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# Do Parental Reports of Routinized and Compulsive-Like Behaviours Decline with Child's Age?: A Brief Report of a Follow-Up Study

Sheila Glenn<sup>1</sup> & Angela Nananidou<sup>1</sup>

<sup>1</sup> School of Natural Sciences and Psychology, Liverpool John Moores University, UK

Correspondence: School of Natural Sciences and Psychology, Liverpool John Moores University, UK. E-mail: s.m.glenn@ljmu.ac.uk

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## Abstract

*Background:* Routinized and compulsive-like behaviours are very common in young children; however, previous studies have shown inconsistent results as to the age such behaviours decline. Another issue concerns any association with later Obsessive-Compulsive Disorder (OCD). *Method:* Related measures longitudinal design: We compared parent ratings of children over a 6 year period. The sample consisted of 109 children (aged 8 to 18 years, 62 males). Measures were of routinized and compulsive-like behaviours, OCD behaviours, worries and fears. *Results:* Routinized behaviours decreased significantly over the 6 year period, but not for children reported to have difficulties. OCD behaviours increased significantly with 31% of the sample having above threshold scores; however, only one child in the sample had an OCD diagnosis. There were significant correlations between CRI, OCD and fear and worry scores. *Conclusion:* We confirmed the view that anxiety reduction is one of the functions of routinized behaviours. A small number of children had high scores on routinized behaviours and the OCD measure, but there was only 1 diagnosis of OCD in the sample. This suggests that they may be part of the typical distribution of such behaviours.

**Keywords:** rituals, compulsive-like behaviour, Obsessive-Compulsive Disorder, longitudinal change

## 1. Introduction

This paper reports a 6 year follow-up of routinized and compulsive-like behaviours in a small sample of children. We used the Childhood Routines Inventory (CRI, Evans et al., 1997) with children whose routinized and compulsive-like behaviours had previously been rated by their parents 6 years earlier (for details of this study see Glenn, Cunningham, & Nananidou, 2012).

Routinized and compulsive-like behaviours are believed to have important adaptive functions in children's development, including reducing anxiety, fostering a sense of control, and practising classification skills (e.g., Gesell, Ames, & Ilg, 1974; Evans et al., 1997). However, there is some debate about the age at which these behaviours decline. For example Evans et al. (1997) demonstrated a significant drop between the ages of 5 and 6 years, but did not continue beyond age 6 years. Glenn et al. (2012) tested 1,318 children aged from 2 to 11 years, and found a significant linear decline in CRI scores with age, with some indication of a more significant drop between 7 and 8 years; a minority of children continued to have high levels up to 11 years of age. Although there was a significant correlation between ratings of routinized and compulsive-like behaviours and obsessional compulsive behaviours for children 7 years and older, there was only 1 child in the sample with a diagnosis of Obsessive Compulsive Disorder (OCD), and scores were low on average. However, as children grow older there is a possibility of increasing prevalence of OCD (e.g., Hanna, 1995; Heyman et al., 2001). All the above studies were cross-sectional; hence a longitudinal study should be informative. As previous studies had reported an association between routinized and compulsive-like behaviours, worries and fears (e.g., Pietrefesa & Evans, 2007; Zohar & Dahan, 2015), we also included a short questionnaire on fears. We hypothesised that:

- 1) CRI scores would decrease in the 6 year period
- 2) OCD scores would increase in the 6 year period
- 3) There would positive correlations between CRI, OCD, and fear scores
- 4) There would be a positive correlation between the CRI and worry scores

## 2. Method

### 2.1 Design

A Related measures design: parent/carer ratings of children on the CRI were compared over a 6 year period.

### 2.2 Participants

The previous study (Glenn et al., 2012) had recruited 493 parents who had provided addresses or telephone numbers, and were willing to be contacted. Of these, 3 had moved, in 42 cases the telephone number was not recognised, 14 did not wish to participate, and in 325 cases the reason for non-response was not known; thus, there was a participation rate of 32.2%: 109 participants (mean age 7.3 years, SD 2.6 at the time of the first study) contacted after 6 years on average (mean age 13.4 years, SD 2.7). There were 62 males and 47 females.

### 2.3 Procedure

Ethical scrutiny and approval was obtained from the University Committee. Where parents had provided addresses, a letter was sent reminding parents that they had completed questionnaires on routinized and compulsive-like behaviours for their child 5 to 6 years previously and inviting them to rate their child again. Questionnaires were sent by post to participants' homes, together with information on the study and self-addressed envelopes to return the completed questionnaires. Where parents had only provided telephone numbers, they were asked on the phone if they would be willing to participate, and if so informed that this could be done by telephone, and a convenient time was arranged. Parents who had given both addresses and telephone numbers were contacted by phone if no questionnaire had been returned by post. We also asked parents to report any diagnoses or problems they were aware of in their child.

### 2.4 Measures

#### 2.4.1 The Child Routines Inventory (CRI, Evans et al., 1997)

The CRI has 19 items rated from 1 (not at all) to 5 (very much/always). Example items are "Does your child prefer to have things done in a particular order or in a certain way (i.e., is he/she a 'perfectionist?')"; "Repeat certain actions over and over?" Two measures are derived: a) intensity—the sum of ratings over the whole scale and b) the number of items endorsed by parents i.e., scores > than 1.

#### 2.4.2 The Obsessive-Compulsive Index (OCD-CBCL, Hudziack et al., 2004)

This index has eight items from the Child Behavior Checklist (CBCL, Achenbach, 1991), predictive of OCD; in order to provide consistency across measures, it was rated from 1 (rarely/never) to 3 (very much/often true). Item 8 ("does your child have worries") was used as the worry measure.

#### 2.4.3 The Fear Survey Schedule for Children (FSSC-R, Ollendick, 1983)

The short version lists the 10 top intense childhood fears (e.g., "death or dead people", "being hit by a car or truck", "bombing attacks", "burglar breaking into the house"). Parents rated the level of their child's fears on a 3-point scale from 1 to 3: "none", "some" or "a lot", giving a total fear score ranging from 10 to 30.

## 3. Results

Alphas for the 3 scales were at acceptable levels (CRI: .89; OCD-CBCL-CBCL: .93; FSSC-R: .79)

The Shapiro-Wilks test was significant for all 3 measures, thus non-parametric statistics were used.

Ten children were reported to have general learning difficulties, and 10 to have other difficulties (including autism, ADHD, depression, hearing impairment, worries, fears, anger management; 1 was reported as compulsive). None of these children had difficulties reported six years previously.

### 3.1 Comparison of Participants and Non-Participants

Where available (50/109 of responders, and 252/384 of non-responders), post codes were used to calculate a Deprivation index (Noble et al., 2008). There was no significant difference between responders and non-responders: (Mann Whitney  $z = 1.88$ ,  $p = .060$ ).

Total CRI scores from the original study (time 1) were not significantly different for those who did and did not participate (medians: 41 and 42 respectively,  $z = -.145$ ,  $p = .885$ ).

Number of CRI ratings > 1 from time 1 were not significantly different (medians: 11 and 12 respectively,  $z = -.062$ ,  $p = .950$ ).

Total OCD-CBCL scores. For those who had OCD-CBCL-CBCL scores at time1 there was no significant difference between those who did and did not participate (medians both 9,  $z = .679$ ,  $p = .497$ ).

### 3.2 Differences between Phases 1 and 2: Total Sample

#### 3.2.1 CRI and OCD Scores

*Total CRI intensity* There was a decrease, significant on a one-tailed test (Wilcoxon  $z = -1.93$ ,  $p = .027$ ), and a Spearman rho correlation of 0.52,  $p = .000$  between phases 1 and 2.

*Number of CRI ratings* There was a significant decrease ( $z = -2.29$ ,  $p = .022$ ), and a correlation of 0.45,  $p = .000$  between the 2 phases.

*OCD-CBCL totals.* As some of the younger children had not been rated at phase 1 the total n was 105. There was a significant increase ( $z = 5.00$ ,  $p = .000$ ), and a correlation of 0.46,  $p = .000$  between the 2 phases.

Table 1. Differences between phases 1 and 2 of total CRI scores, number endorsed and total OCD-CBCL scores

	N = 109	Total CRI phase1	Total CRI phase 2
Mean (SD); Median		43.8 (15.9); 41	40.8 (16.0); 38
		Number CRI phase1	Number CRI phase 2
Mean (SD); Median		11.1 (5.8); 11	9.8 (5.7); 10*
	N = 105	Total OCD-CBCL phase 1	Total OCD-CBCL phase2
Mean (SD); Median		10.3 (2.5); 9	11.8 (3.3); 11**

\*  $p < .05$  \*\*  $p < .001$

*Worries item.* There was a significant increase in worries ( $z = 4.36$ ,  $p = .000$ ) and a correlation of 0.28,  $p = .003$  between the 2 phases.

### 3.3 Fear Scores Phase 2

Table 2. Fears of children rated by their parents

Fear Items	N	Mean	SD	Median
Q1 Dead or dead people.	108	1.55	.63	1
Q2 Getting lost in a strange place.	108	1.50	.64	1
Q3 Bombing attacks - being invaded	106	1.20	.49	1
Q4 Spiders.	108	1.71	.74	2
Q5 A burglar breaking into house.	108	1.54	.65	1
Q6 Fire - getting burned.	107	1.21	.47	1
Q7 Being hit by a car or lorry.	106	1.25	.53	1
Q8 Falling from high places.	106	1.19	.44	1
Q9 Germs or getting a serious illness	108	1.36	.61	1
Q10 Not being able to breathe.	107	1.25	.53	1
Total	105	13.74	3.44	13

Ns are different as not all questions were completed

Scores ranged from 1 to 3; i.e., total scores could range from 10 to 30 Fear of spiders was the highest mean score, and Fear of falling from a high place the lowest. The mean total score was 13.7 (SD 3.4, median 13)

### 3.4 Correlations between CRI, OCD-CBCL, Fear and Worries Scores

There were significant correlations between CRI and OCD-CBCL scores ( $r = .68, p = .000$ ), between CRI and Fear scores ( $r = .44, p = .000$ ), between CRI and Worries scores ( $r = 0.46, p = .000$ ), between Fears and OCD-CBCL scores ( $r = .39, p = .000$ ), and between Fears and Worries scores ( $r = 0.37, p = .000$ ).

There were no significant correlations between CRI, OCD-CBCL or Worries scores at time1 and total fear score at time 2.

A regression analysis indicated that the total OCD-CBCL score and total fear scores were the significant contributors to the total CRI score.

Table 3. Regression analysis of OCD-CBCL total, worry score and total fear score on dependent variable: total CRI score phase 2

	b	SE b	$\beta$
Constant	-5.901	5.044	
OCD-CBCL total Phase 2	3.248	.519	.705***
OCD-CBCL Q8b-worries	-3.578	2.303	-.164
Fears total score	1.013	.364	.220**

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

### 3.5 Differences between Phases 1 and 2 for Those Participants with and without Reported Problems

For those with no reported problems there were significant decreases in CRI totals on a 1 tailed test ( $z = 1.87, p = .030$ ), and in number of items endorsed ( $z = 2.39, p = .017$ ). There were significant increases in OCD-CBCL scores ( $z = 4.12, p = .000$ ) and in worries ( $z = 3.69, p = .000$ ).

For those with reported difficulties there were no significant changes in CRI totals ( $z = .600, p = .550$ ) or in number of items endorsed ( $z = .285, p = .776$ ). There were significant increases in OCD-CBCL scores ( $z = 3.02, p = .003$ ) and in worries ( $z = 2.33, p = .020$ ).

### 3.6 Characteristics of Participants with High Reported CRI Scores

Thirty one youngsters were in the top 25% for total CRI scores; three of these had learning difficulties, two had other conditions (autism and ADHD), and one had a compulsive disorder. Age was not related to CRI scores ( $r = -.102, p = .290$ ; the mean age for those in the top 75% ( $n = 34$ ) was 13 years 1 month, compared to 13 years 6 months of the other 78 children).

### 3.7 Characteristics of Participants with High Reported OCD-CBCL Scores

Thirty four young people were over the threshold suggested by Hudziak et al. (2004) for clinical levels of OCD-CBCL. Of these four were reported to have learning difficulties, and five were reported to have other difficulties (e.g., autism, ADHD, depression). One of the others was reported to have a compulsive disorder; there were no other reports of difficulties/problems. Age was not related to OCD-CBCL scores ( $r = -.054, p = .585$ ; the mean age for those over threshold ( $n = 34$ ) was 13 years, compared to 13 years 8 months of the other 72 children).

## 4. Discussion

There was a relatively low participation rate of 32% from those parents who had given contact details 6 years earlier. However, there were no significant differences on Time 1 measures between participants and non-participants.

Intensity ratings on the CRI and the number of items endorsed decreased significantly in the 6 year period. There was a significant correlation between ratings on the 2 occasions; this could be due either to the parents' perceptions or to the children's behaviour. Independent ratings would be necessary to determine this. There was less of a drop in CRI total scores than we had expected. However, when the group was split into those with and without problems or difficulties reported by their parents, those without difficulties decreased their CRI scores significantly whereas those with difficulties did not. This result suggests that routinized and compulsive-like behaviours are still functional for children with difficulties (Glenn & Cunningham, 2007).

In contrast to CRI scores, OCD-CBCL scores significantly increased over time, as children reached the age at which such behaviours are apparent. This was the case for those with and without reported problems. There were significant correlations between OCD-CBCL and CRI scores, almost certainly due to similarity of the behaviours as the CRI was constructed from more user friendly versions of OCD-CBCL items. There were also significant positive correlations between CRI, OCD-CBCL, fear and worry scores, confirming views that anxiety reduction is one of the functions of routinized and compulsive-like behaviours. Both the OCD-CBCL score and the fear score contributed to scores on the CRI.

Thirty-one children had total CRI scores in the top 25%. Of these high scorers, 5 were reported to have difficulties (including learning difficulties, autism, ADHD, and 1 had a compulsive disorder). Overall, the number of children showing above threshold scores on the OCD-CBCL was high at 31%. It is possible that we had a sample biased towards mothers who had seen more difficult behaviour in their children as they aged. However, Fineberg et al. (2013) also reported a high percentage (21.7%) of adults in their sample from 19 years of age showed some degree of clinically relevant OCD symptoms without a diagnosis. Only one child in the present study was reported to have a compulsive disorder. Four were reported to have learning difficulties (known to be associated with increased repetitive and compulsive-like behaviour e.g., Glenn & Cunningham, 2007), and five were reported to have other diagnoses (e.g., autism, ADHD, depression) also reported to have associations with OCD or repetitive behaviour (e.g., Crespi, 2013; Martin et al., 2014; Meyer et al., 2014). There were no other reports of difficulties/problems. The implication is that the majority of the children with high CRI or OCD-CBCL scores, as in the Fineberg et al. (2013) study, may be part of the typical distribution of such behaviours. A further follow-up study as the children become adults, together with more detailed assessments would be informative.

## 5. Conclusion

Routinized and compulsive-like behaviours are still present in older children, are associated with worries and fears, but there was only one OCD diagnosis. It is possible that if in the future, the behaviours start interfering with everyday life, then a psychiatric diagnosis would be made. However at the present time, they should not be seen as pathological behaviours, but rather as functional in the lives of individuals.

Limitations of this study include the low participation rate, and the use of questionnaires, with little opportunity to talk to parents or to observe children.

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