4%) in the RCT. Of these, six did not start treatment as offered, and 20 did not complete the treatment after having started. Of those six who did not start treatment, two dropped out while on waitlist and four after randomization. The dropout rates from GCBT and ICBT were not significantly different ($p = .27$) and were therefore combined into a single group in our analyses.

2.3.3. Continuous outcome measures

The Spence Children Anxiety Scale, child version (SCAS; Spence, 1998) was used to measure child anxiety symptoms. The SCAS comprises 38 items rated on a 4-point scale from 0 (never) to 3 (always). The SCAS has demonstrated good validity, internal consistency, and adequate test–retest reliability (Spence, 1998; Spence et al., 2003). In the current study, internal consistency for the SCAS was $\alpha = 0.91$.

The Short Mood and Feelings Questionnaire, child version (SMFQ; Angold et al., 1995) was used to measure child depression symptoms. The SMFQ comprises 13 items rated from 0 (untrue) to 2 (true). The SMFQ has been shown to have excellent internal consistency and good test–retest reliability (Costello and Angold, 1988). In the current study, the internal consistency for the SMFQ was $\alpha = 0.88$.

Clinicians severity ratings (CSR) were derived from combined parent-child report on the ADIS-C/P. For each ADIS-C/P section, a CSR score ranging from 0 to 8 was assigned. A higher CSR reflects higher perceived impact on the child's psychological, academic, social, and family functioning.

2.4. Data analytic plan

We examined gender and age differences using *t*-tests, and associations between variables using Pearson's *r*-correlations. We applied a PCA to the 15-item NML-C using Promax rotation, because we assumed potential factors would be correlated. PCA was justified as the Kaiser-Meyer-Olkin (KMO) was 0.87, indicating adequate sampling. Further, Bartlett's test of sphericity was significant ($p < .01$), indicating that the NML-C item correlations overall were different from zero. We used Pearson's *r* correlations to examine the associations between the motivation factors and baseline symptoms (anxiety, depression, and clinical severity). We ran multiple linear regression analyses to examine the NML-C factors as predictors of continuous outcomes (anxiety symptoms,

depression symptoms, and clinical severity). In these models, the baseline symptom scores (anxiety, depression, and clinical severity) were controlled for. Across these models, there was no indication of multicollinearity, with no VIF values > 1.74 for the anxiety symptom change models, no VIF values > 1.57 for the depression symptom change models, and no VIF values > 1.19 for the clinical severity change models. We used logistic regression to examine the NML-C factors as predictors of diagnostic outcomes and dropout. We used IBM SPSS 26 for all analyses.

3. Results

3.1. Principal component analysis

PCA exploratory factor analysis showed three factors with eigenvalues >1. However, inspection of the scree plot indicated two meaningful factors. See Fig. 1. The two-factor indication was further supported by inspection of the component matrix. Two of four items loading on Factor 3 had higher loadings on Factor 2 (see Table 1).

Factor 1 explained 36.4% of the variance (Eigenvalue = 5.5) and comprised eight items (see Table 2). This factor concerns the client's belief that the proposed treatment is helpful, and the client's willingness to get involved and make an effort in treatment. We labelled this factor « preparedness». Reliability analysis of this factor showed high internal consistency ($\alpha = 0.87$).

Factor 2 explained 12.7% of the variance (Eigenvalue: 1.9) and comprised five items (see Table 2). This factor concerns the client's discomfort from the anxiety symptoms, and the feeling of urgency to be helped. We labelled this factor « distress». This factor showed high internal consistency ($\alpha = 0.87$).

To investigate further if three factors may be warranted, we reversed the items comprising the factor "doubt" in the original scale (Keijsers et al., 1999) and ran a PCA with three forced factors. These items were; "*I'm optimistic about the outcome of the FRIENDS program*", "*I believe that the FRIENDS program is the right treatment for me*", and "*I get much support from my family and those around me*". This analysis also indicated two meaningful factors. Thus, the factor "doubt" was not retrieved in the current sample.

Two items did not fit with either factor (see Table 1) and were excluded from further analysis. These items were; "*I expect to benefit more from the FRIENDS program if I actively participate in it"*, and "*I get much support from my family and those around me*".

3.2. Descriptive statistics

The correlation between preparedness and distress was $r = 0.43$ ($p < .01$). There was no difference on overall motivation or any of the factors between ICBT and GCBT (all p > .153). Girls had significantly higher overall motivation scores than boys ($p = .025$; $d = 0.35$). On the factors, girls had significantly higher preparedness scores than boys ($p = .020$; $d = 0.37$). There was no significant gender difference on distress ($p = .204$; $d = 0.20$). This implies that the gender difference in motivation is driven by preparedness. Neither motivation nor any of the factors were significantly correlated with client age (Overall motivation: $r = -0.03$, $p = .745$; Preparedness: $r = -0.05$, $p = .516$; Distress: $r = -0.13$, $p = .092$).

3.3. Associations between motivation factors and pre-treatment symptom levels

Higher preparedness was significantly associated with higher pre-treatment anxiety symptoms ($r = 0.34$, $p < .001$), depression symptoms ($r = 0.18$, $p = .027$), and clinical severity ($r = 0.24$, $p = .012$). Higher distress was significantly associated with higher pre-treatment anxiety symptoms ($r = 0.57$, $p < .001$) and depression symptoms ($r = 0.46$, $p < .001$), but not with clinical severity ($r = 0.17$, $p = .087$). The distress/pre-treatment anxiety symptoms correlation ($r = 0.57$) was
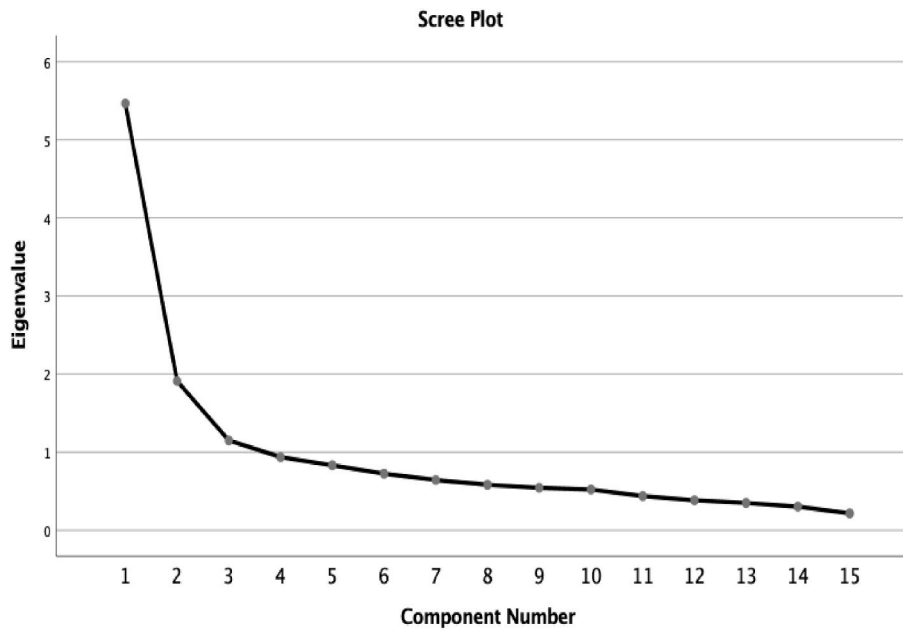
Fig. 1. Scree plot from principal component analysis of the nijmegen motivation list for children.

Table 1
Component matrix for the nijmegen motivation list – child version.

Item	Factor 1	Factor 2	Factor 3
I'm optimistic about the outcome of the FRIENDS program	.880	–	–
I believe that the FRIENDS program is the right treatment for me	.814	–	–
I believe that the FRIENDS program will help me get rid of my problems	.810	–	–
I made the right decision in attending the FRIENDS program	.797	–	–
I'm certain that I shall also practice at home the things I learn in the FRIENDS program	.707	–	–
I will do my best to keep the FRIENDS program appointments	.651	–	–
I'm willing to put school or other activities aside in order to attend the FRIENDS program	.469	–	–
I will do anything to get rid of my problems	.377	–	–
My problems make me unhappy	–	.901	−.489
My problems bother me	–	.766	–
My problems make me feel ashamed	–	.628	–
My problems make me a nuisance to others	−.313	.538	.496
I urgently need help in solving my problems	–	.479	–
I expect to benefit more from the FRIENDS program if I actively participate in it	–	–	.843
I get much support from my family and those around me	–	–	.357

Note. Values < 0.30 not shown. Extraction method: Principal component analysis. Rotation: Promax with Kaizer normalization.

Table 2
Forced two factor component matrix for the nijmegen motivation list – child version.

Item	Factor 1	Factor 2
I'm optimistic about the outcome of the FRIENDS program	.876	–
I believe that the FRIENDS program is the right treatment for me	.839	–
I made the right decision in attending the FRIENDS program	.823	–
I believe that the FRIENDS program will help me get rid of my problems	.812	–
I'm certain that I shall also practice at home the things I learn in the FRIENDS program	.731	–
I will do my best to keep the FRIENDS program appointments	.707	–
I'm willing to put school or other activities aside in order to attend the FRIENDS program	.533	–
I will do anything to get rid of my problems	.402	–
My problems make me a nuisance to others	–	.772
My problems bother me	–	.731
My problems make me feel ashamed	–	.723
My problems make me unhappy	–	.652
I urgently need help in solving my problems	–	.579

Note. Values < 0.40 not shown. Extraction method: Principal component analysis. Rotation: Promax with Kaizer normalization.

significantly higher than the preparedness/pre-treatment anxiety symptoms correlation ($r = 0.34$; $p = .010$). Similarly, the distress/pre-treatment depression symptoms correlation ($r = 0.46$) was significantly higher than the preparedness/pre-treatment depression symptoms correlation ($r = 0.18$; $p = .006$). The correlation sizes between pre-treatment clinical severity and distress and preparedness, $r = 0.17$ and $r = 0.24$, respectively, were not significantly different ($p = .521$).

3.4. Associations between motivation factors and continuous outcomes

See Table 3 for the regression models predicting the continuous outcomes (i.e., anxiety, depression, clinical severity). All the regression models predicting change in anxiety symptoms (SCAS) were significant. However, neither distress nor preparedness were significantly associated with change in anxiety symptoms at any of the measurement points. The pre-treatment anxiety level was a significant predictor in all these models.

All the regression models predicting change in depression symptoms (SMFQ) were significant. Distress was significantly associated with change in depression symptoms at 12-months follow-up, but not at any other measurement point. The pre-treatment depression level was a significant predictor in all these models. Thus, higher distress at pre-treatment was associated with larger depressive symptom reduction at 12-months follow-up, alongside, but not above and beyond pre-treatment depression symptom level.

The regression model predicting change in clinical severity (CSR) from pre-to post-treatment was significant, but the models for 12-months and 3.9-years follow-up were not significant. Preparedness was significantly associated with change in clinical severity at post-

Table 3

RevisedTreatment Motivation Factors as Predictors of Cognitive Behavioral Treatment Outcomes for 179 Children with Anxiety Disorders.

Change variable	Predictor	B	SE	β	t	p	Lower CI	Upper CI	r^2	p
SCAS T^{pre}-T^{post}*	SCAS pre*	−0.48	0.08	−0.55	−5.68	<.001	−1.15	14.91	0.25	<.001
	Preparedness	−0.01	0.35	−0.03	−0.04	.971	−0.70	0.68		
	Distress	0.38	0.59	0.07	0.65	.515	−0.78	1.55		
SCAS T^{pre}-T^{1y}*	SCAS pre*	0.43	0.10	0.44	4.25	<.001	0.23	0.64	0.17	<.001
	Preparedness	0.10	0.40	0.02	0.23	.816	−0.71	0.90		
	Distress	−0.15	0.67	−0.02	−0.23	.822	−1.47	1.17		
SCAS T^{pre}-$T^{3.9y}$*	SCAS pre*	0.76	0.10	0.65	7.22	<.001	0.55	0.97	0.34	<.001
	Preparedness	0.34	0.44	0.06	0.78	.438	−0.53	1.20		
	Distress	−1.14	0.75	−0.15	−1.15	.134	−2.62	0.35		
SMFQ T^{pre}-T^{post}*	SMFQ pre*	0.71	0.10	0.64	7.40	<.001	0.52	0.90	0.32	<.001
	Preparedness	0.00	0.14	0.00	0.03	.980	−0.27	0.28		
	Distress	−0.42	0.22	−0.18	−1.92	.057	−0.86	0.01		
SMFQ T^{pre}-T^{1y}*	SMFQ pre*	0.92	0.12	0.69	7.74	<.001	0.68	1.16	0.35	<.001
	Preparedness	0.06	0.16	0.03	0.35	.725	−0.26	0.37		
	Distress*	−0.62	0.26	−0.23	−2.36	.020	−1.13	−0.99		
SMFQ T^{pre}-$T^{3.9y}$*	SMFQ pre*	0.67	0.11	0.55	6.16	<.001	0.45	0.88	0.26	<.001
	Preparedness	0.07	0.17	0.04	0.45	.654	−0.25	0.40		
	Distress	−0.21	0.27	−0.08	−0.78	.438	−0.74	0.32		
CSR T^{pre}-T^{post}*	CSR pre*	0.28	0.06	0.42	4.36	<.001	0.15	0.41	0.21	<.001
	Preparedness*	−0.23	0.07	−0.34	−3.34	.001	−0.37	−0.09		
	Distress	0.12	0.09	0.14	1.34	.184	−0.06	0.31		
CSR T^{pre}-T^{1y}	CSR pre*	0.15	0.07	0.25	2.25	.027	0.02	0.29	0.04	.114
	Preparedness	−0.06	0.07	−0.10	−0.88	.382	−0.20	0.08		
	Distress	0.08	0.10	0.10	0.83	.407	−0.11	0.27		
CSR T^{pre}-$T^{3.9y}$	CSR pre*	0.10	0.05	0.21	2.02	.046	0.00	0.20	0.02	.153
	Preparedness	0.03	0.05	0.06	0.58	.564	−0.07	0.13		
	Distress	0.00	0.07	0.00	0.04	.972	−0.14	0.14		

Note. SCAS = Spence Children's Anxiety Scale. SMFQ = Short Moods and Feelings Questionnaire. CSR = Clinician's severity rating. T^{pre} = pre-treatment, T^{post} = post-treatment, T^{1y} = one-year follow-up and $T^{3.9y}$ = 3.9 years post. *Model/predictor was significant at the $p < .05$-level.

treatment, but not at any other measurement point. The pre-treatment clinical severity level was also a significant predictor in this model. Thus, higher preparedness at pre-treatment was associated with larger clinical severity reduction at post-treatment, alongside, but not above and beyond pre-treatment clinical severity.

3.5. Associations between motivation factors and dichotomous outcomes

Across the regression models predicting diagnostic recovery at the three different measurement points, neither preparedness nor distress was associated with diagnostic recovery (all $p < .109$). In the regression model predicting dropout, preparedness was a significant predictor (β = 0.86; 95% CI [0.76,0.98], $p = .025$), whereas distress was not (β = 1.21; 95% CI [1.00,1.47], p = .057). Higher preparedness was associated with significantly lower likelihood of dropping out of treatment.

4. Discussion

We assessed the factor structure of a measure for treatment motivation in children who received CBT for anxiety disorders and found that motivation comprised two factors labelled "preparedness" and "distress". These factors partly overlap with findings from the motivation measure used with adults (Keijsers et al., 1999), but the factor "doubt" was not retrieved in our child sample. It is important to consider the potential reasons why the "doubt" factor was not retrieved in the current sample. One reason may concern the number of items. Whereas the current child version of the NML-C comprises 15 items, the original adult scale comprised 25 items. Two of the items that loaded onto the "doubt" factor in the original scale were removed when the NML child version was developed (Ollendick et al., 2009). The items that were removed concerned worries about homework in treatment, i.e. "*I do not know whether I'll find sufficient time to carry out homework assignments as well*" and "*I think it's a nuisance having to carry out homework assignments as well.*" Hence, the "doubt" factor may not have been retrieved because of lack of power due to a lower number of items and a smaller sample, but it may also be related to developmental issues. The doubt factor may

work differently with adults than with children. Children are typically more categorical in their thinking than adults, with less capacity for ambiguity (Dickinson et al., 2023). This may affect their understanding and acknowledgement of doubt. There were some items that loaded on the doubt factor in adults, which loaded higher on preparedness in the current sample. This may reflect less differentiation between motivation dimensions in children due to cognitive capacity, but this should be further explored before conclusions can be drawn.

We also examined motivation factors in relation to other variables. In terms of background factors, age was not associated with any of the motivation factors. This is in contrast with previous findings showing that younger age was associated with lower motivation (e.g., Engle-brecht et al., 2008). However, this study considered substance abuse, for which motivation may be more strongly linked to age than what is the case for anxiety disorders. Girls scored higher than boys on preparedness, whereas there was no gender difference on distress. The higher preparedness score for girls may reflect the fact that girls are generally more conscientious than boys (Slobodskaya, 2021). Higher conscientiousness may reflect in higher preparedness for treatment tasks. It was more surprising that there was no gender difference in distress, since boys are more encouraged than girls to hide sadness and fear, and girls are more socialized to talk about emotions (Kuebli and Fivush, 1992; Shields and Shields, 2002). The lack of gender difference may reflect the general high level of distress experienced in a clinical sample.

In terms of overlap with other pre-treatment variables, both higher preparedness and higher distress were significantly associated with higher baseline symptoms and severity levels. The associations were significantly stronger for distress than for preparedness. Importantly, the largest correlation was r = .57, indicating that motivation factors and pre-treatment variables are related, but distinct, variables. This is also reflected by the fact that the regression models with pre-treatment symptoms as control variables were not impaired by multi-collinearity. Several previous studies have found overlap between baseline symptoms and motivation. For example, research on young people with addiction problems have shown higher motivation with more severe drug addiction and more internalizing problems (Rosenkranz et al., 2012; Slesnick

et al., 2009). Our findings support the notion that experiencing more severe mental health problems is associated with higher motivation for change.

Our aim was to contribute to clearer conceptualization of the motivation construct in the context of youth anxiety treatment. We also examined if the identified motivation factors predicted outcomes. More preparedness predicted lower clinical severity at post-treatment and was associated with lower risk of dropping out of treatment. More distress predicted more depression reduction at 12-months follow-up. Motivation explained symptom and clinical severity outcomes alongside, but not above and beyond pre-treatment symptom levels. Apart from these associations, there were no motivation effects for any of the outcomes. This means that overall, there was little predictive value in the motivation factors.

To sum up, we found two distinct but related motivation factors that were significantly associated with pre-treatment symptom and clinical severity levels. There were overall very few associations with outcomes. The exceptions were that higher preparedness was associated with lower risk of dropping out and with lower clinical severity at post-treatment and higher distress was associated with lower depression one-year follow-up.

Our study findings should be considered in light of previous conceptual and empirical work. Our findings lend part empirical support to the conceptually proposed role of motivation for treatment outcomes (e. g., Karver et al., 2005). Nevertheless, it appears that additional variables should be incorporated into future empirical studies for enhanced clarity. In a study with around 1800 families in youth mental health care, Chorpita and Becker (2022) empirically demonstrated that treatment engagement comprised five distinct factors, which they labelled relationship, expectancy, attendance, clarity, and homework. Motivation-related items loaded on various factors in this framework. For example, the factor expectancy included the item "*I believe counseling is necessary to solve my problems*", and the factor attendance included the item "*I make sure I get to my appointments with my counselor*" (Chorpita and Becker, 2022). This suggests that conceptually and empirically distinguishing how motivation relates to various inner states, external behaviors, and related concepts like engagement is unresolved.

This study has some limitations. The study was not designed to psychometrically assess motivation, so the NML-C could not be examined against another motivation measure for convergent validity. All participants had agreed to participate in an RCT, so their motivation may be different compared to other clients who do not agree to participate. Multiple tests were run, which may lead to some spurious findings. We nevertheless decided not to adjust the p-levels for multiple tests, as this may lead to Type II errors (Perneger, 1998). Finally, the results may not be generalizable beyond CBT for anxiety disorders. The current study is also limited by conceptualization problems in the general motivation literature. A common problem is that treatment motivation is often considered either as an internal state or as a behavior, with conceptualizations failing to account for the role of related internal factors (e.g., abilities) and external factors (e.g., social facilitation, rewards; Drieschner et al., 2004). We also measured motivation only once, which prevented us from examining potential fluctuations in motivation over time.

The main clinical implication of the current study is that clinicians should consider motivation in children as a multifaceted concept. Separately addressing distress and preparedness may break the ground for enhancing motivation. Clinicians should examine if low motivation is associated with limited acknowledgement of the problem and understanding of the negative consequences of anxiety (distress) or lack of belief in the treatment being useful or feasible to comply with (preparedness). Clinicians should be mindful that it may be both. Addressing distress and helping children acknowledge what is difficult for them and others around them may help shift their perspective to increase their engagement in CBT. This can be done both by using short screening instruments like the NML-C, but also as part of screening and/or intake

conversations. Particularly in the light of the associations with dropout risk, clinical severity, and depression outcomes, another clinical implication is that therapists can potentially enhance outcomes if they can enhance preparedness and/or distress acknowledgement. Within the anxiety field, there is limited empirical documentation on treatment enhancement work. However, findings from other treatments, such as substance abuse and weight management for children, have shown that motivational interviewing can effectively enhance outcomes (Barnett et al., 2012; Ling et al., 2022). An important next step for the anxiety field is to develop motivational enhancement techniques for therapists working with youth with anxiety disorders.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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