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# Brief report: A confirmatory approach to the validation of the peer group norm questionnaire

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ABSTRACT

This study evaluates the internal validity of the "Perception of Peer Group Norms Questionnaire" (PPGNQ), a 17-item measure that assesses middle school students' perceptions of positive and negative norms among their grade mates. The sample consisted of 1073 Grade 6 students. The factorability of the two hypothesized factors was assessed with Exploratory Factor Analysis and a clear two-factor structure emerged. Using Confirmatory Factor Analysis this two-factor model evidenced good fit once items of similar wording and subject matter were permitted to correlate. Support was found for metric, strict, scalar, construct and latent means invariance between genders, suggesting that boys and girls perceived items similarly. The results indicate that the PPGNQ may be recommended as a research questionnaire that demonstrates high internal validity and measurement invariance, and can be used to study the influence of the perception of both negative and positive norms on adolescent behavior in school settings.


Through the actions of their members, peer groups communicate information about what is socially accepted (Borsari & Carey, 2001). By knowing how others typically behave and what is approved of, individuals can effectively determine how to act in any given context (Cialdini, Reno, & Kallgren, 1990; Lapinski & Rimal, 2005). In young adolescence, a developmental period during which fitting in is meaningful, knowing and understanding what is socially normative is influential when making behavioral decisions (Berndt, 1982).

Studies on normative influence largely assess social norms by measuring the extent to which participants engage in a particular behavior and then creating an aggregate score that represents the prevalence of that behavior. However, for social norms to exert influence, individuals must first perceive and understand what is normative within their reference group. This perception likely differs from the aggregated social norm largely used in research and likely varies from person to person within the same group (Rimal, 2005). In their study on the influence of the perception of peer-group norms in middle school, Véronneau, Marshall-Denton, Vaillancourt, and Dishion (2014) showed that viewing positive school behavior as normative is predictive of increases in grade-point average (GPA) over time, meanwhile perceiving problematic behaviors as normative within the same reference group leads to decreases in GPA. Similarly, perceiving substance use as normative predicts higher levels of use over time. How one appraises peer group drinking norms, bicycle helmet wearing norms, studying norms and healthy eating norms has also been demonstrated to influence adolescent behavior in those respective areas (Galván, Spatzier,

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& Juvonen, 2011; Lajunen & Rasanen, 2004; Song, Smiler, Wagoner, & Wolfson, 2012; Stok, de Ridder, de Vet, & de Wit, 2014). No other valid measure assessing perception of peer group norms exists.

Given the importance of adolescents' perceptions of their peers' behavior on their own behavioral choices, developing a valid tool that assesses youths' appraisal of peer group norms would be informative to conducting research on peer influence and to implementing and evaluating interventions that involve peer norm perceptions.

The goal of the present study is to evaluate the internal validity of the "Perception of Peer Group Norms Questionnaire" (PPGNQ), a measure created as part of the Next Generation Project to assess middle school students' perceptions of positive and negative norms among their grade mates. We hypothesize that two negatively correlated factors, corresponding to a positive norms factor and a negative norms factor, will emerge.

## Method

### *Participants and procedure*

Participants are 1073 students recruited in eight middle schools in the Pacific North West of the United States. Participants were assessed using paper pencil questionnaires in Grade 6 (*M* age: 12.1 years). The sample consists of 45.5% males and participants were primarily of European descent (78.2%). The principal investigator obtained the Institutional Review Board's approval from his university to conduct this study.

### *Measure*

The PPGNQ is composed of 17 items. Participants are asked to rate how many students in their class participate in different activities or behaviors, on a 6-point Likert-type scale ranging from 0 (*none*) to 5 (*almost all*). Items refer to positive behaviors ("Students who work to complete homework", "Students who are friendly to other students") or negative behaviors ("Students who may have tried or use alcohol", "Students who fight or bully others"). The full item list is available in Table 1. A high rating on an item indicates that the respondent perceives that behavior as highly common among his or her peers; in other words, the behavior is considered to be normative.

### *Analytic strategy*

First, we assessed the factorability of the two hypothesized factors with exploratory factor analysis (EFA) using SPSS v.21, and we evaluated the internal consistency of the proposed subscales (Fields, 2005). Second, we performed a confirmatory factor analysis (CFA) using a robust maximum-likelihood estimation method in MPlus v.7.11 to evaluate the two-factor structure, and finally, we conducted an analysis of measurement invariance in order to establish whether the model structure was equivalent across genders (Byrne, 2012).

**Table 1**
Full items, factor matrix, communalities ($h^2$), item means, and standard deviations.

| Item | Factor loading | $h^2$ | M | SD |
|---|---|---|---|---|
| Factor 1: Negative peer group norms | | | | |
| N1 – Students who may have tried or used tobacco | .68 | .54 | 1.49 | .76 |
| N2 – Students who may have tried or drink alcohol | .73 | .58 | 1.69 | .97 |
| N3 – Students who may have tried or used marijuana | .68 | .56 | 1.36 | .68 |
| N4 – Students who fight or bully | .55 | .41 | 2.13 | .99 |
| N5 – Students who steal or lie to adults | .60 | .43 | 2.01 | .98 |
| N6 – Students exposed to tobacco by family or friends | .75 | .64 | 1.91 | 1.05 |
| N7 – Students exposed to alcohol by family or friends | .76 | .64 | 2.01 | 1.10 |
| N8 – Students exposed to marijuana by family or friends | .73 | .56 | 1.44 | .75 |
| Factor 2: Positive peer group norms | | | | |
| P1 – Students who try to set goals for school-success | .40 | .30 | 4.24 | 1.34 |
| P2 – Students who complete class-homework | .47 | .42 | 4.70 | 1.14 |
| P3 – Students who value health and behaviors that are healthy | .51 | .44 | 4.54 | 1.23 |
| P4 – Students who resist peer activities involving tobacco, drugs and alcohol | .20 | .13 | 5.04 | 1.42 |
| P5 – Students who are friendly to you | .57 | .37 | 4.91 | 1.17 |
| P6 – Students who treat teachers with respect | .68 | .57 | 4.77 | 1.16 |
| P7 – Students who treat students with respect | .72 | .63 | 4.58 | 1.18 |
| P8 – Students who solve problems and conflicts peacefully with students | .69 | .58 | 4.32 | 1.30 |
| P9 – Students who solve problems and conflicts peacefully with teachers | .69 | .58 | 4.19 | 1.33 |