**Title**: Agreement between RBS-R and RBC-EC subscales for characterising SIB among children with neurodevelopmental disorders.  
**Authors**: Laura J. Chubb1, Breanne J. Byiers1, Jason J. Wolff1, Jaclyn Gunderson2, Andrea Huebner2 & Frank Symons1**Introduction**: In the course of typical development restricted repetitive behaviours (RRB) occur commonly in young children (Lachance et al., 2022). RRBs indicate a wide variety of behaviour’s often identified by invariance and rigidity, notably compulsive and ritualistic behaviour, stereotypies, inflexibility, rigidity, intense interests, and repetitive self-injurious behaviour (Wolff et al., 2016). Frequent and persistent RRBs lasting into childhood have been linked to neurodevelopmental disability (NDD). One form of RRB is self-injurious behaviour (SIB). SIB entails the repetitive self-directed actions that result in or have the potential to result in tissue damage. The Repetitive Behaviour Scale-revised (RBS-R; Bodfish et al., 2000) is a questionnaire that captures a wide range of topographies relative to the direct measure of RRB. The RBS-R is comprised of 43 items, each scoring the presence or absence of a RRB and its perceived severity/interference. The scale features six subscales, for the purpose of this project only the Self Injurious Behaviour Subscale was analysed. Drawing inspiration from the RBS-R, the Repetitive Behaviour Scale for Early Childhood (RBS-EC; Wolff et al., 2016) is a downward extension of the RBS-R, comprised of 34 items, each scoring if the behaviour is endorsed, and the relative frequency. The scale features four subscales, for the purpose of this project only the Self Directed Subscale was analysed. Although both scales use the same general topography categories, it is unclear the degree to which total scores for the two scales are comparable for children with NDD given the different response options. We hypothesize that the scores produced will be similar, however we would not necessarily expect total scores to be the same since the response options differ, and the increase in frequency does not necessarily map onto an increase in severity. The purpose of the present study was to i) examine the consistency of total scores and item-level endorsement for the SIB/self-direct subscale for the two scales, and ii) explore the degree to which RBS-R and RBS-EC SIB total scores predict endorsement of SIB 12 months later in a population with NDD.**Method:** Data were collected as part of an ongoing longitudinal study. This secondary data analysis included a sample of 100 children and youth diagnosed with NDD who for at least two timepoints had caregivers complete both the RBS-R and RBS-EC. The timepoint latency needed to be between 11 and 13 months (average of 12.4 months between timepoints). The average age of participants was 6.19 years old (range 2 - 11 years old). The sample was predominantly male (68%), and White (86%), not Hispanic (90%). Most of the respondents were biological parents to the children with NDD. Intraclass correlation coefficients (ICC) were calculated to evaluate consistency of total scores across the scales, and percent agreement in rates of endorsement were evaluated for each topography. To explore predictive validity, a receiver operating characteristic (ROC) curve was calculated using the two measures for SIB.**Results**: The ICCs were .862 and .844 for total scores and number of endorsed items, respectively. For each topography the range of agreement was calculated; hits self with body (89%), hits self with object (90%), hits self against surface (93%), bites (94%), scratches (85%), pulls hair (83%), and skin picking (92%). Percent agreement varied between 83 - 93% for individual topographies. Both the RBS-R and RBS-EC had ~ 96% sensitivity, the RBS-EC had 55% specificity, 83% positive predictive value, and 85% negative predictive value.**Discussion:**  Results of this analysis suggest that the RBS-EC and the RBS-R SIB/self-directed subscale scores are extremely highly correlated among children with NDD, despite some discrepancies in endorsement of individual topographies. These results suggest that the differences in response options have limited impact on parents’ ratings, potentially suggesting that frequency is an important facet of perceived severity of SIB. Further analysis will be needed to generalise these findings to adults and typically developing populations within and across the various RRB subscales. This project is the first known instance of attempting to predict future cases for self-injurious behaviour through calculation of a ROC curve of RBS-R and RBS-EC data. This analysis suggests that both the RBS-R and the RBS-EC performed well in predicting future moderate to severe cases of SIB one year out. This analysis has the potential to inform our understanding of case ascertaining of SIB, develop clinical utility tools, and strengthen our understanding of the trajectory of SIB for children and adolescents with NDD. Future analysis should explore if their predictions are altered when the latency between timepoints is extended.

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**Appendix:**

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| Table 1. Demographic characteristics of respondents in sample. | |
|  | Percentage |
| Male | 68 |
| Female | 32 |
|  |  |
| White | 86 |
| Black/African American | 5 |
| American Indian/Alaskan Native | 2 |
| Asian/Pacific Islander | 0 |
| Unknown | 0 |
| Chose not to disclose | 7 |
| Other | 0 |
|  |  |
| Not Hispanic | 90 |
| Hispanic | 9 |
| Not disclosed | 1 |
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