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Coping in the chair: A validation study of the Monitoring Blunting Dental Scale

A thesis presented in partial fulfilment of the requirements for the degree of

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Matthew Neil Williams

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Abstract

The monitoring-blunting theory of coping in threatening situations (Miller, 1981, 1987) suggests that when faced with a threatening situation, individuals can respond either by attending to threatening information (“monitoring”) or by avoiding threatening information (“blunting”). A valid and reliable measure of children’s preferred coping styles in dental situations may assist dental staff in providing efficacious anxiety-reducing interventions to diverse groups of children. The current study sought to validate a scale of children’s preference for monitoring or blunting in dental situations (the Monitoring Blunting Dental Scale or MBDS). The psychometric characteristics of the scale were assessed in a group of 240 eleven to thirteen year old New Zealand children. Internal consistency reliability was adequate for both the monitoring (\(\alpha = .743\)) and blunting (\(\alpha = .762\)) subscales. Convergent validity was indicated by strong correlations (> .6) between the MBDS monitoring and blunting subscales and those of an adapted version of the Child Behavioural Style Scale (CBSS-M). Discriminant validity with respect to dental anxiety was strong for the monitoring subscale, \(r = .079, p = .221\), but not the blunting subscale, \(r = .478, p <.001\). Confirmatory factor analysis of the MBDS indicated adequate fit for a two factor monitoring-blunting model (RMSEA = .079), but unacceptable fit for a one factor model (RMSEA = .095). A similar finding was observed when confirmatory factor analysis of the CBSS-M was conducted. These confirmatory factor analyses suggested that the monitoring and blunting theoretical constructs cannot be justifiably regarded as representing poles of a single underlying dimension, but are better regarded as distinct, related constructs. A content analysis of children’s comments about the coping strategies they might adopt in several dental scenarios indicated that these strategies were largely classifiable within monitoring-blunting theory, with blunting-type strategies much more commonly mentioned. Given further validity evidence, the MBDS could be a useful measure when attempting to tailor anxiety-reducing interventions in dental settings to children with diverse coping preferences.
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Approval was obtained for this study from the Massey Human Ethics Committee (MUHEC Southern A 09/37).
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Abbreviations

ADF Asymptotically Distribution-free Estimator; a model estimation method (and discrepancy function) for estimating structural equation models.

AMOS A computer program used to evaluate structural equation models; short for Analysis of Moment Structures (Arbuckle, 2008).

CBSS Child Behavioural Style Scale (Miller, Roussi, Caputo, & Kruus, 1995). An adapted version of the CBSS was used in the current study (CBSS-M).

CBSS-M Child Behavioural Style Scale – Medical situations (an adaptation of the CBSS for the current study).

CFA Confirmatory Factor Analysis.

CFI Comparative Fit Index, a measure of the goodness of fit of a given SEM model in comparison to a null model for the same dataset (usually an independence model, with zero population correlations between variables).

CFSS-DS Children’s Fear Survey Schedule – Dental Subscale (Cuthbert & Melamed, 1982).

DAS Dental Anxiety Scale (Corah, 1969).

DMFS Decayed/Missing/Filled Surfaces (a “global” measure of oral health; the sum of a subject’s decayed, missing and filled tooth surfaces).

DMFT Decayed/Missing/Filled Teeth, a simpler and more commonly reported global oral health index; applies to whole tooth counts rather than tooth surfaces.

EFA Exploratory Factor Analysis.

IRT Item Response Theory, a paradigm for the design and analysis of psychometric tests.

KMO Kaiser-Meyer-Olkin measure of sampling adequacy, a measure of the appropriateness of a correlation matrix for factor analysis.
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>MAR</td>
<td>Missing At Random, an assumption with regard to the process underlying the missing data in a dataset; missingness on a variable is assumed to be unrelated to the level of that variable after controlling for all other variables in the analysis (Allison, 2001).</td>
</tr>
<tr>
<td>MBSC</td>
<td>Monitoring and Blunting Scale for Children (Kliewer, 1991; Lepore &amp; Kliewer, 1989).</td>
</tr>
<tr>
<td>MBSS</td>
<td>Miller Behavioural Style Scale (Miller, 1987), a general measure of monitoring and blunting coping preferences.</td>
</tr>
<tr>
<td>MCAR</td>
<td>Missing Completely At Random, a missing data assumption: probability of missingness is assumed to be unrelated to any study variable.</td>
</tr>
<tr>
<td>MCDAS</td>
<td>Modified Child Dental Anxiety Scale (Wong, Humphris, &amp; G. T. Lee, 1998).</td>
</tr>
<tr>
<td>MCI</td>
<td>Mainz Coping Inventory (Krohne et al., 2000).</td>
</tr>
<tr>
<td>MLE</td>
<td>MLE: Maximum Likelihood Estimation (used here with reference to the maximum likelihood estimator/discrepancy function for CFA/SEM models).</td>
</tr>
<tr>
<td>PCLOSE</td>
<td>The p value for the RMSEA test of close fit for a structural equation model (Browne &amp; Cudeck, 1993).</td>
</tr>
<tr>
<td>RMSEA</td>
<td>Root Mean Square Error of Approximation, a measure of the goodness of fit of a structural equation model.</td>
</tr>
<tr>
<td>SEM</td>
<td>Structural Equation Modelling. CFA models are a subtype of SEM model.</td>
</tr>
<tr>
<td>SFPS</td>
<td>Smiley Faces Paper Scale, the dental anxiety measure utilised in the current study; adapted from the computerised Smiley Faces Program (Buchanan, 2005).</td>
</tr>
<tr>
<td>SRMR</td>
<td>Standardised Root Mean square Residual, a measure of the goodness of fit of an SEM model.</td>
</tr>
<tr>
<td>TMSI</td>
<td>Threatening Medical Situations Inventory, a scale measuring monitoring and blunting preferences in medical situations (van Zuuren, de Groot, Mulder, &amp; Peter, 1996).</td>
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</table>