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The Progression of Severe Behavior Disorder in Young Children with Intellectual and Developmental Disabilities

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Abstract

Behavior disorders, such as self-injurious, stereotypic, and aggressive behavior are common among individuals with intellectual or developmental disabilities. While we have learned much about those behaviors over the past few decades, longitudinal research that looks at developmental trajectory has been rare. This study was designed to examine the trajectory of these three forms of severe behavior disorders over a one year time period. The behaviors were measured on two dimensions: frequency of occurrence and severity. Participants were 160 infants and toddlers at risk for developmental delays in Lima, Peru. Using structural equation modeling, we found that the frequency of self-injury and stereotypic behavior and the severity of aggressive behavior remained stable over the 12 month period. Uni-directional structural models fit the data best for self-injurious and aggressive behavior (with frequency being a leading indicator of future severity of self-injury and severity being a leading indicator of future frequency for aggression). For stereotypic behavior, a cross-lagged autoregressive model fit the data best, with both dimensions of frequency and severity involved as leading indicators of each other. These models did not vary significantly across diagnostic groups, suggesting that toddlers exhibiting behavior disorders may be assisted with interventions that target the specific frequencies or severities of behaviors, regardless of diagnostic category.

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Submission Declaration

This manuscript has been adapted from research that was submitted as part of the first author's doctoral dissertation, which was accepted and archived by George Mason University.

Keywords

intellectual disability; developmental disability; autism spectrum disorder; Down Syndrome; challenging behaviors; behavior disorders; self-injury; stereotypy; aggression; structural equation modeling

1 Introduction

Intellectual disability (ID) is a severe and chronic condition that is defined by significant limitations in both intellectual functioning and adaptive behavior that manifest themselves before the age of 18 (American Psychiatric Association, 2000). Individuals with ID typically show deficits in cognitive or social-emotional self-regulation and language development (Borkowski, Carothers, Howard, Schatz, & Farris, 2007). Furthermore, individuals with ID often experience, perceive, and produce emotion in atypical ways (Lewis & Sullivan, 1996), which makes it harder for caregivers and peers to interact appropriately and confidently. It also reduces the likelihood that the individual with ID will understand the reactions of others (Walden & Knipes, 1996). Therefore, it is not surprising that severe behavior disorders, such as self-injurious behavior (SIB), stereotyped behavior (stereotypy), and aggressive behavior, are common in the ID population (Cooper, Smiley, Morrison, Williamson, & Allan, 2007).

SIB is self-directed behavior that causes or has the potential to cause physical damage, occurs repeatedly in idiosyncratic form (Rojahn, Schroeder, & Hoch, 2008). Some of the more common topographies include banging the head or body with other body parts or objects, self-biting, self-scratching, self-pinching, gouging body cavities with fingers, and self-hair pulling (Rojahn et al., 2008). Stereotyped behaviors are restricted and repetitive behavior patterns, interests, or activities that are peculiar in intensity or focus. Individuals show an apparently inflexible adherence to routines or rituals, motor mannerisms, or persistent preoccupation with parts of objects (American Psychiatric Association, 2000). Aggressive or destructive behaviors are offensive actions or deliberate overt attacks directed towards other individuals or objects.

Data on the long-term course of severe behavior disorders have only just recently become available in the literature. Overall, research has shown that severe behavior disorders typically develop early, are pervasive and chronic (Fodstad, Rojahn, & Matson, 2012), and are highly correlated with one another (Totsika, Toogood, Hastings, & Lewis, 2008). In a longitudinal study of 58 adults with ID in a residential setting, Totsika, Toogood, Hastings, and Lewis (2008) found that individuals with severe aggression and SIB paired with highly frequent stereotypy were more likely to present these severe behavior disorders 11 years later; whereas the severity of severe behavior disorders did not predict the severity of later severe behavior disorders. Age and level of adaptive behavior were also predictors of the persistence of behavior disorders.

Taylor, Oliver, and Murphy (2011) found in a cohort study of 49 individuals with ID and SIB that 84% of them exhibited SIB 20 years later, with no significant changes in topography or severity. A review by Furniss and Biswas (2012) led to the conclusion that the frequency of SIB is often chronic and stable, regardless of behavioral interventions.

Few studies have looked at the interactional relationship of severe behavior disorder over time. One recent study of 943 children between four and 18 years old with severe ID showed that high frequency repetitive stereotypic behavior was a risk factor for later severity of SIB and the presence of other challenging behaviors (Oliver, Petty, Ruddick, & Bacarese-Hamilton, 2012). While this is a very important categorical study that examined temporal dynamics across behavior problems, we also need to look at severe behavior disorders from a dimensional perspective such that behavior problems can be understood in relation to sequences, processes, and developmental progression (Achenbach, 2000). From this vantage point, the developmental processes that are associated with severe behavior disorder must be identified so that individuals can be classified on the basis of their behavior patterns rather than on their behavior topographies (Tackett, 2010). For example, knowing if an individual's behavior disorder was likely to remain stable or worsen over time could provide a significant contribution to interventions.

Some behavior assessment instruments include a measure of both the frequency and severity of severe behavior disorder, which provide qualitatively different information. However, since frequency and severity of behavior problems are often highly correlated, most research studies focus on frequency alone. Also, longitudinal studies of severe behavior disorders are often limited to lower functioning individuals who are institutionalized or transitioning into the community, and to SIB or aggression only (Cooper & Picton, 2000; Martin, Ashworth, & Montague, 2012; McClean et al., 2005). Finally, there are very few studies utilizing structural equation modeling that can better account for error in measurement and better estimate parameters than commonly used analysis of variance (ANOVA) techniques.

This study, therefore, focused on identifying models of severe behavior disorder over time for infants and toddlers with various developmental delays. Using structural equation modeling (SEM), we tested various models that describe the relationships among frequency and severity of three types of severe behavior disorders over time and across diagnostic categories.

2 Method

2.1 Participants

Data for this study came from a longitudinal research project at the Centro Ann Sullivan del Peru (CASP) in Lima, Peru. Participants were recruited with media advertisements targeted towards parents with children at risk for developmental delay. Roughly 1,000 parents called CASP expressing concerns for their child's development; 341 of these parents were interviewed over the phone using the Parental Concerns Questionnaire (PCQ), and 262 of these families met the criteria for enrollment. Inclusion criteria for ID risk factors were genetic conditions related to developmental disabilities, family history of disabilities or disorders, neuropsychological factors, and communications deficits (see Mayo-Ortega et al., [2012] for a more detailed description of the participant sampling and inclusion criteria). Twenty individuals were later removed from the dataset due to missing data on the cognitive scale of the Bayley Scales of Infant Development-3 (Bayley, 2006), which we used as a covariate in subsequent analyses.

One hundred and sixty children with developmental delays participated in this study. There were 103 boys and 57 girls, ranging in age from 4 to 44 months at the first observation point ($m = 27.4$, $SD = 9.78$). The majority of the sample were considered “at-risk for autism” ($n = 70$), and the rest were either diagnosed with Down’s syndrome (DS; $n = 41$), or experiencing other developmental delays (“Other”; $n = 49$). In multi-group analyses, children with DS or with other developmental delays were collapsed into one “Developmental Delays” group and compared to children who were “At-risk for Autism”.

The data for this study only include participants who completed all three rounds of BPI-01 data and had Bayley cognitive scale scores at time 1 ($n = 160$). Participants who did not have data for the Bayley cognitive scale, and were subsequently removed from the dataset, did not differ significantly from those who had Bayley cognitive scale scores on age, $t(178) = -.05$, $p = .961$, parent income, $t(175) = .53$, $p = .597$, or gender, $\chi^2(1) = 3.56$, $p = .079$. However, participants were more likely to have other developmental delays besides DS or at-risk for autism, $\chi^2(2) = 15.73$, $p < .001$ (See Table 1 for demographic information). Children at-risk for autism were more likely to be male, $\chi^2(1) = 6.98$, $p = .008$, more likely to be older, $t(157.99) = -3.12$, $p = .002$, and more likely to score higher on the Bayley Cognitive scale, $t(157.52) = -3.51$, $p = .001$. These differences supported including gender and IQ as covariates in subsequent analyses.

2.2 Instruments

2.2.1 Behavior Problems Inventory (BPI-01)—The BPI-01 (Rojahn, Matson, Lott, Esbensen, & Smalls, 2001) contains 49 items measuring severe behavior disorders that have occurred once during the past two months on frequency (0 = *never*, 1 = *monthly*, 2 = *weekly*, 3 = *daily*, 4 = *hourly*) and severity (0 = *no problem*, 1 = *a slight problem*, 2 = *a moderate problem*, 3 = *a severe problem*). These severe behavior disorders are divided into three subscales: SIB (14 items), stereotypic behavior (24 items), and aggressive or destructive behavior (11 items).

The norming sample consisted of 432 individuals with ID (54% male), ranging in age from 14 – 91 (primarily adults), who were in residential care, where 84.2% of participants had severe or profound ID. The BPI-01 was administered by four graduate students by means of interviews with staff who knew participants well. From this sample, a confirmatory factor analysis found the three factor structure described above to be appropriate (Rojahn et al., 2001). Factor validity was later supported with independent confirmatory and exploratory factor analyses, and the three factor structure fit the data well (Gonzalez et al., 2009).

Frequency and severity were found to be highly correlated across subscales ($r = .90$), and for SIB specifically, ($r = .93$) (Gonzalez et al., 2009; Rojahn et al., 2001). The internal consistency of the frequency of SIB has been reported as $\alpha = .61$ (Rojahn et al., 2001), $\alpha = .48$ (Gonzalez et al., 2009), and $\alpha = .71$ (Sturmey, Sevin, & Williams, 1995). Test-retest reliability (one week delay) of the frequency scales was high with $r = .71$ (Gonzalez et al., 2009) and 96% agreement (Sturmey, Fink, & Sevin, 1993).

Inter-rater agreement was acceptable, with a kappa of .65 and 95% agreement (Sturmey et al., 1993). Criterion- related validity has been established in multiple situations. The BPI-01

was compared with the RBS-R, and correlated at $r = .77$ (Bodfish, Symons, & Lewis, 1999). The BPI-01 was compared to the ABC, and the two assessments showed largely consistent results and converged and diverged appropriately (Rojahn, Aman, Matson, & Mayville, 2003). The BPI-01 was also compared with the Autism Spectrum Disorders-Behavior Problems for Intellectually Disabled Adults (ASD-BPA; Matson & Rivet, 2008), and the two instruments converged appropriately (Rojahn, Wilkins, Matson, & Boisjoli, 2010). Overall, the BPI-01 has undergone several reliability and validity examinations, and has shown itself to be a reliable, helpful, and useful tool.

2.2.2 Bayley Scales of Infant Development, 3rd Edition—The Bayley Scales of Infant Development-3 (Bayley-3; Bayley, 2006) is an assessment for children between 1 to 42 months old with scales to assess development in five domains: Cognitive, Language, Motor, Social-Emotional, and Adaptive. The psychometric properties of the Bayley-3 are impressive, with an abundance of separate studies supporting the instrument's reliability, validity, and factor structure (Albers & Grieve, 2007; Scattone, Raggio, & May, 2011; Steenis, Verhoeven, & van Baar, 2012). Only the cognitive scale was administered at the time of entrance into this study, and these scaled scores served as an indication of IQ or intellectual disability level for the participants in this study.

2.3 Procedures

Demographic information was acquired from the parent during the initial observation (i.e., child's gender, child's age, family income, parents' marital status, and parents' education). Cognitive scores on the Bayley-3 were recorded at the first observation, and the BPI-01 was recorded at all three observations, approximately six months apart for each participant, creating one year of data on this cohort with three equally-spaced time points. At the time of this data extraction, only 23 families had dropped out of the study for various reasons (e.g., loss of cell phone contact, moving, hospitalization, or illness).

Parents of participants were provided with six workshops on strategies and support for raising a child with ID. CASP also contacted families every month by phone to monitor the child's behavior and provide suggestions for assisting with common concerns (e.g., daily living skills, eating, sleeping, and discipline). This support seemed to reduce family stress and prevent drop-out throughout the study (paper being prepared for another publication).

2.4 Statistical Analyses

For our main analyses we used an SEM framework, which assumes data are normal, continuous, or dummy coded (Willett, Singer, & Martin, 1998). We examined skewness and kurtosis values to determine whether the BPI-01 behavior disorder observations were normally distributed. All observations failed this test of normality and a Bonferroni adjustment was unsuccessful. To handle this non-normal data, we used Generalized Least-Squares (GLS) estimation. One risk to this method is that GLS may accept incorrect models and return inaccurate parameter estimates more often than ML (Olsson, Foss, Troye, & Howell, 2000). However, when the hypothetical model fits the data well and is, in reality, not false, Bollen (1989) found that GLS and ML produce identical results (e.g., fit statistics, parameter estimates).

To answer our research questions, we used SPSS Amos to build cross lagged autoregressive models of each severe behavior disorder. We entered the respective severe behavior disorder BPI-01 frequency and severity score for times 1, 2, and 3 as manifest variables with error terms. We constrained the unstandardized regression weights to be the same over time separately for frequency and severity. We added gender and IQ (cognitive scaled score from Bayley-3) as exogenous, correlated, predictors of the six time points. We also constrained the correlations among the error terms across frequency and severity to be the same for time 2 and time 3. This was our unconditional model for all three severe behavior disorders. We then tested models which compared the model of frequency as a leading indicator of severity and severity as a leading indicator of frequency to the unconditional model, and the cross-lagged model to the best fitting uni-directional model. Chi-square statistics were used from each model in chi-square change tests to determine the best fitting model of behavior disorder; hence, we were examining relative fit rather than absolute fit.

To answer our first research question about the stability of frequency and severity in behavior disorders, we examined the stability coefficients (i.e., autoregressive parameters). Using recommendations made by Choudhury (2009), we determined the strengths of these coefficients, and therefore the strength of stability.

To answer our second research question, does earlier frequency set the stage for worse severity later on, does earlier severity set the stage for higher frequency later on, or are both sets of association involved, we found the best fitting models by using the procedure described above. These models included no cross lags, uni-directional cross lags, or bidirectional cross lags and thus described for each behavior which model best represented the data.

To answer our third research question of whether the best fitting models varied across diagnostic groups, we performed a multi-group analysis for each behavior disorder, comparing the sample of toddlers at-risk for autism and toddlers with other developmental delays. We used a similar strategy of examining relative fit across models which allowed the best fitting model to vary across groups, a model which constrained the stability between time points to be the same across groups, and models which constrained the frequency and severity lags to be the same across groups.

3 Results

3.1 Stability in Frequency and Severity Scores

The best fitting models, which constrained the unstandardized frequency and severity regression paths respectively, showed different levels of stability for the severe behavior disorders (See Figure 1 for the standardized path coefficients). The frequency of both SIB and stereotypy appeared to be stable over time, with betas ranging from .51 to .92; whereas the frequency of aggressive behavior was weak and unstable, with betas ranging from .09 to .10. However, the severity of both SIB and stereotypic behavior was unstable, with betas ranging from .14 to $-.23$, while the severity of aggression was stable over time, with betas ranging from .62 to .67. Interestingly, these paths were weak and negative for the severity of

stereotypy over time, meaning that more severe behaviors earlier were related to less severity behavior in the future.

3.2 Predicting Later Scores with Earlier Scores

Each type of behavior provided its own answer to this question based on its final model. The best fitting model for SIB was a unidirectional model which accounted for frequency as a leading indicator of severity (see Table 2 and Figure 1), with betas ranging from .33 to .39. The bidirectional model was trending towards significance, but the unidirectional, frequency leading to severity model was the best, most parsimonious representation of the data. This means that frequency is an influential variable in the development of SIB frequency and severity over time, holding gender and IQ constant. Children who exhibited highly frequent self-injury tended to have more frequent and more severe SIB at later time points, controlling for child's gender and IQ.

The best fitting model for stereotypy was a fully cross-lagged auto regressive model, with both frequency and severity involved as leading indicators of future stereotypy (see Table 2 and Figure 1). The path coefficients show that the frequency of stereotypy was strongly related to the frequency (with betas ranging from .90 to .92) and severity (with betas ranging from .79 to .80) of later stereotypy, meaning that children who exhibited highly frequent stereotyped behavior also exhibited highly frequent and highly severe stereotyped behavior in the future. The severity of stereotypy was negatively related to the future frequency (with betas ranging from $-.29$ to $-.41$) and severity (with betas ranging from $-.19$ to $-.23$) of stereotypy, meaning that the severely stereotypic behaviors were associated with less frequent and less severe stereotypy in the future. These relationships were found while controlling for child gender and IQ.

The best fitting model for aggression included paths from earlier severity to later frequency (Table 2 and Figure 1). The high standardized path coefficients show that the severity of aggressive behavior is associated with later frequency (with betas ranging from .49 to .53) and severity (with betas ranging from .62 to .67). This means that severity is an influential element in the development of aggressive behavior's frequency and severity over time, holding gender and IQ constant. In other words, children who exhibited severely aggressive behavior were likely to show more severe and highly frequent aggression in the future, controlling for gender and IQ.

3.3 Do These Relations Change as a Function of Diagnostic Group?

The multi-group analyses showed that the models generalized to both groups (at-risk for autism and other developmental delays) for SIB, stereotypy, and aggression (Table 3). In other words, the models did not fit worse when constrained to fit across both groups.

4 Discussion

This research investigated the relationships among frequency and severity for three severe behavior disorders (SIB, stereotypy, and aggression) in children who were diagnosed or at risk for various IDs (i.e. DS, at-risk for Autism, or other delays). Three findings emerged: there was variability in the stability of frequency and severity over time, there was

variability in the models of these factors across different severe behavior disorders, and these models of severe behavior disorder did not vary across diagnostic categories.

4.1 Variable Stability of Frequency and Severity

We found that the frequency of SIB and stereotypic behaviors were relatively stable over time, which supports several previous studies (i.e., Fodstad et al., 2012; Furniss & Biswas, 2012; Taylor, Oliver, & Murphy, 2011). Whereas those studies compared average rates of behavior disorders over large periods of time, this study examined the behaviors within a much tighter timeframe of one year. However, we found that the severity of SIB and stereotypy were relatively unstable even within that restricted time range. We also found, however, that while the severity of the aggressive behavior was quite stable, its frequency was unstable. These findings highlight the importance of treating various severe behavior disorders as distinct behaviors, with two potential targets for intervention: the frequency and severity of the behaviors. For example, a child exhibiting severe SIB may not be as concerning as severe aggressive behavior, and a child exhibiting highly frequent SIB may be more concerning than highly frequent aggressive behavior.

4.2 Variable Models Depending on the Type of Severe Behavior Disorder

We found each domain of severe behavior disorder had a different way that frequency and severity played out over time. The frequency of SIB was a strong leading indicator of later SIB frequency and later severity, which was somewhat similar to the findings of Totsika et al. (2008). This could be of importance to caregivers and practitioners creating or implementing behavior modification plans. A main target for SIB interventions should be the frequency of the behavior to potentially lower the development of more severe and frequent SIB in the future.

The frequency of stereotyped behavior was a strong leading indicator of the future frequency and severity of stereotyped behavior. Concurrently, the severity of stereotypy was a negative leading indicator of future severity and frequency. This negative relationship may be due to concerned parents receiving more specific or helpful suggestions during the intervention. When their child displayed highly severe stereotypy earlier in the study, the research staff's support and guidance may have modified parent behaviors to produce decreases in frequency and severity at later points in the study. Parents may have been more concerned, expressed more concern, and received more information in response to highly severe stereotypy relative to highly frequent stereotypy.

The severity of aggression was a leading indicator of the frequency of later aggression. This provides an argument to those who currently remove severity data from their studies for simplicity reasons, due to the common correlation between these topographies. Stereotypy was best described using a cross-lagged auto regressive model, where both frequency and aggression were both involved as leading indicators. This information could be useful for practitioners, caregivers, and families in terms of assessment and target variables for behavioral interventions.

4.3 Similar Models across Diagnostic Categories

Finally, we found that these distinct severe behavior disorder models did not differ significantly between the toddlers at-risk for autism and the toddlers with other developmental delays. This may support the practice of assessing and intervening similarly to combat distinct severe behavior disorders, regardless of diagnostic categories. The lack of distinction that we found could be due to the diagnostic categories not having differentiated yet behaviorally at this young age. Thus, this conclusion should only be applied to cases of individuals in early intervention programs or prior to receiving any formal IDD diagnosis. Some research has shown similar findings in infants and toddlers with severe behavior disorders (Sipes, Rojahn, Turygin, Matson, & Tureck, 2011); whereas, others have found distinct patterns of severe behavior disorders for toddlers at risk for autism (Matson, Mahan, Sipes, & Kozlowski, 2010).

5 Limitations

One limitation to the current study is the period of observation. As discussed by Mitchell and James (2001) and Singer and Willet (2003), the time of measurement is crucial for identifying relationships between variables. Although equally spaced and during the early years of rapid developmental growth, three observations over a year may not have been the specific observations required to accurately represent the larger picture of how these behaviors progress over time. Future research would benefit from a longer study and more points of observation around periods of intense development that take place in the early years.

A second limitation to this study is that the parents of participants had access to a mild behavioral intervention throughout the year that they were observed. This clearly changed the type of data obtained and could be considered a very particular sample within this population, limiting generalizations. However, the percentage of individuals with IDD who seek as well as receive assessments and services for severe behavior disorder is high, given our improvements in this area over the past years. Since families of children with IDD are most likely provided similar behavior intervention experiences, we argue that the results of these models can be generalized to a typical individual with IDD. Future research should collect data to examine the potential confounding effects of an intervention program for severe behavior disorder development and progression, since parents of different severe behavior disorders could have received slightly different information and support.

A third limitation to this study is the small number of diagnostic categories represented. As these severe behavior disorders are commonly exhibited by several genetic disorders (e.g., Smith Magenis Syndrome and Cornelia de Lange Syndrome), future research should examine how well these models hold up across other diagnoses and in populations of children without any diagnosis or risk for diagnosis. The development of these behaviors in an otherwise typically developing population could provide a good basis of comparison for just how atypical these severe behavior disorders are in a group of young children.

Finally, as with all SEM analyses, causal conclusions cannot be made, and the relationships among the variables are simply correlations. The advantage of examining models of patterns

of behavior is not without its disadvantages. However, we believe this research adds a new perspective on this field, and is worth pursuing to assist in the development of interventions for children with highly frequent and severe behavior disorders. Another limitation of SEM is that the models are data specific, as we are examining the how well the specific data fits these theoretical models. As this dataset was not large enough to split and conduct validating replication studies, future research should pursue replication of these models with various datasets of severe behavior disorders.

This research brings a relatively new type of statistical research in the IDD population. We examined the theoretical models of the relationship between frequency and severity among severe behavior disorders across different diagnostic groups. More studies are needed that attempt to establish a theoretical model for the development and progression for various severe behavior disorders for various diagnostic categories. While previous researchers have tended to eliminate severity data in favor of a simpler frequency study, our findings support the inclusion of severity as providing important additional information. Finally, this study supports generally treating toddlers with developmental delays and toddlers at-risk for autism as similar in their progression of particular severe behavior disorders, but treating different severe behavior disorders as unique in their progression and influences.

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Figure 1.

Best fitting models with standardized path coefficients.

Notes: For simplicity, covariates (gender and IQ) and error terms have been removed from the figure. f = frequency; s = severity.

Table 1

Demographic Information by Group

	Groups		
	At risk ASD	Down Syndrome	Other
N	72	44	49
Females	24.30%	56.10%	34.70%
Males	75.70%	43.90%	65.30%
Mean Age in months at time 1 (<i>SD</i>)	30.01 (8.11)	21.93 (10.02)	28.35 (10.12)
Bayley Cognitive Score (<i>SD</i>)	6.23 (2.72)	3.76 (3.04)	5.22 (3.42)
Self-injury present at time 1	94.30%	82.90%	75.50%
Stereotypy present at time 1	98.60%	68.30%	83.70%
Aggression present at time 1	87.10%	78.00%	81.60%

Table 2

Chi-square Change Test Statistics

<i>SIB</i>	χ^2	<i>df</i>	χ^2	<i>df</i>	<i>p</i>
Unconditional	43	11			
F->S*	33.8	10	9.2	1	.002
S->F	34	10	9	1	.003
F<->S	30.9	9	2.9	1	.089
<i>Stereotyped Behavior</i>					
Unconditional	59	11			
F->S	38.2	10	20.8	1	.000
S->F	58.3	10	0.7	1	.403
F<->S*	32.3	9	5.9	1	.015
<i>Aggressive/Destructive Behavior</i>					
Unconditional	55.7	11			
F->S	43.8	10	11.9	1	.001
S->F*	27.8	10	27.9	1	.000
F<->S	27.7	9	0.1	1	.752

Note: F = Frequency; S = Severity;

* best fitting model

Table 3

Chi-square Change Test Statistics for Multi-Group

<i>SIB</i>	χ^2	<i>df</i>	χ^2	<i>df</i>	<i>p</i>
Free to vary	51.3	22			
Stability constrained	51.4	24	0.1	2	.951
F->S constrained	53.8	25	2.5	3	.475
<i>Stereotype Behavior</i>					
Free to vary	51.2	20			
Stability constrained	52.1	22	0.9	2	.638
F->S constrained	52.1	23	0.9	3	.825
S->F constrained	52.1	23	0.9	3	.825
Cross-lag constrained	52.1	24	0.9	4	.925
<i>Aggressive/Destructive Behavior</i>					
Free to vary	40.55	20			
Stability constrained	45.51	22	4.96	2	.084
S->F constrained	45.92	23	5.37	3	.147

Note: F = Frequency; S = Severity