

# Package ‘mxmmod’

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**Type** Package

**Title** Measurement Model of Derivatives in 'OpenMx'

**Version** 1.1.0

**Description** Provides a convenient interface in 'OpenMx' for building Estabrook's (2015) <[doi:10.1037/a0034523](https://doi.org/10.1037/a0034523)> Measurement Model of Derivatives (MMOD).

**License** Apache License 2.0

**Encoding** UTF-8

**LazyData** true

**Imports** OpenMx

**Suggests** knitr, rmarkdown, testthat, tidyverse

**VignetteBuilder** knitr

**RoxygenNote** 7.1.1

**Depends** R (>= 2.10)

**NeedsCompilation** no

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**Repository** CRAN

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 mxMmodModel

*Create an MMOD*


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### Description

This function builds a Measurement Model of Derivatives (MMOD; Estabrook 2015) with a given factor structure.

### Usage

```
mxMmodModel(
  data,
  modelName,
  idvar,
  timevar,
  structure,
  orthogonal = F,
  embed_dim = NULL,
  fiml = F
)
```

### Arguments

<code>data</code>	a data frame with measurements in long format
<code>modelName</code>	name for the resulting model
<code>idvar</code>	name of column for subject IDs
<code>timevar</code>	name of column for measurement occasion
<code>structure</code>	factor structure, see 'Details'
<code>orthogonal</code>	if true, fix correlations between factors to 0 (A factor and its derivatives will still intercorrelate)
<code>embed_dim</code>	time delay embedding dimension
<code>fiml</code>	if true, use raw data to fit model with FIML. Otherwise, fit using cov matrix (dropping missing values if necessary).

### Details

The structure argument is a list of latent factors and their mappings to manifest variables. For example, a one factor structure would be:

```
list(F1 = c('m1', 'm2', 'm3', 'm4', 'm5', 'm6'))
```

And a two factor structure would be:

```
list(F1 = c('m1', 'm2', 'm3'), F2 = c('m4', 'm5', 'm6'))
```

### Value

an MMOD as an mxModel object

## Examples

```
data(nlsy97depression)
# Fit one factor MMOD
structure <- list(
  F1 = c('nervous', 'down', 'depressed', 'calm', 'happy')
)
mmod_model <- mxMmodModel(data=nlsy97depression,
                          modelName='1 Factor MMOD',
                          idvar='pid', timevar='occasion', structure=structure)
mmod_fit <- OpenMx::mxRun(mmod_model)
summary(mmod_fit)
```

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nlsy97depression      *NLSY97 Longitudinal Depression Scale Data*

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## Description

A 5-item depression scale used on the National Longitudinal Survey of Youth, 1997 sample (NLSY97). Individuals were assessed in 2000, 2002, and 2004. All items are assessed on a 4-point likert scale.

## Usage

```
nlsy97depression
```

## Format

A data frame with 26952 rows and 7 variables:

**pid** Unique ID of participant  
**sex** Sex of participant  
**birth\_m** Birth Month  
**birth\_y** Birth Year  
**occasion** Measurement occasion  
**nervous** How often participant felt 'like a nervous person'  
**calm** How often participant felt 'calm and peaceful'  
**down** How often participant felt 'down or blue'  
**happy** How often participant felt 'like a happy person'  
**depressed** How often participant felt 'depressed'

## Source

<https://www.bls.gov/nls/nlsy97.htm>

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