

The relationships between social factors and basic psychological needs: A Bayesian
Structural Equation Modeling study

Jaime León and Juan L. Núñez

University of Las Palmas de Gran Canaria, Spain

Abstract

The relationships between social factors such as autonomy support, structure and involvement and the basic psychological needs (autonomy, competence and relatedness) has been a topic of several studies in the self-determination theory framework. In some studies it has been posit that autonomy support, structure and involvement predicts only autonomy, competence and relatedness respectively; while in others, the effect of autonomy support, structure and involvement in all psychological needs altogether have been studied. We propose another approach for this topic based on Bayesian Structural Equation Modeling (BSEM). In BSEM parameters are seen as variables instead of constants as is in Maximum Likelihood (ML), also when estimating loadings with ML some of them are freed and others are fixed to 0, in BSEM, instead of fixing them to 0, we can set a small variance, so this loading is not exactly 0.

The goal of the study was to explore the more appropriate way to study the relationships between the variables above mentioned. To achieve this goal three models were tested, a model with no priors specification (model 1), where autonomy support predicted autonomy, structure predicted competence and involvement predicted relatedness. A cross regression model (model 2), where the effect of the autonomy support on competence and relatedness, the effect of involvement on autonomy and competence, and the effect of structure on autonomy and competence were allowed with mean of 0 and standard deviation of 0.01. In the third model (model 3), in addition to the flexibility of Model 2, cross loadings, on one side between autonomy support, structure and involvement and, on the other side, between basic psychological needs were allowed with mean of 0 and standard deviation of 0.01.

A total of 2561 high school students between 13 and 18 years old took part in this study. Results showed that for model 1, the Deviance Information Criterion (DIC) was

351211.578; for model 2, DIC = 351211.837; and for model 3, DIC = 350710.168. So the third model fitted better. In this model the effect of autonomy support on autonomy was $\beta = .233$, on competence was $\beta = .066$ and on relatedness was $\beta = -.006$. The effect of structure on autonomy was $\beta = .158$, on competence was $\beta = .367$ and on relatedness was $\beta = -.003$. Finally, the effect of involvement on autonomy was $\beta = .271$, on competence was $\beta = -.046$ and on relatedness was $\beta = .918$.

In conclusion, it is recommended to study autonomy, competence and relatedness taking into account the effect of the three social factors, autonomy support, structure and involvement altogether as well as allow some small cross loadings.

Keywords: Autonomy support; Basic psychological needs; BSEM; Involvement; Self-determination; Structure.

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tascAut by tasEs05-tasRI19 (a01-a14);

tascCmp by tasAu03-tasAu24 tasRI01-tasRI19(b01-b16);

tascRel by tasAu03-tasEs23 (c01-c14);

bpneAut by bpnCmp03-bpnRIP20 (d01-d10);

bpneCmp by bpnAut01-bpnAut09 bpnRIP04-bpnRIP20(e01-e10);

bpneRel by bpnCmp03-bpnRIP20 (f01-f10);

bpneRel ON tascRel (ra);

bpneRel ON tascAut (rb);

bpneRel ON tascCmp (rc);

bpneAut ON tascAut (rd);

bpneAut ON tascRel (re);

bpneAut ON tascCmp (rf);

bpneCmp ON tascCmp (rg);

bpneCmp ON tascRel (rh);

bpneCmp ON tascAut (ri);

MODEL PRIORS:

a01-f10 ~ N(0.00, 0.01);

rb ~ N(0.00, 0.01);

rc ~ N(0.00, 0.01);

re ~ N(0.00, 0.01);

rf ~ N(0.00, 0.01);

rh ~ N(0.00, 0.01);

$r_i \sim N(0.00, 0.01);$