



Emotion awareness and internalising symptoms in children and adolescents: The Emotion Awareness Questionnaire revised

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ABSTRACT

A commonly accepted prerequisite for adaptive emotion regulation is emotion awareness, which refers to an attentional process (e.g. to monitor and differentiate emotions, locate their antecedents) but also includes attitudinal aspects (e.g. how are emotions and their expression valued?). In this study, the Emotion Awareness Questionnaire for children (Rieffe, Meerum Terwogt, Petrides, et al., 2007), developed to measure the key aspects of emotion awareness, was improved conceptually and shortened to a 30-item version. First, the former scale Acting Out (the blunt expression of emotions) previously failed to uniquely contribute to the prediction of internalising symptoms and was therefore replaced by the scale Not Hiding (the tendency not to keep one's emotion experiences hidden from others), which is theoretically more relevant to internalising symptoms. Second, items that did not load on the intended factor were omitted from the questionnaire. The outcomes from a sample of 665 children and young adolescents showed good psychometric properties and good criterion validity with the related measure for emotional self-efficacy, the TEIQue. Additionally, good concurrent validity was established with respect to common internalising problems during childhood and adolescence: somatic complaints, social anxiety, depression and a tendency for non-productive thinking (worry and rumination).

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1. Introduction

Humans' basic emotions serve to quickly and adequately respond to changes in the environment that might affect a person's well-being. Yet, the hardwired action pattern that is activated, aimed at survival and including a physiological arousal to prepare for immediate reactions, should not be acted out under normal circumstances in our modern society. Instead, already in toddlerhood children are taught how to control these initial responses and how to react alternatively in order to find a balance between personal demands and demands from society. Cognitive control mechanisms become increasingly important with age in this respect. This requires a certain insight into one's own emotional functioning; that is, emotional awareness, a commonly accepted prerequisite for adaptive emotion regulation (Lambie & Marcel, 2002).

In its most narrow sense, emotional awareness refers to an attentional process that is interconnected with some interpretative and evaluative functions. This attentional process not only enables

us to monitor our emotions, but also to differentiate between various emotions in a qualitative sense; to locate their antecedents; and to acknowledge the physiological correlates of the emotion experience for what they are. However, we suggest that emotional awareness also includes attitudinal aspects: do you value emotions as a positive or negative part of yourself; do you regard emotion experiences as private processes (that should be kept to oneself or bluntly expressed) or as interpersonal processes that should be shared with (communicated to) others and attended to in others? Obviously, these attitudinal aspects are closely intertwined with the described attentional and interpretive processes. If emotion experiences are something to be ashamed of, it will be difficult to attend and evaluate them in an open minded way. Moreover, attention for emotions will vanish when its merit is not acknowledged; and vice versa, an inability to locate the causes of the emotion will conceal its informative value.

In order to examine emotion awareness in children, the self-report Emotion Awareness Questionnaire (EAQ) was developed (Rieffe, Meerum Terwogt, Petrides, et al., 2007) to reflect the aforementioned key concepts of emotional awareness, resulting in six scales: the ability to differentiate between emotions and

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locate their antecedents (Differentiating Emotions); attention to the physiological aspects of the emotion experience (Bodily Awareness, i.e. awareness that emotions are accompanied by bodily symptoms); the communication of emotions (Verbal Sharing); the blunt expression (Acting Out Emotions); and the willingness to face one's own and others' emotions (Attending to Others' Emotions and Analyses of (Own) Emotions, respectively).

These authors' findings (Rieffe et al., 2007) confirmed that most aspects of emotion awareness – as identified by the six scales of the EAQ – uniquely contributed to the prediction of internalising symptoms in children, such as somatic complaints, depression, worry and rumination. Whereas a lesser ability to understand the antecedents and differentiate between emotions contributed to all dependent variables, other scales distinguished between the different internalising symptoms. For example, Verbal Sharing contributed to symptoms of depression and worry, but not to somatic complaints. Only Acting Out failed to contribute to any of the dependent variables.

We noted that the original items of the scale Acting Out in fact represented two aspects, (i) the tendency to express emotions and (ii) the tendency to hide them, considered to be opposite ends of one dimension. Yet, the principal component analysis showed a division between the items representing blunt expression and concerning hiding, and the items regarding hiding emotions were deleted from the scale. It could indeed be argued that these two aspects do not necessarily form one dimension, because not hiding your emotions does not automatically imply an eagerness to show them and vice versa. However, in consideration of current literature, hiding emotions seems more relevant to internalising problems, because the blunt expression of emotions is usually associated with externalising problems, and the inhibition of emotions with internalising disorders, such as anxiety (Zeman, Cassano, Perry-Parrish, & Stegall, 2006; Zeman, Shipman, & Suveg, 2002). Therefore, new items were formulated to represent the concept Not Hiding Emotions, which replaced the scale Acting Out Emotions. Additionally, items that showed a moderate or poor fit on their keyed factor in the former version of the EAQ and that were excluded from the analyses (Rieffe et al., 2007), were now omitted from the questionnaire (15 items, including the 3 items of Acting Out).

The objective of this study was twofold. The first objective was to examine this revised EAQ for children on its psychometric properties and its concurrent validity with respect to common internalising problems during late childhood and adolescence. This age period is especially important because at around the age of 9, children become able to reflect upon their own behaviour and emotions (Harris, 1989). This facilitates the development of cognitive strategies to control emotion experiences. With respect to the psychometric properties, it was expected that a principal component analysis would support the proposed six-factor structure, including the new scale Not Hiding; and it was expected that all scales would show good internal consistency. With respect to the concurrent validity, we examined the unique contribution of the six EAQ scales to the prediction of somatic complaints, social anxiety, depression and children's tendency for non-productive thinking (worry and rumination). Social anxiety was not included previously, but was now added to the design because of its notable increase during late childhood and young adolescence (Westenberg, Drewes, Goedhart, Siebelink, & Treffers, 2004). It was expected that the outcomes of Rieffe et al. would be confirmed and the new scale Not Hiding was also expected to contribute uniquely to the prediction of internalising symptoms.

Secondly, the criterion validity of the EAQ was examined through its associations with a measure for (trait) emotional intelligence, the TEIQue (Petrides, Sangareau, Furnham, & Frederickson, 2006). Trait emotional intelligence reflects a collection of

emotion related dispositions and self-perceptions, touching upon a person's ability to cope with affective aspects of daily life. This questionnaire contains one scale, including items concerning a person's self-esteem, emotion control, friendships, motivation and ability to deal with stress (Petrides et al., 2006). Consequently, the EAQ and TEIQue should partly overlap, because they both touch upon a person's affective self-efficacy. Whilst the TEIQue reflects a broad construct, the EAQ is specifically designed to measure the separate key aspects that we consider relevant to emotion awareness. The concepts of the following EAQ scales are part of the TEIQue and are thus expected to contribute to its prediction: Differentiating Emotions, Verbal Sharing and Others' Emotions.

2. Method

2.1. Participants and procedure

In this study, 706 children were drawn from primary ($n = 403$, mean age 10 years, 8 months; $SD = .93$ months) and secondary ($n = 303$, mean age 14 years, 3 months; $SD = 14$ months) schools in the Netherlands in and around major cities and asked to fill out questionnaires in class (EAQ, SCL, SAS-A and Worry/Rumination in both age-groups, CDI only in the younger age-group, TEIQue only in the older age-group). The data of 41 participants were excluded from the analyses (more than 6 missing values). The sample used for data analyses consisted of 665 children, including 297 boys and 368 girls. Parental consent was obtained prior to the data collection for all participants.

2.2. Materials

The *Emotion Awareness Questionnaire* (EAQ-30) (Rieffe et al., 2007) aims to identify how children and adolescents feel and think about their feelings. The present EAQ (30 items) was designed with a six-factor structure describing six aspects of emotional functioning: (1) Differentiating Emotions, (2) Verbal Sharing of Emotions, (3) Not Hiding Emotions (formerly Acting Out), (4) Bodily Awareness of Emotions, (5) Attending to Others' Emotions, and (6) Analyses of Emotions. The original EAQ consisted of 40 items, however 15 items were removed from this first version of the EAQ due to an insufficient fit on their intended factor (see factor matrix in Rieffe et al., 2007). A total of 5 new items were added (items in *Italics* in Table 1). Four new items were formulated in order to represent the scale Not Hiding. One new item was added to the scale Analyses of Emotions in order to replace an item that was deleted from the former version. Some items are conversely formulated with respect to the trait (R). Respondents are asked to rate the degree to which each item is true about them on a three-point scale (1 = not true, 2 = sometimes true, 3 = often true).

The *Somatic Complaint List* (Jellesma, Rieffe, & Meerum Terwogt, 2007) was developed with the aim of identifying how often children and adolescents experience and feel pain. The questionnaire showed good internal consistency and construct validity in previous studies (Jellesma et al., 2007; Rieffe, Meerum Terwogt, Bosch, et al., 2007) which was confirmed in this study (Table 2). The SCL consists of 11 items. Participants have to rate on a three-point response scale (1 = never, 2 = sometimes, 3 = often) the frequency with which they experience certain bodily complaints, such as a stomach-ache. The scoring is reversed for two items which were formulated positively, for example "I never/sometimes/often feel well".

The *Social Anxiety Scale for Adolescents* (SAS-A) (La Greca & Lopez, 1998) is a modified version of the Social Anxiety Scale for Children – Revised (SASC-R). A Dutch version of the questionnaire was

Table 1
EAQ items (30 items)

<i>Differentiating Emotions</i>	
1.1	I am often confused or puzzled about what I am feeling R
1.2	It is difficult to know whether I feel sad or angry or something else R
1.3	I never know exactly what kind of feeling I am having R
1.4	When I am upset, I don't know if I am sad, scared or angry R
1.5	Sometimes, I feel upset and I have no idea why R
1.6	I often don't know why I am angry R
1.7	I don't know when something will upset me or not R
<i>Verbal Sharing of Emotions</i>	
2.1	I find it difficult to explain to a friend how I feel R
2.2	I find it hard to talk to anyone about how I feel R
2.3	I can easily explain to a friend how I feel inside
<i>Not Hiding Emotions</i>	
2.4	When I am upset about something, I often keep it to myself R
3.1	<i>Other people don't need to know how I am feeling R</i>
3.2	<i>When I am upset, I try not to show it R</i>
3.3	<i>When I am angry or upset, I try to hide this R</i>
3.4	<i>When I am feeling bad, it is no one else's business R</i>
<i>Bodily Awareness</i>	
4.1	When I am scared or nervous, I feel something in my tummy R
4.2	When I feel upset, I can also feel it in my body R
4.3	I don't feel anything in my body when I am scared or nervous
4.4	My body feels different when I am upset about something R
4.5	When I am sad, my body feels weak R
<i>Attending to Others' Emotions</i>	
5.1	It is important to know how my friends are feeling
5.2	I don't want to know how my friends are feeling R
5.3	If a friend is upset, I try to understand why
5.4	I don't care about how my friends are feeling inside R
5.5	I usually know how my friends are feeling
<i>Analyses of Emotions</i>	
6.1	When I am angry or upset, I try to understand why
6.2	My feelings help me to understand what has happened
6.3	When I have a problem, it helps me when I know how I feel about it
6.4	It is important to understand how I am feeling
6.5	<i>I always want to know why I feel bad about something</i>

Note. Items marked with R are reversed-scored; items in italics are new.

used for this study (Dekking, 1983). The SAS-A reflects three subscales: Fear of Negative Evaluation, Social Avoidance and Distress in General, and Social Avoidance Specific to New Situations or Unfamiliar Peers, and consists of 18 items which can be scored on a five-point scale according to how true the item is (1 = not at all, 5 = all the time). The questionnaire showed good internal consistency and construct validity in previous studies (Meerum Terwogt, Rieffe, Miers, Jellesma, & Tolland, 2006), which was confirmed in this study (Table 2).

The Worry/Rumination Questionnaire for Children (Rieffe et al., 2007) reflects the tendency to dwell on a problem instead of deal-

ing with it in terms of solving or coping adaptively with the emotional impact of the situation. The questionnaire comprises 10 items with good internal consistency in previous studies (Jellesma, Meerum Terwogt, Reijntjes, Rieffe, & Stegge, 2005; Rieffe, Meerum Terwogt, Petrides, et al., 2007; Rieffe, Oosterveld, & Meerum Terwogt, 2006), which was confirmed in this study (Table 2). Respondents are asked to rate the degree to which each item is true about them on a three-point scale (1 = not true, 2 = sometimes true, 3 = often true). The scoring is reversed for one item.

The *Children's Depression Inventory* (CDI; Kovacs, 1992; Dutch translation: Timbremont & Breat, 2002) is a test that assesses cognitive, affective and behavioural signs of depression in children and adolescents from 6 to 17 years old. The CDI contains 26 items, each of which consists of three statements. The participants are asked to select the statement that best describes their feelings in the past two weeks. The questionnaire showed good internal consistency in a previous and the present study (Table 2; Meerum Terwogt et al., 2006).

The *Trait Emotional Intelligence Questionnaire* (TEIQue; Petrides et al., 2006) is a 30-item self-report questionnaire and measures emotional intelligence, or emotional self-efficacy, by means of emotion related behavioural dispositions and self-perceived emotion abilities. The Dutch adolescent version was used for this study (Mavroveli, Petrides, Rieffe, & Bakker, 2007). The participants are asked to rate the degree they agreed with the items on a seven-point scale. The questionnaire showed good internal consistency and validity in a previous study (Mavroveli et al., 2007), which was confirmed in this study (Table 2). The questionnaire also showed strong associations with the dependent variables used in this study: the SCL ($-.45, p < .001$), the SAS-A ($-.45, p < .001$) and the Worry/Rumination Questionnaire ($-.51, p < .001$). Given that the TEIQue was not designed for the youngest age-group, and was only administered to the secondary school children, it was not possible to examine its correlation with children's depression score (CDI).

2.3. Analyses

The internal structure and homogeneity of the scales was established with Principal Component Analysis (PCA) and reliability analyses. Oblimin rotation was used, as the restriction of scale independence was considered too stringent. The criterion validity was established by means of regression of the TEIQue on the EAQ scales. The concurrent validity was similarly investigated by a regression of the SCL, SAS-A, CDI and Worry/Rumination Questionnaire on the EAQ scales. The equality of this model across both age-groups was tested using multigroup structural equation modelling with equality constraints on the regression parameters. As the TEI-

Table 2
Internal consistencies of the EAQ-30, SCL, SASA Worry/Rumination Questionnaire, CDI and TEIQue by age-group

Questionnaire	No. of items	Primary School sample		Secondary School sample	
		Cronbach's alpha	Inter-item correlation	Cronbach's alpha	Inter-item correlation
<i>EAQ scales</i>					
Differentiating Emotions	7	.67	.23	.74	.30
Verbal Sharing	3	.68	.41	.77	.53
Not Hiding	5	.68	.30	.76	.39
Bodily Awareness	5	.64	.26	.74	.35
Others' Emotions	5	.65	.25	.77	.40
Analyses Emotions	5	.65	.26	.77	.41
SCL	11	.84	.33	.84	.32
SAS-A	18	.93	.41	.92	.40
Worry/Rumination	10	.82	.31	.82	.31
CDI	26	.86	.20	–	–
TEIQue	30	–	–	.83	.15

Table 3
EAQ items (30 items) and PCA factor loadings

	Differentiating	Verbal Sharing	Not Hiding	Bodily Awareness	Others' Emotions	Analyses Emotions
1.1	.448					
1.2	.643					
1.3	.674					
1.4	.640					
1.5	.510					
1.6	.580					
1.7	.586					
2.1		.742				
2.2		.653				
2.3		.725				
2.4			.661			
3.1			.640			
3.2			.667			
3.3			.605			
3.4			.708			
4.1				.750		
4.2				.597		
4.3				.753		
4.4				.621		
4.5				.500		
5.1					.700	
5.2					.666	
5.3					.538	
5.4					.739	
5.5					.447	
6.1						.676
6.2						.569
6.3						.628
6.4						.759
6.5						.711

Note. Only factor loadings >.40 are displayed.

Que and CDI were not administered to both age-groups, separate regression analyses were performed to establish the concurrent validity of the EAQ with these constructs.

3. Results

3.1. Factor structure

A PCA on all 30 items from the updated EAQ, with the factor count limited to the assumed six factors (Table 3), shows that almost all items loaded on their keyed factor (explaining 49% of the variance), with the exception of item 2.4. This item is more strongly associated with the newly formulated items that represent the tendency not to hide one's emotions than with the items

Table 4
The interfactor correlations of the EAQ-30

	Verbal Sharing	Not Hiding	Bodily Awareness	Others' Emotions	Analyses Emotions
Differentiating	.27**	.19**	.31**	.03	-.12**
Verbal Sharing		.42**	.13**	.22**	-.09*
Not Hiding			.10*	.15**	.12*
Bodily Awareness				-.21**	-.31**
Others' Emotions					.31**

* $p < .05$.
** $p < .01$.

from its original scale, *Verbal Sharing*. The interfactor correlation matrix in Table 4 shows that the six scales are intercorrelated, as should be the case for a multifaceted construct.

3.2. Reliability

Reliability coefficients for the two different age-groups are presented in Table 2. In the older age-group, all internal consistencies and mean inter-item correlations of EAQ scales meet the expected minimum of .70 and .30, respectively (Nunnally, 1978), which means that the psychometric properties of the scales are good for this age-group. For the younger age-group, the internal consistencies vary between .63 and .68, the mean inter-item correlations between .12 and .41, which is still acceptable, especially given the fact that it is quite a challenge to design items about emotion awareness for such a young audience.

3.3. Concurrent validity

The zero order correlation coefficients (Table 5) show that all scales have substantial and significant relations to one or more dependent variables. The correlations are in the expected, negative direction for *Differentiating*, *Verbal Sharing*, *Not Hiding* and *Bodily Awareness*. In line with previous findings, *Others' Emotions* and *Analyses Emotions* show positive correlations with some of the dependent variables (Rieffe et al., 2007).

The equality of regression model on the SCL, SAS-A and Worry scales was tested with a multigroup analysis. Although the χ^2 reached significance ($\chi^2 = 57$, $df = 24$, $p < .001$), suggesting misfit, other fit measures show only minor violations of the equality (RMSEA = .063; GFI = .98). The modification indices imply that removing the equality restriction in the regression of Social Anxi-

Table 5
Correlations and regression coefficients for EAQ-30 scales on the SCL, SASA Worry/Rumination Questionnaire, CDI and TEIQue

	Differentiating	Verbal Sharing	Not Hiding	Bodily Awareness	Others' Emotions	Analyses Emotions
<i>Correlations (Primary and Secondary)</i>						
SCL	-.34**	-.18**	-.18**	-.35**	.06	.02
SAS-A	-.43**	-.27**	-.23**	-.32**	.03	.15**
Worry/Rumination	-.48**	-.24**	-.22**	-.48**	.13*	.18**
CDI (Primary)	-.36**	-.26**	-.17**	-.17**	-.19**	-.10*
TEIQue (Secondary)	.52**	.41**	.31**	.26**	.14*	.12*
<i>Common metric standardized solution regression coefficient (multigroup analysis Primary and Secondary)</i>						
SCL	-.26**	-.05	-.07	-.26**	.03	-.10*
SAS-A	-.30**	-.13**	-.12**	-.18**	.05	.06
Worry/Rumination	-.35**	-.09**	-.10**	-.31**	.07	.04
<i>Standardized regression coefficient (separate group analysis Primary and Secondary)</i>						
CDI (Primary)	-.30**	-.13*	-.02	-.13*	-.10	-.18**
TEIQue (Secondary)	.42**	.21**	.07	.14**	.15**	.08

* $p < .05$.
** $p < .01$.

ety on Not Hiding and Differentiating and in the regression of Somatic Complaints on Verbal Sharing and Analyses will result in the largest decreases in χ^2 value. All these regression coefficients will be lower in the Primary schools sample than in the Secondary schools sample. Performing the analyses for the separate dependent variables establishes equality of regression for Worry ($\chi^2 = 6.5$, $df = 7$, $p = .48$), whereas the other two (SCL, SAS-A) show significant, but minor differences.

Table 5 shows the regression coefficients for the EAQ scales. The R^2 values are moderately high for SCL, SAS-A and CDI (.22, .27, .20, respectively) and high for Worry (.39) and TEIQue (.40). It is important to note that all significant contributions of EAQ scales in explaining variance in the dependent variables are in the expected direction: positive with the related concept, emotional intelligence (TEIQue), and negative with all indices for internalising symptoms (SCL, SAS-A, CDI and Worry/Rumination). It can be seen that Differentiating Emotions and Bodily Awareness contribute to explaining variance in all dependent variables. The scales involving the expression of emotions, Not Hiding and Verbal Sharing contribute significantly to Social Anxiety and Worry/Rumination, but only Verbal Sharing contributes to explaining variance in depression (CDI) and emotional intelligence (TEIQue). Others' Emotions contributes significantly to the TEIQue and Analyses Emotions contributes significantly to explaining variance in somatic complaints and depression.

4. Discussion

Compared to the former 40-item version, the EAQ-30 is shorter, all scales have good internal consistencies and the questionnaire improved conceptually as reflected in the clear factor structure and stronger relationships with the dependent variables. Whereas the original Acting Out scale did not show any significant associations with dependent variables in a former version of the questionnaire (Rieffe et al., 2007), the more homogeneous factor Not Hiding shows stronger correlations with all internalising indices, as well as a unique concurrent value for two of them (social anxiety and worry). Furthermore, the multigroup regressions show that the concurrent validity with respect to two age-groups has minor differences for Social Anxiety and Somatic Complaints and is equal for Worry/Rumination. The regression further shows that not all scales contribute to the prediction of the dependent variables. Due to shared variance, some scales seem redundant statistically. Nevertheless, these scales contribute to the construct of emotion awareness and are considered to be vital with respect to the content validity of the questionnaire. Additionally, the zero order correlations show that these scales have distinctive relations to the dependent variables and therefore carry relevance for diagnostic purposes.

With respect to the criterion validity, all EAQ scales correlate positively with a conceptually related measure for trait emotional intelligence (TEIQue). Four scales uniquely contribute to its prediction: Differentiating, Verbal Sharing and Others' Emotions were expected because the TEIQue contains similar concepts. The unique contribution of Bodily Awareness was unexpected, but it confirms previous findings of its importance in the emotion domain which, to date, has not received much consideration in the literature. Usually it is hypothesised that little attention for the bodily symptoms of the emotion experience might lead to misattributions, based on Pennebaker's Symptom Perception Hypothesis (Pennebaker, 1984) and thus refers to a lesser understanding of the own emotions. However, we consistently find that a greater awareness of bodily symptoms is strongly related to more internalising symptoms, and in this study is related to a lower trait emotional intelligence. Probably, during healthy development, it is acknowledged that

bodily symptoms of the emotion experience will vanish once the emotion is dealt with adequately. In other words, the focus should be on the elements in the situation that caused the emotion (Differentiating Emotions) instead of on physical signals in order to deal with an emotion evoking situation adaptively.

Note that the reliability of self-report questionnaires for children is sometimes questioned. Yet, the authors want to stress that respondents have direct knowledge of their own emotions and therefore, instead of drawing from other sources of information, it is more advantageous to ask children themselves (Miers, Rieffe, Meerum Terwogt, Cowan, & Linden, 2007). Furthermore, it has frequently been shown that children are better informants than parents or teachers with respect to their own internalising symptoms (Achenbach, McConaughy, & Howell, 1987; DiBartolo & Grills, 2006; Jellesma et al., 2007), which further supports the use of self-report methods, even in children.

Overall, the outcomes of this study confirm previous findings (Rieffe et al., 2006; Rieffe et al., 2007). An increased ability to differentiate between emotions, not to hide them, but to verbally share them with others and a lesser awareness of bodily symptoms that accompany the emotional arousal, are associated with decreased internalising problems (self-reported somatic complaints, social anxiety, depression or tendency to worry or ruminate). In addition, a reluctance to attend one's own emotions is uniquely associated with fewer somatic complaints and depression.

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