Validating SRQ-A and BPNS for middle school children: the factor structure under scrutiny

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INTRODUCTION

The aim of the present study was to investigate the factor structure of SRQ-A and BPNS in (Danish) children of young age (10-13 years).

Measuring engagement and mediators of engagement in middle-school pupils is central to facilitate learning and prevent future drop-out (e.g., Finn, 1989; NRC, 2004; Finn & Zimmer, 2012; Skinner & Pitzer, 2012).

Most research on engagement has been done on high-school with a drop-out prevention focus (see Reschly & Christenson, 2012).

Using the framework of Self-System Model of Motivational Development (SSMMD; Connell, 1990; Connell & Wellborn, 1991) it becomes paramount to measure basic need satisfaction at an early age to guide engagement facilitating interventions. SRQ-A (Ryan & Connell, 1989) and BPNS (Ryan & Deci, 1998) might be relevant in this matter.

It was expected that: 1) SRQ-A distinguishes between external and internal regulatory styles. A distinction between all four regulatory styles is more questionable based on previous research (Ryan & Connell, 1989; Hayamizu, 1997; Yamauchi & Tanaka, 1998); 2) BPNS distinguishes between the three needs. BPNS is not meant for children which might challenge the distinction; 3) a subject specific focus using 5-point likert-scales will improve the statistical distinctions in both questionnaires.

METHOD

Two similar studies:
School-1: 104/163 participants (Answer percentage: 63,8; Age: M = 11,3; Gender: 50,0% female)
School-2: 128/143 participants (Answer percentage: 89,5; Age: M = 11,4; Gender: 43,8% female)

Procedure:
- Questionnaire including SRQ-A and BPNS (and parts of SARAC) were administered in classroom. Teachers read out loud if deemed necessary. Teachers were given no training or information on the questionnaire in advance.
- All measures had been translated into Danish by author of this poster. Translations were discussed with research unit leading to formulation that Danish children would find natural.
- On School-1 all measures used 4-point likert-scales and all questions focused on situation “in school” (e.g. a broad school focus was used). On School-2 all measures used 5-point likert-scales with neutral center (e.g. “in between”) and all questions focused on situation “in the subject Danish” (e.g. a specific school subject was used as focus).
- Exploratory factor analysis was done using “Principal Axis Factoring” in SPSS. A “direct oblimin” rotation was employed, since factors were assumed to correlate.

RESULTS

Table 1 (above) summarizes BPNS, School-2. Two factors with moderate correlation were deduced using Cattell’s scree-plot method. Note the expected structure for competence and relatedness, but a split structure for autonomy (see 2 below).

Table 2 (right) summarized SRQ-A, School-1. Four factors with negligible to moderate correlation were deduced using Cattell’s scree-plot method. Note the split structure of introjected and the cross-loading for identified regulatory style (see 1 below).

For both tables: All loadings below +/- .20 are removed and all above +/- .40 are in bold to ease interpretation.

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DISCUSSION

Results partly supported hypotheses. 1) SRQ-A distinguished between external and internal regulatory style; 2) BPNS distinguished between need for competence and need for relatedness (although factors were moderately correlated).

1) Items measuring introjected and identified regulatory style were problematic: The former split in items most correlated with extrinsic regulatory style and items more correlated with identified regulatory style. The latter showed crossloadings across multiple factors. This pattern confounds the distinction between all four regulatory styles and the distinction between a dichotomous understanding of external vs. internal regulatory styles.

2) Measuring need for autonomy proved complex at the studied child age: Autonomy-items split in items correlated to relatedness and items either uncorrelated to other items or correlated to each other by presumably measuring autonomy in task completion.

3) The use of subject-specific focus improved communalities for BPNS, but not for SRQ-A. It is possible that the way questions are asked only one time for each block of eight items in SRQ-A might make the subject-specific focus more indistinct. 5-point likert-scales improved the data through lower skewness and kurtosis, and comparable factor structures as 4-point likert-scales.

Future work needs to be done to measure children’s need for autonomy in a valid way. SRQ-A might be an option (e.g. Skinner, Furrer, Marchand & Kindermann, 2008; Skinner, Kindermann & Furrer, 2009) although it presumably measures reason for acting not degree of satisfied autonomy. E.g. SRQ-A measures a derivate/result of autonomy, not autonomy satisfaction per se.

Another aim for future research would be optimizing the items concerning introjected and identified regulatory styles so that these are not crossloading across a distinction between external and internal regulatory style.

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