Effects of the KiVa Anti-Bullying Program on Adolescents'
Perception of Peers, Depression, and Anxiety

By

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Abstract

Bullying is associated with negative developmental outcomes for both the bully and the victim. Consequently, several school-based intervention programs have been developed to prevent such behaviors. A recently developed bullying intervention program in Finland (the KiVa program) placed concerted emphasis on enhancing the empathy, self-efficacy, and anti-bullying attitudes of onlookers, who are neither bullies nor victims. Importantly, the KiVa program is designed to enhance the role of bystanders thereby reducing the rewards gained by bullies and consequently their motivation to bully. The present study included 8,613 students from 78 schools who were randomly assigned to either an intervention or control condition. Structural equation modeling (SEM) was used to test whether the KiVa program reduced depression and anxiety symptoms and increased students' positive perceptions of their classmates. A cross-lagged panel model suggested that the KiVa program was effective for reducing students' depression and anxiety symptoms and improving their peer-group perceptions among intervention participants as compared to controls. Implications of the findings and future directions for research are discussed.

Keywords: Bullying, prevention, KiVa, program evaluation, structural equation modeling

Bullying is defined as repeated acts of aggression towards a victim who is weaker in regards to physical size, social status, or other factors (Merrell, Gueldner, Ross, & Isava, 2008; Olweus, 1991). A defining characteristic of bullying is that a power differential exists between the bully and the victim, which the bully effectively exploits. Research has suggested that bullying is universal (Smith & Brain, 2000) and is associated with maladjustment for both bullies (Coie & Dodge, 1998; Feshbach, 1970; Ladd, 2005; Parke & Slaby, 1983; Hawley, Little, & Rodkin, 2007) and victims (Biggs el al., 2010; Card, 2003; Card, Isaacs, & Hodges, 2007). Specifically, victimization is related to psychosocial maladjustment such as high levels of depression and anxiety (Card, Stucky, Sawalani, & Little, 2008). Victimization has also been found to independently contribute to increasingly negative perceptions of peers (Troop-Gordan & Ladd, 2005. That is, the more children are victimized, the more they view peers as hostile, untrustworthy, and unsupportive (Salmivalli & Isaacs, 2005). The present study extends a previous study that found that the KiVa bullying intervention program reduced victimization (Kärnä et al., 2010). The present study analyzed outcome measures (victimization, perception of peers, depression, and anxiety) to find if they were being measured in a similar manner in both study groups (intervention and control) and across time, as well as to test whether reductions in peer-reported victimization predict improvement in students' self-reported anxiety and depression as well as their peer-group perceptions.

Victimization has been shown to be an independent and unique contributor to future adjustment problems (DeRosier, Kupersmidt, & Patterson, 1994; Hugh-Jones & Smith, 1999; Olweus, 1993). Children who are victimized by their peers often experience problems such as depression, anxiety and negative peer perceptions (Hodges & Perry, 1999; MacKinnon-Lewis,

Rabiner, & Starnes, 1999; Salmivalli & Isaacs, 2005), and more frequent peer victimization has been linked to increases over time in self-reported depression symptoms, anxiety symptoms, and negative perception of peer relationships (Olweus, 1993; Parker & Asher, 1987; Vernberg, Abwender, Ewell, & Beery, 1992; Vernberg, 1990).

Multiple studies have reported that children who have been victimized by their peers are more likely to feel less happy and more depressed than nonvictimized children (Austin & Joseph, 1996; Boivin, Hymel, & Bukowski, 1995; Crick & Grotpeter, 1996; Kaltiala-Heino et al., 1999; Slee, 1995; Vernberg, 1990). In addition, regardless of their behavioral predispositions, victimized children experience higher levels of depression (Austin & Joseph, 1996; Kumpulainen et al., 1998; Rigby, 1998; Schwartz, 2000; Schwartz, Proctor, and Chien, 2001). Due to the fact that anxiety and depression are highly linked, it is not surprising that anxiety is also related with peer victimization. Multiple studies have noted that victimized children report moderate to severe levels of anxiety after a victimization experience (Faust & Forehand, 1994; Rigby, 1998; Rigby, 2001; Schwartz, 2000; Sharp, 1995). It has also been shown that peer victimization is associated with both generalized anxiety (Slee, 1994; Slee, 1995) and social anxiety (Boulton & Smith, 1994; Crick & Grotpeter, 1996; Slee, 1994).

Studies have shown that children's past experiences with peers affect the beliefs they form about peers and peers' characteristics. Several studies have reported that, generally, children believe that their peers tend to be trustworthy and supportive (prosocial) or that they tend to be untrustworthy and hostile (antisocial) (Rabiner, Keane, & MacKinnon-Lewis, 1993; MacKinnon-Lewis, Rabiner, & Starnes, 1999). It has also been shown that negative peer experiences (e.g. victimization and rejection) are related to antisocial beliefs about familiar peers

(MacKinnon-Lewis, Rabiner, & Starnes, 1999). Children who experienced repeated victimization from kindergarten through grade three became increasingly less satisfied with their peer relationships (Kochenderfer-Ladd & Wardrop, 2001). It has also been noted that children with long histories of negative peer experiences tended to develop negative beliefs about peers' social orientations (Ladd and Troop-Gordon, 2003). Victimized children experience strains and stressors that amplify and/or exacerbate internal cognitive states such as mistrust of peers (Kochenderfer Ladd, 1996). In addition, negative peer perception has also been linked to internalizing problems such as depression and anxiety (Ladd & Troop-Gordon, 2003; Rudolph & clark, 2001).

In light of the negative impact associated with peer victimization, the need for bullying prevention and intervention is evident. Over the last twenty years, several school-wide bullying intervention and prevention programs have been developed, implemented, and evaluated (Smith, Schneider, Smith, & Ananiadou, 2004). Many of these programs have been modeled after the Olweus Bullying Prevention Program (Olweus, 1991). This program adopted a systemic, school-wide strategy that directed intervention curricula and activities toward the entire educational community (e.g. students, teachers, parents, and staff). Early results of evaluation studies of the Olweus Bullying Prevention Program were encouraging. Victimization and bullying rates as well as other delinquent behaviors decreased dramatically (Olweus, 1993). However, effectiveness studies of Olweus' program and other related programs in the years since have produced mixed results with most outcomes showing modest to no effect of the intervention (Baldry & Farrington, 2004; Cross, Hall, Hamilton, Pintabona, & Erceg, 2004; Frey et al., 2005; O'Moore & Minton, 2004; Pepler, Craig, Ziegler, & Charach, 1994). However, some have suggested that

the contradictory findings are artifacts of methodological flaws, or inconsistent implementation of the program itself, arguing that more rigorous program implementation and evaluation research is needed (Kärnä et al., 2010). Another area of concern from previous intervention studies is the lack of evidence that lowering the rates of victimization result in corresponding improvements in the social (e.g. perception of peers) and psychological adjustment (e.g. depression and anxiety) of children already impacted by bullying (Zins, Elias, & Maher, 2007).

The purpose of the present study is to evaluate with rigorous methods, how an innovative anti-bullying program recently developed in Finland called the KiVa program (Salmivalli, Kärnä, & Poskiparta, 2009) might affect peer-reported victimization status and emotions that are thought to be related to victimization. This program builds on Olweus' program as well as other previous interventions. The KiVa program is predicated on the notion that bullying is a group process in which the bully behaves aggressively to attain a higher peer-group status and is continually reinforced by the encouragement of onlookers (Salmivalli et al., 1996). A core aspect of the KiVa program is 20 hours of dedicated curricula targeted toward increasing peer support for the victims of bullying by increasing anti-bullying attitudes in classrooms as well as defending behaviors and self-efficacy among bystanders. The KiVa program offers guiding principles and provides structured curriculum for bullying similar to other academic subjects. Lessons involve activities such as discussion (on general topics, such as the importance of respect in relationships, group communication, and group pressure towards bullying and its mechanisms and consequences), group work (brainstorming different ways to support and help the bullied victims, and practicing them), short films about bullying (adults who were bullied as children tell about their schooldays and how their experiences have affected their life, and, also,

the role of the group in either maintaining bullying or putting an end to it), and role-play exercises (exploring and practicing new/different participant roles). A class rule, based on the central theme of the lesson (e.g. if students witness bullying they will report it to teacher or school staff), is adopted after each lesson and at the end of the year the class rules are assembled together and signed by everyone to form the KiVa-contract. Additional components of the program include a five-level interactive computer game that includes three components, 1) "I Know" (learn new information and review information from previous lessons), 2) "I Can" (decide how to react to bullying in virtual school environment and view how their decisions effect other characters), and 3) "I Do" (report skills they have put into practice).

The KiVa program also includes an individual and small group intervention component to address specific bully-victim incidents. When acute cases of bullying are identified, a team of three school staff members work with the classroom teacher to put an end to on going bullying by setting up individual and group discussions with the victims and bullies. The teachers and staff are provided with manuals that offer assistance in identifying victims of bullying and detailed instructions on how these discussions can be conducted. The victim is also asked to identify friendly classmates that have not been involved in bullying, and these classmates are then challenged to provide support for the victim. A parents' guide is sent to each home that includes information about bullying and advice concerning the parents' ability to reduce and ultimately prevent the problem. School staff are provided two-day training before starting the implementation of KiVa, In addition, to enhance the effectiveness of the program, teachers and the school teams are supported in the implementation of the program in the following ways: 1) all materials have been created to be as self contained and ready to use as possible; 2) teachers

are provided with a web-based discussion forum to discuss, share experiences and to obtain advice, and 3) school teams meet three times a year with other school teams for additional discussion and support. This allows the schools to monitor the intervention themselves, without relying on support from the researchers.

A recent evaluation study from the first phase of the KiVa evaluation suggests that the program was successful in reducing bullying behaviors and victimization in intervention schools (Kärnä et al., 2010). The authors used multilevel modeling to account for the clustered data, which resulted in a 4-level model (time, individual, classroom, school). Although multilevel modeling is appropriate for clustered data, there are a few associated drawbacks. First, multilevel modeling cannot readily accommodate multiple indicators of study variables (e.g. perceptions, attitudes, affect) as it is based on a single reduced-form regression equation, which uses aggregate scale scores. In addition, aggregate scale scores contain measurement error that will impact the results. Second, the measurement process itself cannot be evaluated in order to determine whether measurement was similar for various participant groups, such as intervention and control conditions. Third, although nested model comparisons are possible in multilevel modeling, model fit information is not provided. In addition, multilevel modeling assumes that the residual errors at the lowest level have a normal distribution with a mean of zero and a common variance in all groups, and the second level residual errors are assumed to be independent from the lowest level errors and to have a multivariate normal distribution with means of zero. The assumptions above generate questions about the accuracy of the various estimation methods when these assumptions are false. Laden et al. (1997) suggested that when assumptions of normality are not met, the MLM standard errors are biased downward. By using

structural equation modeling researcher can accommodate multiple indicators of study variables, measurement error can be accounted for, model fit information can be analyzed, and differences in variances between groups can be analyzed and accounted for.

The present study was intended to complement and extend previous findings regarding the KiVa program (Kärnä et al., 2010) using a different analytic approach. In addition to offering a more fine-grained analysis of one outcome (peer nominated victimization status) by Kärnä and researchers (2010), the present study also focuses on outcome measures that were not previously evaluated. Kärnä et al. (2010) focused on the effect of the KiVa program on rates of victimization, bullying, bystander behaviors and related cognitions and emotions (e.g., attitudes and empathy), whereas the present study investigates the relationships between reductions in victimization and depression, anxiety, and perceptions of the peer climate, three outcome variables that were not analyzed in the previous study.

Furthermore, the present study extends prior intervention research testing bullying prevention programs in several meaningful ways. First, an important contribution of the current investigation is examining the program's impact on secondary outcomes, such as depression, anxiety and perception of peers. Although depression, anxiety, and peer perception have been linked to victimization (Dill, Vernberg, Fonagy, Twemlow, & Gamm, 2004), most intervention studies have tested outcomes related to rates of bullying and victimization, but have seldom assessed the outcomes tested here in the context of intervention research. Second, the examination of these secondary outcomes helps to clarify the role of victimization in causing adverse effects. The results of the present study can be used to shed light on the causal link between victimization, depression, anxiety, and negative perception of peers.

Specifically, Structural Equation Modeling (SEM) will be used in the present study to address the following research questions:

1. Are the outcome measures of interest being measured in a similar manner in both study groups (intervention vs. control) as well as across time? Finding measurement invariance indicates that the comparison of mean levels of victimization, peer perceptions, depression, and anxiety between the two study conditions and over time are relevant comparisons.
2. Are there mean level differences in the outcome measures between students receiving the intervention and those that do not? It was expected that the positive effects of the KiVa program will be reflected not only in reduction of victimization but also in improvement in the three outcome variables, i.e. depression, anxiety, and peer perceptions. In addition, it is expected that the rate of change in the intervention group will be greater than for the control group.
3. Can reductions in peer-reported victimization predict improvement in students' self-reported anxiety and depression as well as their peer-group perceptions? It was hypothesized that changes in victimization will result in decreases in depression and anxiety as well as a more favorable perception of peers. Additionally, we hypothesized that changes in these constructs not attributable to victimization would be dependent on initial evaluations of the peer climate. That is, changes in respondent's anxiety and depression scores would be contingent upon their initial impressions of how hostile versus friendly their classmates appeared while holding the actual amount of victimization constant.

Method

Participants

In the fall of 2006, letters describing the KiVa program were sent to 3,418 schools in Finland. All of these schools provide basic education in either Finnish or Swedish as both official languages are used in the Finnish educational system. The letter included information about the objectives and content of KiVa as well as an enrollment form. A total of 275 schools enrolled in the study, and in the first phase of evaluation concerning grades four to six, 78 of them were stratified by province and language, and then randomly assigned to the intervention or control condition. Of these 78 schools, 429 classrooms from grades 3 - 5 (grades 4-6 during the implementation of KiVa) were included, and the final sample size for the analyses was 8,613 students (4,225 in the control group and 4,388 in the intervention group). Parents of the students were sent information letters and consent forms, and 7,564 students (91.7%) received consent to participate in the study. Of the respondents, 50.1 % were girls and 49.9 % were boys. Most students were native Finns (i.e. Caucasian), with the proportion of immigrants being 2.4%. By wave 3 there were changes in the sample population including the following: 251 students left and 463 entered the schools and 6 control schools (691 students) dropped out of the study.

Procedure

Data were collected at three separate time points over the course of a two academic years: in May 2007, December 2007/January 2008, and May 2008. At each wave of data collection, teachers administered online questionnaires to students during regular school hours. Teachers were provided with instructions for questionnaire administration approximately two weeks prior

to data collection, and were also provided with phone/email support services throughout the data collection period. Students received individual passwords that were required to log into the questionnaire. Students completed the questionnaire during school hours in each school's computer lab. Scale and item order were randomized to prevent any order effects. Details concerning the intervention protocol and materials are provided in Salmivalli et al. (2009) and Kärnä et al. (2010).

Measures

Peer-Reported Victimization. Victimization was measured via a peer-nomination process through which each student was rated by his or her classmates as either a victim or non-victim. Students were asked to respond to the following three items that relate to the victim role: "He/She is being pushed around and hit," "He/She is called names and mocked," "Nasty rumors are spread about him/her." When presented with such items, students were also provided a list of their classmates and were asked to indicate as many of their peers that they think fit the item description. Students were allowed to make as many nominations as they felt were true, including none. The number of peer nominations for each student was totaled and a proportion was calculated by dividing the number of raw nominations received for each student by the number of students providing nominations within each class. The victimization scale has shown adequate internal consistency in a prior study (α =.87; Karna et al., 2010). Data for this measure were collected at all three measurement occasions.

Perception of Peers. Students were also asked to rate their beliefs about their peers in general. Student beliefs were measured using the Generalized Perception of Peers Questionnaire which is a 13-item scale that assesses the extent to which one's peers are considered supportive,

kind, and trustworthy as opposed to unsupportive, hostile, and untrustworthy (Salmivalli, Ojanen, Haanpää, & Peets, 2005). Students are provided statements such as "They can really be relied on," or "They are hostile," and asked to rate the accuracy of the statement on a Likert-scale ranging from 0 ("not true at all") to 4 ("exactly true"). About half of the items (7 out of 13) were reverse-coded so that higher scores reflect more favorable views of one's social environment. Internal consistency of the scale items was adequate (α =.89). Perception of peers was measured at the first and third measurement occasion only. Items are presented in Table 1.

Depression. Students' level of depression was measured by a 7-item scale derived from the Beck Depression Inventory (Beck, Steer, & Brown, 1996). The scale consisted of statements such as "What is your mood like?" and "How do you feel about yourself?", which were rated on a Likert-format response scale ranging from 0 (e.g., "fairly bright and good") to 4 (e.g., "I am so depressed and downcast that I cannot take it anymore"). While responding, the students were asked to describe their feelings in the last two weeks. The Beck Depression Inventory is intended to be used with adults, however previous research has found it to be a valid measure with a younger adolescent Finish population (Kaltiala-Heino, Rimpelä, Rantanen, & Laippala, 1999). Internal consistency for the 7 items was sufficient (α =.89). Depression was measured at the first and third measurement occasion only. Items are presented in Table 1.

Social Anxiety. Two social anxiety scales, the Fear of Negative Evaluation Scale and the Social Avoidance and Distress Scale were combined to measure students' level of anxiety, in order to get a broader range of symptoms (García-López, Olivares, Hidalgo, Beidel, & Turner, 2001). The Fear of Negative Evaluation Scale is a 5-item scale that measures the extent to which others' evaluation of the respondent cause undue stress and worry (e.g. "I'm afraid the others

won't like me"). The Social Avoidance and Distress Scale is a 4-item questionnaire that measures the extent to which the respondent avoids social interactions and feels uncomfortable in group situations (e.g. "I stay quiet when I'm in a group of people). Students rated each statement on a Likert scale ranging from 0 ("not at all") to 4 ("all the time"). Preliminary analyses suggested that these nine items could be combined to form a single measure of which the internal consistency was .88. As with depression, anxiety was measured at the first and third measurement occasion only. Items are presented in Table 1.

Covariates. Four covariates (gender, age, language, and immigrant status) were also included in the analyses to control for their effects on the outcome variables. Gender and age were controlled for because they have been found to be important predictors of bullying and victimization (Salmivalli & Voeten, 2004). The language of classroom instruction (Finnish vs. Swedish) was also coded and entered into the models because Swedish language schools were overrepresented in the sample and to account for possible cultural effects. Finally, immigration status was entered into the models to control for possible cultural effects.

Statistical Methods

Mean and Covariance Structure (MACS) analyses were used to examine the data (Little, 1997). MACS models operate within the SEM framework by explicitly modeling the mean structure of the data in addition to the covariance structure. As such, error-free measurements can be used to examine relationships between study variables as well as changes in means. MACS models also allow multiple-group estimation in which model parameters can be compared across two or more meaningful subgroups. This is particularly relevant to the present analysis, in which half of the participants received an intervention and the other half did not.

The percent missing for each of the indicators was low with the exception of schools in the control condition at the third measurement occasion (for additional information, see http://www.kivakoulu.fi/english). Multiple imputation (Enders, 2010) was used in the present study to handle missing data (e.g. dropouts and newcomers) by using the SAS Proc MI utility. Details of the imputation process are extensively described elsewhere (cf. Kärnä et al., 2010).

Several MACS models were evaluated. First, factorial invariance was evaluated to determine if the measurement process was similar for all students in the study. Factorial invariance testing involves estimating a series of increasingly constrained models in which model parameters are set equal between study groups and/or across time (Meredith, 1993). If the constraints are supported as demonstrated by a non-significant loss of model fit, then the specific measurement property under investigation is said to be invariant between subgroups (or over time). For the present study, *measurement* invariance constraints (factor loadings and item intercepts) were considered acceptable if a change of less than or equal to .01 in the Comparative Fit Index (CFI, Bentler, 1990) between the constrained and unconstrained models was observed (Cheung & Rensvold, 2002; Little, Card, Slegers, & Ledford, 2007). *Structural* invariance constraints (latent variances, covariances, and means) were evaluated via the χ^2 difference test. Finding measurement invariance allowed comparing mean levels of victimization, peer perceptions, depression, and anxiety between the two study conditions and over time.

In additional to statistical tests, effect sizes for mean differences between conditions were calculated at each measurement occasion. Repeated measures (within-group) effects sizes were calculated as well. The following formula was used to calculate the effect sizes:

$$\text{Latent } d = \frac{\alpha_I - \alpha_C}{\left(\frac{n_I\psi_I + n_C\psi_C}{n_I + n_C}\right)}$$

This statistic, which we refer to as Latent *d*, is based on Cohen's *d* (Hancock, 2001) where α_I and α_C represent the intervention and control condition latent means, respectively; n_I and n_C are the intervention and control group sample sizes; and ψ_I and ψ_C represent the variance of the latent variable for the intervention and control group. For the repeated measures effect sizes, ψ_I and ψ_C represent the latent variable variance at two different time points. Cohen's conventional effect size guidelines (1988) were used to determine whether an effect was small (e.g. d = .20), medium (e.g. d =.50), or large (e.g. d = .80).

Finally, a cross-lagged panel model (Little, Preacher, et al., 2007) was tested to determine if changes in victimization led to changes in the other outcomes variables. This model was evaluated according to the CFI and other fit indices such as the Root Mean Error of Approximation (RMSEA, Steiger & Lind, 1980), the Tucker-Lewis Index (TLI, Tucker & Lewis, 1973), and the Standardized Root Mean Square Residual (SRMR, Bentler, 1995). All models were estimated using normal theory maximum likelihood estimation.

For each model, parcels were used instead of individual scale items. Parceling is an aggregation technique in which scale items are combined to form a smaller set of construct indicators, usually by averaging item scores for each parcel. Parcels have several psychometric advantages over item-level data such as higher reliabilities, a lower likelihood of violating distributional assumptions, and more precise (i.e. smaller and more equal) scale intervals (Little, Cunningham, Shahar, & Widaman, 2002). Parcels also provide several model fit advantages such

as greater parsimony, reduced sampling error, a lower indicator-to-subject ratio, and a lower likelihood of encountering correlated residuals and/or a dual-factor loading. For the depression and anxiety constructs, a total of three parcels for each construct were created using random assignment. For the perception of peers construct, a facet-representative parceling technique (Little et al., 2002) was used to create two parcels for the construct, because 7 of the 13 items were reversed-coded and thus a method effect (negative vs. positive wording) may have been present. Consequently, the seven reverse-coded items were placed into the first parcel and the remaining six into the second parcel. Finally, the three scale items represented the peer victimization construct and therefore parceling was not used.

To set the scale for the latent factors, the effects coding method of identification was used (Little, Slegers, & Card, 2006). The effects coding method is a non-arbitrary scaling approach that uses constraints to average the indicator loadings and intercepts for each factor to 1 and 0, respectively. This specification allows for the estimation of latent variances and means in a meaningful metric. Also, for each model the residual variances of corresponding indicators were allowed to correlate across time. This specification is due to the fact that residual variances consist of two components: (a) a reliable variance component that is specific to a given indicator, and (b) a random error variance component. Consequently, the item-specific variance component on an item is expected to covary with itself over time (Little, Preacher, et al., 2007). Finally, due to the cluster sampling protocol, we initially considered the use of Multilevel Structural Equation Modeling (MSEM) to examine our hypotheses (du Toit & du Toit, 2008). However, initial analyses revealed low intraclass correlation (ICC) values for items at both the school and classroom levels (ICCs < .05). This means that less than 5% of the observed variance in the

indicators can be attributed to the cluster level and thus multilevel methods were not warranted (Muthen, 1994; van de Vijver & Poortinga, 2002). That is, which school or classroom the student was in accounted for a very small amount of the variance in the indicators. Additionally, model parameter estimates were evaluated using the chi-square difference test, which is not affected by Type I error inflation as the result of clustering dependence.

Results

Measurement Invariance

All models were analyzed using LISREL version 8.8 except for the panel model that was analyzed using Mplus version 5.0. Syntax for the measurement invariance models, structural invariance models and the panel model are in Appendix A. First, measurement invariance of the four outcome measures was evaluated. Results of the four invariance models are presented in Table 2. All invariance constraints were supported as evidenced by a change in the CFI of less than or equal to .01, and acceptable model fit according to the other fit indices. Thus, the measurement process was similar for students in both the intervention and control groups. Unstandardized and completely standardized parameter estimates for the strong invariant model can be found in Table 3.

Given that the assumption of strong metric invariance held, we subsequently tested for structural invariance of the latent parameters. Results of these three tests can also be found in Table 2. It was found that the latent factor variances, correlations, and means were not invariant across time or group. The differences in latent means were expected due to the effects of the KiVa intervention. The difference between groups/over time in variances and correlations

suggested that the homogeneity within and relationships between some study variables differed between groups and over the course of the study. Phantom constructs were used to adjust for these differences and is discussed later in the study. Specific differences in these parameter estimates can be found in Table 3.

Latent Means

Latent means were also compared across groups using the chi-square difference test to determine if improvements in study outcomes could be attributed to the KiVa program. Results from these comparisons can be found in Table 4, and effect sizes for between-condition and within-condition mean comparisons can be found in Table 5. For peer-reported victimization, the intervention group mean was statiatically equal to the control group mean at the first wave of data collection ($\Delta\chi^2$ (1) = 0.184, p = .668). However, students in the intervention group reported significantly less victimization at wave 2 (d = -1.08; $\Delta\chi^2$ (1) = 13.226, p < .001) and wave 3 (d = -2.19; $\Delta\chi^2$ (1) = 0.184, p = .668). This suggests that peer-reported victimization decreased over time for those who received the intervention and remained stable for those who did not.

Somewhat similar patterns were found for the other three outcome variables. Students' positive peer perceptions actually decreased in both conditions (i.e. students grew increasingly distrustful of their peers over time), but the decrease was less dramatic in the intervention group as compared to the control group. This finding was supported statistically as the groups did not differ in their perceptions at wave 1 (d = .04; $\Delta\chi^2$ (1) = 0.546, p = .460) but differed at wave 3 (d = .20; $\Delta\chi^2$ (1) = 5.369, p = .02). Likewise, mean depression levels increased less dramatically for the intervention group when compared to the control group. However, this effect failed to reach statistical significance. The equality constraints were supported at wave 1 (d = .02; $\Delta\chi^2$ (1) =

.066, p = .797) and at wave 3 (d = -.09; $\Delta\chi^2$ (1) = 2.901, p = .089). Finally, anxiety showed decreases in both groups over time, however a larger decrease was reported for those in the intervention group. The groups reported statistically equal levels of anxiety at wave 1 (d = -.03; $\Delta\chi^2$ (1) = 1.245, p = .265) but not at wave 3 (d = -.13; $\Delta\chi^2$ (1) = 21.318, p < .001).

Structural Relations

The KiVa program is predicated on the basic assumption that reductions in victimization can positively influence other important areas of students' well-being. This assumption was tested via a multiple-group cross-lagged panel model. The cross-lagged panel model is a type of SEM data structure that describes change via temporal directional effects (both autoregressive and cross-lagged) in longitudinal data (Little, Preacher, Selig, & Card, 2007). Due to the differences between groups on latent variances, the model was evaluated using phantom constructs. Phantom constructs are exogenous latent variables that are used to standardize the relationships between constructs (i.e. converting covariances to correlations), thereby making cross-group and cross-time comparisons of relationships possible (Little, 1997).

Autoregressive paths and within-time correlations were freely estimated as well as the regressions of all study variables onto the four covariates. Covariates were allowed to correlate with each other. The three outcomes of interest (peer perceptions, depression, and anxiety) at wave 3 were regressed onto the victimization construct at waves 1 and 2. We hypothesized that changes in victimization would predict corresponding changes in peer perceptions, depression, and anxiety, and that these changes would also be dependent on initial levels of victimization. Additionally, the depression and anxiety variables at wave 3 were regressed onto the perception of peers variable at wave 1. It was hypothesized that changes in these symptoms not attributable

to victimization would be dependent on initial evaluations of the peer climate. That is, changes in respondent's anxiety and depression scores would be contingent upon their initial impressions of how hostile versus friendly their classmates appeared while holding the actual amount of victimization constant.

Next, latent correlation and regression parameters were evaluated individually for equality across groups via the chi-square difference test. Estimates that were found to be statistically equal were equated and a final model was estimated (Figure 1). This model demonstrated acceptable model fit (χ^2 (634) = 4632.52, p = <.01, RMSEA = .048 (90% C.I. = .047 - .049), CFI = 0.951. All autoregressive coefficients were statistically equal between groups with the exception of depression, which had a significant change in chi-square ($\Delta\chi^2$ (1) = 12.715, p < .01). Regarding the cross-lagged regressions, the relationship between anxiety at wave 3 and victimization at wave 2 was significantly different between groups ($\Delta\chi^2$ (1) = 7.975, p < .01) as was the regression of anxiety at wave 3 on perception of peers at wave 1 ($\Delta\chi^2$ (1) = 9.335, p < .01). Within time correlations that differed between groups are shown in Figure 1. All structural estimates were in expected directions and significantly different from zero according to chi-square difference tests. Specifically, reductions in peer-reported victimization over time resulted in increases in students' positive peer evaluation (β = -.18). That is, greater decreases in victimization led to more favorable views of the peer context. Reductions in victimization also resulted in lower depression levels (β = .09). Also, reductions in victimization over time predicted subsequent reductions in anxiety levels (β = .12 for the intervention group; β = .06 for the control group. In addition, perception of peers at wave one predicted subsequent depression (β = -.10) and anxiety (β = -.13 for intervention group and β = -.20 for control group) at wave 3.

As mentioned earlier, the covariates that were entered into the model were not variables of interest for the present study, but were included to account for their effects on the outcome measures. The effects of the covariates on all of the latent variables can be found separately in Table 6.

Discussion

The present study analyzed outcome measures (peer-reported victimization, perception of peers, self-reported depression, and self-reported anxiety) to find if they were being measured in a similar manner in both study groups (intervention and control) and across time, analyzed mean level differences in outcome measures across groups, as well as evaluated whether reductions in peer-reported victimization predict improvement in students' self-reported anxiety and depression and peer-group perceptions. Importantly, as a result of using SEM to analyze the data, the measurement properties for the variables of interest were evaluated before proceeding to test the theoretical model. Examination of measurement properties is an essential step given that some of the measures were translated from their English versions to Finnish and Swedish. Had the invariance testing failed, it would be uncertain whether comparisons between the two groups were due to true differences between treatment conditions or differing measurement of the outcomes. Similarly, a consistent measurement process over time for both groups was confirmed, which rules out that developmental changes in measurement account for results of the present study (Little, Card, et al., 2007; Little, Preacher, et al., 2007). Results from the present study, which gave an error free analysis of the group means, reaffirmed the overall findings of Kärnä et al., (2010), suggesting that the KiVa program was effective in reducing victimization in designated classrooms. In the present study, rates of victimization remained stable in the control

group over time, whereas victimization declined significantly among intervention participants. It is also important to note that the effect size for reduction of victimization between groups was large at wave 2 (d = -1.08) and wave 3 (d = -2.19).

The present study looked for mean level differences between the intervention and control on self-reported depression, anxiety, and perception of peers, three outcome measures not addressed in the Kärnä et al., (2010) study. The results of this investigation suggest that the KiVa program may also positively influence students' levels of anxiety and perceptions of their peer climate. Levels of anxiety, as measured by a composite of fear of negative evaluation and social avoidance and distress, among intervention participants declined at a faster rate as compared to students in the control condition. Research has suggested that anxiety arises out of concern of peer evaluations of themselves, and that children experiencing victimization in front of their peers are concerned about the negative evaluation associated with the victimization experience (Slee, 1995). Therefore, by reducing victimization, the KiVa program may have also reduced the threat of negative peer evaluation, which in turn would lead to reduction in levels of anxiety. Also, while peer perceptions declined in both groups, students in the control group reported less favorable views of their peers than students in the KiVa program. It is not surprising that perception of peers grew more negative for both groups. Latent growth curve analyses conducted by Troop-Gordon and Ladd (2005) revealed that during preadolescence, children started to view peers as less friendly and more antisocial. They concluded that these changes may be a result of moving from egocentric thinking (evaluating others solely on how they themselves are treated) to incorporating the observations of others into their cognitive representation of others. That is, students within this age group move toward greater awareness of experiences of the group (i.e.

their peers) compared to just focusing on their own personal experiences. Therefore, the less negative perception of peers found in the intervention groups may be a result of not only the reduction of victimization experienced, but also the reduction of victimization witnessed. Lastly, although students involved in the KiVa program reported less depression than students in the control group, the difference was not statistically significant. The lack of a significant change in depressive symptoms between groups may be explained by the persistence of depressive symptoms that are associated with victimization. Specifically, Olweus (1993) discovered that boys who were victimized during their school years continued to display depressive symptoms at age twenty-three. Overall, students in the KiVa program evidenced more positive outcomes over time in terms of victimization and anxiety as compared to controls. Results also suggest that the KiVa program, by lessening victimization, slows the natural increases in depression levels and distrust of peers.

In addition, the present study looked to see if reductions in peer-reported victimization predict improvement in students' self-reported anxiety, depression, and peer-group perceptions, as well as if changes in students' anxiety and depression scores would be contingent upon their initial peer-group perceptions. The results of this investigation suggest that reductions in victimization over time predicted more favorable views of the peer context, lower depression levels, and reductions in anxiety. Results also showed that initial levels of peer perception effected later levels of depression and anxiety. These results suggest that internalizing symptoms can be effected.

Strengths and Limitations of the Present Study

Several limitations exist in the present study. First, overall victimization was analyzed and not divided into relational and overt victimization. By looking at victimization in general, without separate analyses, the possible differences between types of victimization (relational and overt) and their relationship to depression, anxiety and perceptions of peers are not represented in the findings. Specifically, gender differences have been reported in regard to reduction of victimization and its relationship to internalizing symptoms, in which depression and anxiety was impacted more by relational victimization for girls and overt aggression for boys (Vuijk, van Lier, Crijnen, & Huizink, 2007). Therefore, additional research should examine relational and overt aggression separately, as well as gender as a possible mediator between victimization and internalizing symptoms. Second, the measures of depression, anxiety, and perception of peers were evaluated only at the first and third occasion of measurement. The time period between these two time points was one full year, which may be too long to sufficiently model the change process. In future implementations of the Kiva project, it would be beneficial to measure depression, anxiety and perception of peers at all three time points, as was done with victimization.

The strengths of this investigation, however, offset the limitations. First, the present study used the rigorous, error free methods of structural equation modeling to more accurately establish the KiVa program's ability to reduce victimization among intervention participants. The use of SEM is certainly a strength as it allowed establishment of measurement invariance across the intervention and control groups, model error-free latent variables via multiple indicators, and assess model fit information to test the complex relationships among treatment

effects and student outcomes of interest. These strengths associated with SEM analysis, allowed error free comparison of outcome means across groups. In addition, the longitudinal structure of the data allowed analysis of outcome variables over time, which in turn allowed for analyzing changes in outcome means over time and the relationship between reductions in victimization and the other three outcome variables (self-reported depression and anxiety symptoms, and perception of peers).

Implications and Directions for Future Research

The psychological and social maladjustment associated with peer victimization and the attendant social and individual affects on youth development emphasize the need for innovative prevention and intervention strategies. Meta-analytic reviews of anti-bullying have revealed that the most effective interventions for reducing victimization are those with multiple intervention components (e.g., Hahn et al., 2007; Farrington & Ttofi, 2009; Ttofi, Farrington, & Baldry, 20098; Wilson, Lipsey, & Derzon, 2003; Wilson & Lipsey, 2007). Research has also indicated that a system wide perspective that involves peers, teachers, school staff, and parents are essential pieces for designing and implementing a bullying intervention program (Craig, Pepler, Murphy, & McCuaig-Edge, 2010). In addition, Fonagy and colleagues (2009) found that a teacher-implemented school-wide intervention that does not focus on disturbed children substantially reduced victimization and improved classroom behavior. Applying these research supported intervention strategies, the KiVa program appears to not only reduce victimization, but also positively impact maladjustment associated with victimization, such as rates of depression and anxiety and the victim's negative perceptions of peers. However, it is unclear what mechanisms are related to these positive outcomes. Therefore, the mechanisms by which the

KiVa program is implemented needs further evaluation so that modifications can be made to maximize the programs impact.

Additionally, multiple anti-bullying programs have been developed, implemented and evaluated that have produced varying effects in regard to reducing victimization. However, results from the present study show large effect sizes for reduction of peer-reported victimization within the intervention group (wave 2, d = -1.08; wave 3, d = -1.83). The question remains, however, how the KiVa program compares to other effective anti-bullying programs in regard to effect sizes of relevant outcomes. Therefore, a vital direction for future KiVa research will be to examine and compare its effects sizes to other bullying prevention programs.

Lastly, the KiVa intervention has only been implemented in Finnish schools and therefore has not been studied with other populations. It should also be noted that there was very little diversity in the population that was studied (over 90% Caucasian Finns). Therefore, the KiVa program needs to be implemented and evaluated within more diverse populations and or different countries to assess its generalizability.

Conclusion

The present study not only supports, but also significantly adds to previous findings on the KiVa program. Specifically, the KiVa program reduced victimization, impeded the natural development of increasingly negative peer perceptions, and reduced anxiety symptoms for students receiving the intervention. In light of these results, it appears that KiVa's use of research-supported intervention strategies (e.g. addressing the social context associated with victimization and its systematic approach) effectively reduce victimization and improve the

social and psychological well being of students in Finnish schools. The present study also sheds light on the relationship between reductions in victimization and depressive symptoms, anxiety symptoms, and perception of peers. Although the KiVa intervention has been shown to be effective, additional research is needed to identify the mechanisms by which the intervention impacts students in order to maximize its positive effects, to assess its generalizability with different populations, as well as to compare the effect of the KiVa program to other effective bullying prevention and intervention programs. Nevertheless, the KiVa program's positive results for multiple outcomes, across numerous intervention studies, signify that it is a vital tool for the field of bullying prevention and intervention.

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Table 1
Items Used in Parcels

Factor	Parcel	Content	Prompt/Scale Format
Perception of Peers	Parcel 1	"Shouldn't be trusted too much" †	How do you consider your mates of the same age?
		"Don't really care about me"†	When responding don´t think of your best friends only, but tell us your impression in general. They..
		"Only think about their own interest"†	0 = Not at all; 4 = Exactly True
		"Betray one's trust whenever they get the chance"†	
		"Want to hurt me"†	
		"Think bad things about me"†	
		"Are hostile"†	
	Parcel 2	"Can really be relied on"	How do you consider your mates of the same age? When responding don´t think of your best friends only, but tell us your impression in general. They..
		"Really care about what happens to me"	0 = Not at all; 4 = Exactly True
		"Are there for me whenever I need help"	
		"Usually have good intentions"	
		"Are honest with me"	
		"Can be confided in"	
Depression	Parcel 1	"How was your mood (describe your mood)?"†	0 = So depressed I cannot stand; 4 = Sunny & good
		"Do you feel senses of disappointment?"†	0 = Hate myself; 4 = Satisfied
		"How satisfied or dissatisfied do you feel about yourself?"†	0 = Completely unhappy; 4 = Quite happy
	Parcel 2	"How do you see the future?"†	0 = Desperate; 4 = Face Optimistically
		"How do you see yourself?"†	0 = Worthless and bad; 4 = Quite Good
	Parcel 3	"How do you feel your life has been running?"†	0 = Completely failed; 4 = Succeeded often
		"How do you feel about your being and appearance?"†	0 = Ugly; 4 = Satisfied
Anxiety	Parcel 1	"I'm afraid of asking others to do things with me as they might turn me down and not do things with me"	0 = Not at all; 4 = Exactly True
		"I'm worried about what the others say	

	about me”	
	“If I have to argue about something, I’m afraid that the others won’t like me”	
Parcel 2	“It’s difficult for me to ask others to do things with me”	0 = Not at all; 4 = Exactly True
	“I feel quite shy even among those mates I know well”	
	“I’m afraid the others won’t like me”	
Parcel 3	“I stay quiet when I’m in a group of people”	0 = Not at all; 4 = Exactly True
	“I’m worried that the others don’t like me”	
	“I’m worried about what the others think of me”	

† indicates that the item was reverse-coded.

Table 2
Invariance Testing Across Time & Group

Model	χ^2	df	p	$\Delta\chi^2$	Δdf	p	RMSEA	90% C.I.	CFI	Constraint Tenable?
Configural Invariance	1991.713	444	<.001	---	---	---	.030	.029-.031	.992	Yes
Weak Invariance	2817.771	469	<.001	---	---	---	.036	.035-.037	.988	Yes
Strong Invariance	4099.510	494	<.001	---	---	---	.043	.042-.045	.982	Yes
Equal Latent Variances*	3773.174	483	<.001	955.403	14	<.001	.042	.041-.043	.983	No
Equal Covariances*	3427.572	515	<.001	609.801	46	<.001	.036	.035-.037	.978	No
Equal Latent Means†	4629.011	508	<.001	529.501	14	<.001	.046	.045-.048	.979	No

* For the chi-square difference test, the weak invariant model served as the parent model
† For the chi-square difference test, the strong invariant model served as the parent model
χ^2 = chi-square; df = degrees of freedom; p = probability value; $\Delta\chi^2$ = chi-square difference; Δdf = chi-square difference in degrees of freedom; RMSEA = root mean square error of approximation; 90% C.I. = 90% RMSEA confidence interval; CFI = Comparative Fit Index

Table 3

Parameter Estimates for the Strong Invariant Model

	Unstandardized Solution				Completely Standardized Solution											
					Intervention Group						Control Group					
Indicator	λ	S.E.	τ	S.E.	λ	S.E.	τ	S.E.	θ	R^2	λ	S.E	τ	S.E.	Θ	R^2
Peer-Reported Victimization (Time1)																
Item 1	.05	.001	.04	.00	.56	.01	-.04	.01	.69	.31	.58	.01	-.04	.01	.67	.33
Item 2	.12	.002	-.06	.00	.98	.01	-.16	.01	.03	.97	.99	.01	-.15	.01	.03	.97
Item 3	.09	.001	.08	.00	.75	.01	.19	.01	.44	.56	.75	.01	.18	.01	.44	.56
Peer-Reported Victimization (Time2)																
Item 1	.05	.001	.04	.00	.65	.01	-.05	.01	.58	.42	.60	.01	-.04	.01	.64	.36
Item 2	.12	.002	-.06	.00	.94	.01	-.17	.01	.12	.88	.95	.01	-.15	.01	.09	.91
Item 3	.09	.001	.08	.00	.70	.01	.20	.01	.51	.49	.68	.01	.17	.01	.54	.46
Peer-Reported Victimization (Time3)																
Item 1	.05	.001	.04	.00	.66	.01	-.05	.01	.56	.44	.65	.01	-.05	.01	.58	.42
Item 2	.12	.002	-.06	.00	.99	.01	-.19	.01	.02	.98	.98	.01	-.16	.01	.05	.95
Item 3	.09	.001	.08	.00	.69	.01	.21	.01	.52	.48	.70	.01	.19	.01	.51	.49
Perception of Peers (Time1)																
Parcel1	.54	.010	3.2	.01	.84	.01	.49	.04	.30	.70	.82	.01	.49	.04	.33	.67
Parcel2	.45	.010	2.1	.01	.66	.01	-.47	.03	.56	.44	.64	.01	-.46	.03	.58	.42
Perception of Peers (Time3)																
Parcel1	.54	.010	3.2	.01	.57	.01	.46	.03	.68	.32	.64	.01	.48	.04	.60	.40
Parcel2	.45	.010	2.1	.01	.51	.01	-.48	.03	.74	.26	.56	.01	-.50	.04	.69	.31
Depression (Time1)																
Parcel1	.34	.005	.14	.01	.87	.01	-.05	.00	.25	.75	.88	.01	-.05	.00	.22	.78
Parcel2	.34	.005	.13	.01	.81	.01	-.08	.00	.35	.65	.81	.01	-.08	.00	.34	.66
Parcel3	.37	.005	.23	.01	.76	.01	.11	.01	.42	.58	.75	.01	.11	.01	.44	.56
Depression (Time3)																
Parcel1	.34	.005	.14	.01	.92	.01	-.04	.00	.16	.84	.90	.00	-.04	.00	.19	.81
Parcel2	.34	.005	.13	.01	.88	.01	-.07	.00	.23	.78	.88	.00	-.07	.00	.23	.77
Parcel3	.37	.005	.23	.01	.82	.01	.09	.00	.33	.67	.82	.01	.09	.00	.34	.67
Anxiety (Time1)																
Parcel1	.85	.011	1.4	.02	.88	.00	.01	.01	.24	.77	.87	.00	.01	.01	.25	.75
Parcel2	.78	.011	1.1	.01	.86	.01	-.18	.01	.27	.73	.84	.01	-.18	.01	.29	.71
Parcel3	.82	.011	1.5	.02	.87	.00	.16	.01	.24	.76	.87	.00	.16	.01	.25	.75
Anxiety (Time3)																
Parcel1	.85	.011	1.4	.02	.93	.00	.01	.01	.13	.84	.93	.00	.02	.01	.13	.87
Parcel2	.78	.011	1.1	.01	.89	.01	-.19	.01	.20	.80	.89	.00	-.20	.01	.20	.80
Parcel3	.82	.011	1.5	.02	.91	.00	.17	.01	.17	.84	.91	.00	.18	.01	.18	.82

λ = factor loading; τ = intercept; θ = residual variance; R^2 = communality; S.E. = standard error

Table 4

Latent Mean Comparisons

Factor	W1	W2	W3
		Control Condition	
Peer-reported Victimization	0.0	.06	.03
Perception of Peers	0.0	--	-.18
Depression	0.0	--	.23
Anxiety	0.0	--	-.06
		Intervention Condition	
Peer-reported Victimization	.01	-.02	-.12
Perception of Peers	.02	--	-.12
Depression	.01	--	.17
Anxiety	-.02	--	-.17

W1 = Wave 1; W2 = Wave 2; W3 = Wave 3 (*Mean scores are in relation to W1 Control means)*

Between Condition Mean Comparisons

Factor	W1	W2	W3
Peer-reported Victimization	p = .668	p < .001	p < .001
Perception of Peers	p = .460	--	p = .020
Depression	p = .797	--	p = .089
Anxiety	p = .265	--	p < .001

W1 = Wave 1; W2 = Wave 2; W3 = Wave 3; *p* = probability value

Table 4 (Continued)

Within-Condition Mean Comparisons

Factor	W1 vs. W2	W2 vs. W3	W1 vs. W3
		Intervention Condition	
Peer-reported Victimization	p = .007	p < .001	p < .001
Perception of Peers	--	--	p < .001
Depression	--	--	p < .001
Anxiety	--	--	p < .001
		Control Condition	
Peer-reported Victimization	p < .001	p = .016	p = .092
Perception of Peers	--	--	p < .001
Depression	--	--	p < .001
Anxiety	--	--	p = .003

W1 = Wave 1; W2 = Wave 2; W3 = Wave 3

p = probability value

Table 5

Between Condition Effect Sizes

Factor	W1	W2	W3
Peer-reported Victimization	.13	-1.08	-2.19
Perception of Peers	.04	--	.20
Depression	.02	--	-.09
Anxiety	-.03	--	-.13

W1 = Wave 1; W2 = Wave 2; W3 = Wave 3

Within-Condition Effect Sizes

Factor	W1 vs. W2	W2 vs. W3	W1 vs. W3
		Intervention Condition	
Peer-reported Victimization	-.46	-1.08	-1.83
Perception of Peers	--	--	-.34
Depression	--	--	.33
Anxiety	--	--	-.16
		Control Condition	
Peer-reported Victimization	.67	-.42	.29
Perception of Peers	--	--	-.43
Depression	--	--	.48
Anxiety	--	--	-.07

W1 = Wave 1; W2 = Wave 2; W3 = Wave 3

Table 6

Standardized Regression Coefficients for Cross-Lagged Panel Model

		Intervention Condition			Control Condition		
Covariate	Dependent Variable	β	S.E.	*p*	β	S.E.	*p*
Gender	Peer-reported Victimization (wave 1)	.08*	.02	< .01	.09*	.02	< .01
(1 = male)	Peer-reported Victimization (wave 2)	.01	.01	.35	.01	.01	.22
	Peer-reported Victimization (wave 3)	-.01	.01	.28	-.03*	.01	.02
	Perception of Peers (wave 1)	-.02	.02	.26	-.05*	.02	< .01
	Perception of Peers (wave 3)	-.12*	.02	< .01	-.15*	.02	< .01
	Depression (wave 1)	-.03	.02	.13	-.07*	.02	< .01
	Depression (wave 3)	.00	.02	.80	.02	.02	.29
	Anxiety (wave 1)	-.12*	.02	< .01	-.14*	.02	< .01
	Anxiety (wave 3)	-.08*	.02	< .01	-.09*	.02	< .01
Swedish	Peer-reported Victimization (wave 1)	.04	.04	.27	-.08*	.04	.03
(1 = Swedish)	Peer-reported Victimization (wave 2)	.08*	.02	< .01	.00	.03	.94
	Peer-reported Victimization (wave 3)	-.03	.03	.30	-.02	.03	.62
	Perception of Peers (wave 1)	.02	.05	.73	.02	.05	.62
	Perception of Peers (wave 3)	-.10	.05	.08	-.02	.05	.67
	Depression (wave 1)	.07	.04	.10	.03	.04	.53
	Depression (wave 3)	.07	.04	.09	.07	.04	.07
	Anxiety (wave 1)	.03	.04	.54	-.09*	.04	.03
	Anxiety (wave 3)	.05	.04	.19	-.01	.04	.72
Immigrant	Peer-reported Victimization (wave 1)	.09*	.02	< .01	.04*	.02	.02
(1 = immigrant)	Peer-reported Victimization (wave 2)	-.02	.03	.49	.01	.01	.64
	Peer-reported Victimization (wave 3)	.03*	.01	< .01	.03*	.01	.02
	Perception of Peers (wave 1)	-.06*	.02	< .01	-.02	.02	25

	Perception of Peers (wave 3)	.02	.02	.49	.00	.02	.92
	Depression (wave 1)	-.01	.02	.58	-.00	.02	.95
	Depression (wave 3)	-.01	.02	.70	-.01	.02	76
	Anxiety (wave 1)	.04*	.02	.03	.01	.02	.42
	Anxiety (wave 3)	-.19	.02	.23	.03*	.02	.05
Age	Peer-reported Victimization (wave 1)	-.03	.04	.48	.09*	.04	.03
	Peer-reported Victimization (wave 2)	-.01	.03	.85	.01	.03	.84
	Peer-reported Victimization (wave 3)	.07*	.03	.02	-.01	.03	.76
	Perception of Peers (wave 1)	.00	.05	.93	-.08	.05	.07
	Perception of Peers (wave 3)	.01	.05	.93	.00	.05	.95
	Depression (wave 1)	-.01	.04	.88	.03	.04	.52
	Depression (wave 3)	-.05	.04	.22	-.05	.04	.15
	Anxiety (wave 1)	-.12*	.04	< .01	.04	.04	.40
	Anxiety (wave 3)	-.02	.04	.70	-.01	.04	.72

β = Standardized regression coefficient; S.E. = Standard error; *p* = probability of result given a null distribution

* = Coefficient statistically significant from zero at .05 alpha level

Appendix A: LISREL and Mplus Syntax

Syntax for Configural Invariance Model

```
TI Configural Invariance
DA NG=2 NO=3685 NI=33 ME=ML
ME fi=Control.pvict.dat
SD fi=Control.pvict.dat
KM fi=Control.pvict.dat
LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO NY=25 NE=9 LY=FU,FI PS=SY,FR TE=SY,FI TY=FR AL=FI

FI PS(1,1) PS(2,2) PS(3,3) PS(4,4) PS(5,5) PS(6,6) PS(7,7) PS(8,8) PS(9,9)
VA 1.0 PS(1,1) PS(2,2) PS(3,3) PS(4,4) PS(5,5) PS(6,6) PS(7,7) PS(8,8) PS(9,9)

 FR LY(1,1) LY(2,1) LY(3,1)!Vic over time
 FR LY(12,5) LY(13,5) LY(14,5)
 FR LY(15,6) LY(16,6) LY(17,6)

 FR LY(4,2) LY(5,2)! Per of peers over time
 FR LY(18,7) LY(19,7)

 FR LY(6,3) LY(7,3) LY(8,3)! Dep over time
 FR LY(20,8) LY(21,8) LY(22,8)

 FR LY(9,4) LY(10,4) LY(11,4)! Anx over time
 FR LY(23,9) LY(24,9) LY(25,9)

FR TE(1,1) TE(2,2) TE(3,3) TE(4,4) TE(5,5) TE(6,6) TE(7,7) TE(8,8) TE(9,9) TE(10,10)
FR TE(11,11) TE(12,12) TE(13,13) TE(14,14) TE(15,15) TE(16,16) TE(17,17) TE(18,18)
FR TE(19,19) TE(20,20) TE(21,21) TE(22,22) TE(23,23) TE(24,24) TE(25,25)

!Correlate residuals for victimization items
```

```
 FR TE(12,1)
 FR TE(15,1)
 FR TE(15,12)
 FR TE(13,2)
 FR TE(16,2)
 FR TE(16,13)
 FR TE(14,3)
 FR TE(17,3)
 FR TE(17,14)

!Correlate residuals for perception of peer items
 FR TE(18,4)
 FR TE(19,5)

!Correlate residuals for depression items
 FR TE(20,6)
 FR TE(21,7)
 FR TE(22,8)

!Correlate residuals for anxiety items
 FR TE(23,9)
 FR TE(24,10)
 FR TE(25,11)

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU AD=OFF RS SC MI ND=3
DA NO=4056 ! Group2
ME fi=Intervn.pvict.dat
SD fi=Intervn.pvict.dat
KM fi=Intervn.pvict.dat

LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
```

```
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO LY=PS PS=PS TE=PS TY=FR AL=FI

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU
```

Syntax for Weak Invariance Model

```
TI Weak Invariance
DA NG=2 NO=3685 NI=33 ME=ML
ME fi=Control.pvict.dat
SD fi=Control.pvict.dat
KM fi=Control.pvict.dat
LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO NY=25 NE=9 LY=FU,FI PS=SY,FR TE=SY,FI TY=FR AL=FI

 FI PS(1,1) PS(2,2) PS(3,3) PS(4,4)
 VA 1.0 PS(1,1) PS(2,2) PS(3,3) PS(4,4)

 FR LY(1,1) LY(2,1) LY(3,1)!Vic over time
 FR LY(12,5) LY(13,5) LY(14,5)
 FR LY(15,6) LY(16,6) LY(17,6)
 EQ LY(1,1) LY(12,5) LY(15,6)
 EQ LY(2,1) LY(13,5) LY(16,6)
 EQ LY(3,1) LY(14,5) LY(17,6)

 FR LY(4,2) LY(5,2)! Per of peers over time
 FR LY(18,7) LY(19,7)
 EQ LY(18,7) LY(4,2)
 EQ LY(19,7) LY(5,2)

 FR LY(6,3) LY(7,3) LY(8,3)! Dep over time
 FR LY(20,8) LY(21,8) LY(22,8)
 EQ LY(20,8) LY(6,3)
 EQ LY(21,8) LY(7,3)
 EQ LY(22,8) LY(8,3)

 FR LY(9,4) LY(10,4) LY(11,4)! Anx over time
 FR LY(23,9) LY(24,9) LY(25,9)
```

```
 EQ LY(23,9) LY(9,4)
 EQ LY(24,9) LY(10,4)
 EQ LY(25,9) LY(11,4)

 FR TE(1,1) TE(2,2) TE(3,3) TE(4,4) TE(5,5) TE(6,6) TE(7,7) TE(8,8) TE(9,9) TE(10,10)
 FR TE(11,11) TE(12,12) TE(13,13) TE(14,14) TE(15,15) TE(16,16) TE(17,17) TE(18,18)
 FR TE(19,19) TE(20,20) TE(21,21) TE(22,22) TE(23,23) TE(24,24) TE(25,25)

 !Correlate residuals for victimization items
 FR TE(12,1)
 FR TE(15,1)
 FR TE(15,12)
 FR TE(13,2)
 FR TE(16,2)
 FR TE(16,13)
 FR TE(14,3)
 FR TE(17,3)
 FR TE(17,14)
!Correlate residuals for perception of peer items
 FR TE(18,4)
 FR TE(19,5)
!Correlate residuals for depression items
 FR TE(20,6)
 FR TE(21,7)
 FR TE(22,8)
!Correlate residuals for anxiety items
 FR TE(23,9)
 FR TE(24,10)
 FR TE(25,11)

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU AD=OFF RS SC MI ND=3

DA NO=4056
ME fi=Intervn.pvict.dat
SD fi=Intervn.pvict.dat
KM fi=Intervn.pvict.dat
LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
```

```
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO LY=IN PS=PS TE=PS TY=FR AL=FI

 FR PS(1,1) PS(2,2) PS(3,3) PS(4,4)

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU RS SC MI ND=3
```

Syntax for Strong Invariance Model

```
TI Strong Invariance
DA NG=2 NO=3685 NI=33 ME=ML
ME fi=Control.pvict.dat
SD fi=Control.pvict.dat
KM fi=Control.pvict.dat
LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO NY=25 NE=9 LY=FU,FI PS=SY,FR TE=SY,FI TY=FR AL=FI

 FI PS(1,1) PS(2,2) PS(3,3) PS(4,4)
 VA 1.0 PS(1,1) PS(2,2) PS(3,3) PS(4,4)

FR LY(1,1) LY(2,1) LY(3,1)!Vic over time
 FR LY(12,5) LY(13,5) LY(14,5)
 FR LY(15,6) LY(16,6) LY(17,6)
 EQ LY(1,1) LY(12,5) LY(15,6)
 EQ LY(2,1) LY(13,5) LY(16,6)
 EQ LY(3,1) LY(14,5) LY(17,6)

 FR LY(4,2) LY(5,2)! Per of peers over time
 FR LY(18,7) LY(19,7)
 EQ LY(18,7) LY(4,2)
 EQ LY(19,7) LY(5,2)

 FR LY(6,3) LY(7,3) LY(8,3)! Dep over time
 FR LY(20,8) LY(21,8) LY(22,8)
 EQ LY(20,8) LY(6,3)
 EQ LY(21,8) LY(7,3)
 EQ LY(22,8) LY(8,3)

 FR LY(9,4) LY(10,4) LY(11,4)! Anx over time
 FR LY(23,9) LY(24,9) LY(25,9)
```

```
EQ LY(23,9) LY(9,4)
EQ LY(24,9) LY(10,4)
EQ LY(25,9) LY(11,4)

EQ TY(1) TY(12) TY(15)
EQ TY(2) TY(13) TY(16)
EQ TY(3) TY(14) TY(17)
EQ TY(4) TY(18)
EQ TY(5) TY(19)
EQ TY(6) TY(20)
EQ TY(7) TY(21)
EQ TY(8) TY(22)
EQ TY(9) TY(23)
EQ TY(10) TY(24)
EQ TY(11) TY(25)

FR AL(5) AL(6) AL(7) AL(8) AL(9)

FR TE(1,1) TE(2,2) TE(3,3) TE(4,4) TE(5,5) TE(6,6) TE(7,7) TE(8,8) TE(9,9) TE(10,10)
FR TE(11,11) TE(12,12) TE(13,13) TE(14,14) TE(15,15) TE(16,16) TE(17,17) TE(18,18)
FR TE(19,19) TE(20,20) TE(21,21) TE(22,22) TE(23,23) TE(24,24) TE(25,25)

!Correlate residuals for victimization items
FR TE(12,1)
FR TE(15,1)
FR TE(15,12)
FR TE(13,2)
FR TE(16,2)
FR TE(16,13)
FR TE(14,3)
FR TE(17,3)
FR TE(17,14)
!Correlate residuals for perception of peer items
FR TE(18,4)
FR TE(19,5)
!Correlate residuals for depression items
FR TE(20,6)
FR TE(21,7)
FR TE(22,8)
!Correlate residuals for anxiety items
FR TE(23,9)
FR TE(24,10)
FR TE(25,11)

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU AD=OFF RS SC MI ND=3

DA NO=4056
ME fi=Intervn.pvict.dat
SD fi=Intervn.pvict.dat
```

```
KM fi=Intervn.pvict.dat
LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO LY=IN PS=PS TE=PS TY=IN AL=FR

 FR PS(1,1) PS(2,2) PS(3,3) PS(4,4)

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU RS SC MI ND=3
```

Syntax for Equal Latent Variances Model

```
TI Equal Variances
DA NG=2 NO=3685 NI=33 ME=ML
ME fi=Control.pvict.dat
SD fi=Control.pvict.dat
KM fi=Control.pvict.dat
LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO NY=25 NE=9 LY=FU,FI PS=SY,FR TE=SY,FI TY=FR AL=FI

 FI PS(1,1) PS(2,2) PS(3,3) PS(4,4) PS(5,5) PS(6,6) PS(7,7) PS(8,8) PS(9,9)
 VA 1.0 PS(1,1) PS(2,2) PS(3,3) PS(4,4) PS(5,5) PS(6,6) PS(7,7) PS(8,8) PS(9,9)

FR LY(1,1) LY(2,1) LY(3,1)!Vic over time
 FR LY(12,5) LY(13,5) LY(14,5)
 FR LY(15,6) LY(16,6) LY(17,6)
 EQ LY(1,1) LY(12,5) LY(15,6)
 EQ LY(2,1) LY(13,5) LY(16,6)
 EQ LY(3,1) LY(14,5) LY(17,6)

 FR LY(4,2) LY(5,2)! Per of peers over time
 FR LY(18,7) LY(19,7)
 EQ LY(18,7) LY(4,2)
 EQ LY(19,7) LY(5,2)

 FR LY(6,3) LY(7,3) LY(8,3)! Dep over time
 FR LY(20,8) LY(21,8) LY(22,8)
 EQ LY(20,8) LY(6,3)
 EQ LY(21,8) LY(7,3)
 EQ LY(22,8) LY(8,3)

 FR LY(9,4) LY(10,4) LY(11,4)! Anx over time
 FR LY(23,9) LY(24,9) LY(25,9)
```

```
 EQ LY(23,9) LY(9,4)
 EQ LY(24,9) LY(10,4)
 EQ LY(25,9) LY(11,4)

 FR TE(1,1) TE(2,2) TE(3,3) TE(4,4) TE(5,5) TE(6,6) TE(7,7) TE(8,8) TE(9,9) TE(10,10)
 FR TE(11,11) TE(12,12) TE(13,13) TE(14,14) TE(15,15) TE(16,16) TE(17,17) TE(18,18)
 FR TE(19,19) TE(20,20) TE(21,21) TE(22,22) TE(23,23) TE(24,24) TE(25,25)

 !Correlate residuals for victimization items
 FR TE(12,1)
 FR TE(15,1)
 FR TE(15,12)
 FR TE(13,2)
 FR TE(16,2)
 FR TE(16,13)
 FR TE(14,3)
 FR TE(17,3)
 FR TE(17,14)

!Correlate residuals for perception of peer items
 FR TE(18,4)
 FR TE(19,5)
!Correlate residuals for depression items
 FR TE(20,6)
 FR TE(21,7)
 FR TE(22,8)
!Correlate residuals for anxiety items
 FR TE(23,9)
 FR TE(24,10)
 FR TE(25,11)

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU AD=OFF RS SC MI ND=3

DA NO=4056
ME fi=Intervn.pvict.dat
SD fi=Intervn.pvict.dat
KM fi=Intervn.pvict.dat
LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
```

```
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO LY=IN PS=PS TE=PS TY=FR AL=FI

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU RS SC MI ND=3
```

Syntax for Equal Covariances Model

```
TI Equal Covariances (Phantom)
DA NG=2 NO=3685 NI=33 ME=ML
ME fi=Control.pvict.dat
SD fi=Control.pvict.dat
KM fi=Control.pvict.dat

LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO NY=25 NE=18 LY=FU,FI PS=SY,FI TE=SY,FI BE=FU,FI

FR LY(1,1) LY(2,1) LY(3,1)!Vic over time
 FR LY(12,5) LY(13,5) LY(14,5)
 FR LY(15,6) LY(16,6) LY(17,6)
 EQ LY(1,1) LY(12,5) LY(15,6)
 EQ LY(2,1) LY(13,5) LY(16,6)
 EQ LY(3,1) LY(14,5) LY(17,6)

 FR LY(4,2) LY(5,2)! Per of peers over time
 FR LY(18,7) LY(19,7)
 EQ LY(18,7) LY(4,2)
 EQ LY(19,7) LY(5,2)

 FR LY(6,3) LY(7,3) LY(8,3)! Dep over time
 FR LY(20,8) LY(21,8) LY(22,8)
 EQ LY(20,8) LY(6,3)
 EQ LY(21,8) LY(7,3)
 EQ LY(22,8) LY(8,3)

 FR LY(9,4) LY(10,4) LY(11,4)! Anx over time
 FR LY(23,9) LY(24,9) LY(25,9)
 EQ LY(23,9) LY(9,4)
 EQ LY(24,9) LY(10,4)
```

```
EQ LY(25,9) LY(11,4)

FR PS(10,10) PS(11,11) PS(12,12) PS(13,13) PS(14,14)
FI PS(10,10) PS(11,11) PS(12,12) PS(13,13) PS(14,14)
VA 1.0 PS(10,10) PS(11,11) PS(12,12) PS(13,13) PS(14,14)

FR PS(15,15) PS(16,16) PS(17,17) PS(18,18)
FI PS(15,15) PS(16,16) PS(17,17) PS(18,18)
VA 1.0 PS(15,15) PS(16,16) PS(17,17) PS(18,18)

FR PS(14,10) PS(15,14)
FR PS(11,10) PS(16,15)
FR PS(12,10) PS(17,15)
FR PS(13,10) PS(18,15)
FR PS(12,11) PS(17,16)
FR PS(13,11) PS(18,16)
FR PS(13,12) PS(18,17)
FR PS(14,11) PS(16,14)
FR PS(14,12) PS(17,14)
FR PS(14,13) PS(18,14)
FR PS(15,13) PS(15,12) PS(15,11) PS(15,10)
FR PS(16,13) PS(16,12) PS(16,11) PS(16,10)
FR PS(17,13) PS(17,12) PS(17,11) PS(17,10)
FR PS(18,13) PS(18,12) PS(18,11) PS(18,10)

EQ PS(14,10) PS(15,14)
EQ PS(11,10) PS(16,15)
EQ PS(12,10) PS(17,15)
EQ PS(13,10) PS(18,15)
EQ PS(12,11) PS(17,16)
EQ PS(13,11) PS(18,16)
EQ PS(13,12) PS(18,17)
EQ PS(14,11) PS(16,14)
EQ PS(14,12) PS(17,14)
EQ PS(14,13) PS(18,14)

FR TE(1,1) TE(2,2) TE(3,3) TE(4,4) TE(5,5) TE(6,6) TE(7,7) TE(8,8) TE(9,9) TE(10,10)
FR TE(11,11) TE(12,12) TE(13,13) TE(14,14) TE(15,15) TE(16,16) TE(17,17) TE(18,18)
FR TE(19,19) TE(20,20) TE(21,21) TE(22,22) TE(23,23) TE(24,24) TE(25,25)

!Correlate residuals for victimization items
FR TE(12,1)
FR TE(15,1)
FR TE(15,12)
FR TE(13,2)
FR TE(16,2)
FR TE(16,13)
FR TE(14,3)
FR TE(17,3)
FR TE(17,14)

!Correlate residuals for perception of peer items
FR TE(18,4)
FR TE(19,5)
```

```
!Correlate residuals for depression items
 FR TE(20,6)
 FR TE(21,7)
 FR TE(22,8)

!Correlate residuals for anxiety items
 FR TE(23,9)
 FR TE(24,10)
 FR TE(25,11)

 VA 1.0 BE(1,10) BE(2,11) BE(3,12) BE(4,13)
 FR BE(5,14) BE(6,15) BE(7,16) BE(8,17) BE(9,18)

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3
 PH_Vic1 PH_Per1 PH_Dep1 PH_Anx1
 PH_Vic2
 PH_Vic3 PH_Per3 PH_Dep3 PH_Anx3

OU AD=OFF SO RS SC MI ND=3

DA NO=4056
ME fi=Intervn.pvict.dat
SD fi=Intervn.pvict.dat
KM fi=Intervn.pvict.dat

LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO LY=IN PS=IN TE=PS BE=FU,FI

 FR BE(1,10) BE(2,11) BE(3,12) BE(4,13) BE(5,14) BE(6,15) BE(7,16) BE(8,17) BE(9,18)
```

```
LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3
 PH_Vic1 PH_Per1 PH_Dep1 PH_Anx1
 PH_Vic2
 PH_Vic3 PH_Per3 PH_Dep3 PH_Anx3

OU AD=OFF SO RS SC MI ND=3
```

Syntax for Equal Latent Means Model

```
TI Equal Means
DA NG=2 NO=3685 NI=33 ME=ML
ME fi=Control.pvict.dat
SD fi=Control.pvict.dat
KM fi=Control.pvict.dat

LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO NY=25 NE=9 LY=FU,FI PS=SY,FR TE=SY,FI TY=FR AL=FI

 FI PS(1,1) PS(2,2) PS(3,3) PS(4,4)
 VA 1.0 PS(1,1) PS(2,2) PS(3,3) PS(4,4)

FR LY(1,1) LY(2,1) LY(3,1)!Vic over time
 FR LY(12,5) LY(13,5) LY(14,5)
 FR LY(15,6) LY(16,6) LY(17,6)
 EQ LY(1,1) LY(12,5) LY(15,6)
 EQ LY(2,1) LY(13,5) LY(16,6)
 EQ LY(3,1) LY(14,5) LY(17,6)

 FR LY(4,2) LY(5,2)! Per of peers over time
 FR LY(18,7) LY(19,7)
 EQ LY(18,7) LY(4,2)
 EQ LY(19,7) LY(5,2)

 FR LY(6,3) LY(7,3) LY(8,3)! Dep over time
 FR LY(20,8) LY(21,8) LY(22,8)
 EQ LY(20,8) LY(6,3)
 EQ LY(21,8) LY(7,3)
 EQ LY(22,8) LY(8,3)

 FR LY(9,4) LY(10,4) LY(11,4)! Anx over time
```

```
 FR LY(23,9) LY(24,9) LY(25,9)
 EQ LY(23,9) LY(9,4)
 EQ LY(24,9) LY(10,4)
 EQ LY(25,9) LY(11,4)

 EQ TY(1) TY(12) TY(15)
 EQ TY(2) TY(13) TY(16)
 EQ TY(3) TY(14) TY(17)
 EQ TY(4) TY(18)
 EQ TY(5) TY(19)
 EQ TY(6) TY(20)
 EQ TY(7) TY(21)
 EQ TY(8) TY(22)
 EQ TY(9) TY(23)
 EQ TY(10) TY(24)
 EQ TY(11) TY(25)

 FR TE(1,1) TE(2,2) TE(3,3) TE(4,4) TE(5,5) TE(6,6) TE(7,7) TE(8,8) TE(9,9) TE(10,10)
 FR TE(11,11) TE(12,12) TE(13,13) TE(14,14) TE(15,15) TE(16,16) TE(17,17) TE(18,18)
 FR TE(19,19) TE(20,20) TE(21,21) TE(22,22) TE(23,23) TE(24,24) TE(25,25)

 !Correlate residuals for victimization items
 FR TE(12,1)
 FR TE(15,1)
 FR TE(15,12)
 FR TE(13,2)
 FR TE(16,2)
 FR TE(16,13)
 FR TE(14,3)
 FR TE(17,3)
 FR TE(17,14)

!Correlate residuals for perception of peer items
 FR TE(18,4)
 FR TE(19,5)

!Correlate residuals for depression items
 FR TE(20,6)
 FR TE(21,7)
 FR TE(22,8)

!Correlate residuals for anxiety items
 FR TE(23,9)
 FR TE(24,10)
 FR TE(25,11)

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU AD=OFF RS SC MI ND=3

DA NO=4056
```

```
ME fi=Intervn.pvict.dat
SD fi=Intervn.pvict.dat
KM fi=Intervn.pvict.dat
LA
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3
 boy age immigran grade swedish vicg_1 vicg_2 vicg_3
SE
 pvict1_1 pvict2_1 pvict3_1
 Pper1_1 Pper2_1
 Pdep1_1 Pdep2_1 Pdep3_1
 Panx1_1 Panx2_1 Panx3_1
 pvict1_2 pvict2_2 pvict3_2
 pvict1_3 pvict2_3 pvict3_3
 Pper1_3 Pper2_3
 Pdep1_3 Pdep2_3 Pdep3_3
 Panx1_3 Panx2_3 Panx3_3/

MO LY=IN PS=SY,FR TE=PS TY=IN AL=FI

LE
 Vic1 Per1 Dep1 Anx1
 Vic2
 Vic3 Per3 Dep3 Anx3

OU RS SC MI ND=3
```

Syntax for Constrained Panel Model

```
INPUT INSTRUCTIONS

 TITLE:
    Panel Model with Covariates - Constrained

 DATA:
    FILE IS KiVa.dat;
    TYPE IS CORRELATION MEANS STDEVIATIONS;
    NOBSERVATIONS ARE 4056 3865;
    NGROUPS=2;

 VARIABLE:
    NAMES ARE
       pvict1_1 pvict2_1 pvict3_1
       Pper1_1 Pper2_1
       Pdep1_1 Pdep2_1 Pdep3_1
       Panx1_1 Panx2_1 Panx3_1
       pvict1_2 pvict2_2 pvict3_2
       pvict1_3 pvict2_3 pvict3_3
       Pper1_3 Pper2_3
       Pdep1_3 Pdep2_3 Pdep3_3
       Panx1_3 Panx2_3 Panx3_3
       boy swedish immigran age grade
       vicg_1 vicg_2 vicg_3;

    USEVARIABLES ARE
       pvict1_1 pvict2_1 pvict3_1
       pvict1_2 pvict2_2 pvict3_2
       pvict1_3 pvict2_3 pvict3_3
       Pper1_1 Pper2_1
       Pper1_3 Pper2_3
       Pdep1_1 Pdep2_1 Pdep3_1
       Pdep1_3 Pdep2_3 Pdep3_3
       Panx1_1 Panx2_1 Panx3_1
       Panx1_3 Panx2_3 Panx3_3
       boy swedish immigran age;

 ANALYSIS:
 TYPE IS GENERAL;
 ITERATIONS = 15000;

 MODEL:
 PVIC1 BY
  pvict1_1* (L1)
  pvict2_1 (L2)
  pvict3_1 (L3);

 PER1 BY
  Pper1_1* (L4)
  Pper2_1 (L5);

 DEP1 BY
```

```
 Pdep1_1* (L6)
 Pdep2_1 (L7)
 Pdep3_1 (L8);

ANX1 BY
 Panx1_1* (L9)
 Panx2_1 (L10)
 Panx3_1 (L11);

PVIC2 BY
 pvict1_2* (L1)
 pvict2_2 (L2)
 pvict3_2 (L3);

PVIC3 BY
 pvict1_3* (L1)
 pvict2_3 (L2)
 pvict3_3 (L3);

PER3 BY
 Pper1_3* (L4)
 Pper2_3 (L5);

DEP3 BY
 Pdep1_3* (L6)
 Pdep2_3 (L7)
 Pdep3_3 (L8);

ANX3 BY
 Panx1_3* (L9)
 Panx2_3 (L10)
 Panx3_3 (L11);

BOY1 BY
 boy* (L12);
 boy@0;

SWE1 BY
 swedish* (L13);
 swedish@0;

IMM1 BY
 immigran* (L14);
 immigran@0;

AGE1 BY
 age* (L15);
 age@0;

 PH_PVIC1 BY PVIC1@1;
 PH_PER1 BY PER1@1;
 PH_DEP1 BY DEP1@1;
 PH_ANX1 BY ANX1@1;
 PH_PVIC2 BY PVIC2*;
```

```
PH_PVIC3 BY PVIC3*;
PH_PER3 BY PER3*;
PH_DEP3 BY DEP3*;
PH_ANX3 BY ANX3*;

BOY1@1;
SWE1@1;
IMM1@1;
AGE1@1;
PVIC1@0;
PER1@0;
DEP1@0;
ANX1@0;
PVIC2@0;
PVIC3@0;
PER3@0;
DEP3@0;
ANX3@0;
PH_PVIC1@1;
PH_PER1@1;
PH_DEP1@1;
PH_ANX1@1;
PH_PVIC2@1;
PH_PVIC3@1;
PH_PER3@1;
PH_DEP3@1;
PH_ANX3@1;

pvict1_1 WITH pvict1_2 pvict1_3;
pvict1_2 WITH pvict1_3;
pvict2_1 WITH pvict2_2 pvict2_3;
pvict2_2 WITH pvict2_3;
pvict3_1 WITH pvict3_2 pvict3_3;
pvict3_2 WITH pvict3_3;
Pper1_1 WITH Pper1_3;
Pper2_1 WITH Pper2_3;
Pdep1_1 WITH Pdep1_3;
Pdep2_1 WITH Pdep2_3;
Pdep3_1 WITH Pdep3_3;
Panx1_1 WITH Panx1_3;
Panx2_1 WITH Panx2_3;
Panx3_1 WITH Panx3_3;

PVIC1 WITH PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0
PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

PER1 WITH DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0
PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

DEP1 WITH ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0
PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;
```

```
 ANX1 WITH PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 PVIC2 WITH PVIC3@0 PER3@0 DEP3@0 ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 PVIC3 WITH PER3@0 DEP3@0 ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 PER3 WITH DEP3@0 ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 DEP3 WITH ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 ANX3 WITH PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0
 PH_PVIC2@0 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

!Autoregressive Paths
 PH_PVIC2 ON PH_PVIC1 (B1);
 PH_PVIC3 ON PH_PVIC1@0;
 PH_PVIC3 ON PH_PVIC2 (B2);
 PH_PER3 ON PH_PER1 (B3);
 PH_DEP3 ON PH_DEP1;
 PH_ANX3 ON PH_ANX1 (B4);

!Time 1 Correlations
 PH_PVIC1 WITH PH_PER1;
 PH_PVIC1 WITH PH_DEP1 (B5);
 PH_PVIC1 WITH PH_ANX1;
 PH_PER1 WITH PH_DEP1;
 PH_PER1 WITH PH_ANX1 (B6);
 PH_DEP1 WITH PH_ANX1 (B7);

! Time 3 Correlations
 PH_PVIC3 WITH PH_PER3;
 PH_PVIC3 WITH PH_DEP3;
 PH_PVIC3 WITH PH_ANX3 (B8);
 PH_PER3 WITH PH_DEP3 (B9);
 PH_PER3 WITH PH_ANX3;
 PH_DEP3 WITH PH_ANX3 (B10);

!PH_PVIC2 Cross-Lags
 PH_PVIC2 ON PH_PER1@0;
 PH_PVIC2 ON PH_DEP1@0;
 PH_PVIC2 ON PH_ANX1@0;

 PH_PER3 ON PH_PVIC2 (B11);
```

```
 PH_DEP3 ON PH_PVIC2 (B12);
 PH_ANX3 ON PH_PVIC2;

!PH_PVIC3 Cross-Lags
 PH_PVIC3 ON PH_PER1@0;
 PH_PVIC3 ON PH_DEP1@0;
 PH_PVIC3 ON PH_ANX1@0;

!PH_PER3 Cross-Lags
 PH_PER3 ON PH_PVIC1 (B13);
 PH_PER3 ON PH_DEP1@0;
 PH_PER3 ON PH_ANX1@0;

!PH_DEP3 Cross-Lags
 PH_DEP3 ON PH_PVIC1 (B14);
 PH_DEP3 ON PH_PER1 (B15);
 PH_DEP3 ON PH_ANX1@0;

!PH_ANX3 Cross-Lags
 PH_ANX3 ON PH_PVIC1 (B16);
 PH_ANX3 ON PH_PER1;
 PH_ANX3 ON PH_DEP1@0;

 PH_PVIC1 ON BOY1 SWE1 IMM1 AGE1;
 PH_PER1 ON BOY1 SWE1 IMM1 AGE1;
 PH_DEP1 ON BOY1 SWE1 IMM1 AGE1;
 PH_ANX1 ON BOY1 SWE1 IMM1 AGE1;
 PH_PVIC2 ON BOY1 SWE1 IMM1 AGE1;
 PH_PVIC3 ON BOY1 SWE1 IMM1 AGE1;
 PH_PER3 ON BOY1 SWE1 IMM1 AGE1;
 PH_DEP3 ON BOY1 SWE1 IMM1 AGE1;
 PH_ANX3 ON BOY1 SWE1 IMM1 AGE1;

 BOY1 WITH SWE1 IMM1 AGE1;
 SWE1 WITH IMM1 AGE1;
 IMM1 WITH AGE1;

 BOY1 WITH PVIC1@0 PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0;
 SWE1 WITH PVIC1@0 PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0;
 IMM1 WITH PVIC1@0 PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0;
 AGE1 WITH PVIC1@0 PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0;

MODEL G1:
 [boy];
 [swedish];
 [immigran];
 [age];
 [pvict1_1];
 [pvict2_1];
 [pvict3_1];
 [Pper1_1];
 [Pper2_1];
 [Pdep1_1];
 [Pdep2_1];
```

```
 [Pdep3_1];
 [Panx1_1];
 [Panx2_1];
 [Panx3_1];
 [pvict1_2];
 [pvict2_2];
 [pvict3_2];
 [pvict1_3];
 [pvict2_3];
 [pvict3_3];
 [Pper1_3];
 [Pper2_3];
 [Pdep1_3];
 [Pdep2_3];
 [Pdep3_3];
 [Panx1_3];
 [Panx2_3];
 [Panx3_3];

 [BOY1@0];
 [SWE1@0];
 [IMM1@0];
 [AGE1@0];
 [PVIC1@0];
 [PER1@0];
 [DEP1@0];
 [ANX1@0];
 [PVIC2@0];
 [PVIC3@0];
 [PER3@0];
 [DEP3@0];
 [ANX3@0];
 [PH_PVIC1@0];
 [PH_PER1@0];
 [PH_DEP1@0];
 [PH_ANX1@0];
 [PH_PVIC2@0];
 [PH_PVIC3@0];
 [PH_PER3@0];
 [PH_DEP3@0];
 [PH_ANX3@0];

MODEL G2:
PVIC1 BY
 pvict1_1* (L1)
 pvict2_1 (L2)
 pvict3_1 (L3);

PER1 BY
 Pper1_1* (L4)
 Pper2_1 (L5);

DEP1 BY
 Pdep1_1* (L6)
```

```
 Pdep2_1 (L7)
 Pdep3_1 (L8);

ANX1 BY
 Panx1_1* (L9)
 Panx2_1 (L10)
 Panx3_1 (L11);

PVIC2 BY
 pvict1_2* (L1)
 pvict2_2 (L2)
 pvict3_2 (L3);

PVIC3 BY
 pvict1_3* (L1)
 pvict2_3 (L2)
 pvict3_3 (L3);

PER3 BY
 Pper1_3* (L4)
 Pper2_3 (L5);

DEP3 BY
 Pdep1_3* (L6)
 Pdep2_3 (L7)
 Pdep3_3 (L8);

ANX3 BY
 Panx1_3* (L9)
 Panx2_3 (L10)
 Panx3_3 (L11);

BOY1 BY
 boy* (L12);
 boy@0;

SWE1 BY
 swedish* (L13);
 swedish@0;

IMM1 BY
 immigran* (L14);
 immigran@0;

AGE1 BY
 age* (L15);
 age@0;

 PH_PVIC1 BY PVIC1*;
 PH_PER1 BY PER1*;
 PH_DEP1 BY DEP1*;
 PH_ANX1 BY ANX1*;
 PH_PVIC2 BY PVIC2*;
 PH_PVIC3 BY PVIC3*;
```

```
PH_PER3 BY PER3*;
PH_DEP3 BY DEP3*;
PH_ANX3 BY ANX3*;

BOY1;
SWE1;
IMM1;
AGE1;
PVIC1@0;
PER1@0;
DEP1@0;
ANX1@0;
PVIC2@0;
PVIC3@0;
PER3@0;
DEP3@0;
ANX3@0;
PH_PVIC1@1;
PH_PER1@1;
PH_DEP1@1;
PH_ANX1@1;
PH_PVIC2@1;
PH_PVIC3@1;
PH_PER3@1;
PH_DEP3@1;
PH_ANX3@1;

pvict1_1 WITH pvict1_2 pvict1_3;
pvict1_2 WITH pvict1_3;
pvict2_1 WITH pvict2_2 pvict2_3;
pvict2_2 WITH pvict2_3;
pvict3_1 WITH pvict3_2 pvict3_3;
pvict3_2 WITH pvict3_3;
Pper1_1 WITH Pper1_3;
Pper2_1 WITH Pper2_3;
Pdep1_1 WITH Pdep1_3;
Pdep2_1 WITH Pdep2_3;
Pdep3_1 WITH Pdep3_3;
Panx1_1 WITH Panx1_3;
Panx2_1 WITH Panx2_3;
Panx3_1 WITH Panx3_3;

PVIC1 WITH PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0
PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

PER1 WITH DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0
PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

DEP1 WITH ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0
PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;
```

```
 ANX1 WITH PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 PVIC2 WITH PVIC3@0 PER3@0 DEP3@0 ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 PVIC3 WITH PER3@0 DEP3@0 ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 PER3 WITH DEP3@0 ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 DEP3 WITH ANX3@0
 PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0 PH_PVIC2@0
 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

 ANX3 WITH PH_PVIC1@0 PH_PER1@0 PH_DEP1@0 PH_ANX1@0
 PH_PVIC2@0 PH_PVIC3@0 PH_PER3@0 PH_DEP3@0 PH_ANX3@0;

!Autoregressive Paths
 PH_PVIC2 ON PH_PVIC1 (B1);
 PH_PVIC3 ON PH_PVIC1@0;
 PH_PVIC3 ON PH_PVIC2 (B2);
 PH_PER3 ON PH_PER1 (B3);
 PH_DEP3 ON PH_DEP1;
 PH_ANX3 ON PH_ANX1 (B4);

!Time 1 Correlations
 PH_PVIC1 WITH PH_PER1;
 PH_PVIC1 WITH PH_DEP1 (B5);
 PH_PVIC1 WITH PH_ANX1;
 PH_PER1 WITH PH_DEP1;
 PH_PER1 WITH PH_ANX1 (B6);
 PH_DEP1 WITH PH_ANX1 (B7);

! Time 3 Correlations
 PH_PVIC3 WITH PH_PER3;
 PH_PVIC3 WITH PH_DEP3;
 PH_PVIC3 WITH PH_ANX3 (B8);
 PH_PER3 WITH PH_DEP3 (B9);
 PH_PER3 WITH PH_ANX3;
 PH_DEP3 WITH PH_ANX3 (B10);

!PH_PVIC2 Cross-Lags
 PH_PVIC2 ON PH_PER1@0;
 PH_PVIC2 ON PH_DEP1@0;
 PH_PVIC2 ON PH_ANX1@0;

 PH_PER3 ON PH_PVIC2 (B11);
 PH_DEP3 ON PH_PVIC2 (B12);
```

```
 PH_ANX3 ON PH_PVIC2;

!PH_PVIC3 Cross-Lags
 PH_PVIC3 ON PH_PER1@0;
 PH_PVIC3 ON PH_DEP1@0;
 PH_PVIC3 ON PH_ANX1@0;

!PH_PER3 Cross-Lags
 PH_PER3 ON PH_PVIC1 (B13);
 PH_PER3 ON PH_DEP1@0;
 PH_PER3 ON PH_ANX1@0;

!PH_DEP3 Cross-Lags
 PH_DEP3 ON PH_PVIC1 (B14);
 PH_DEP3 ON PH_PER1 (B15);
 PH_DEP3 ON PH_ANX1@0;

!PH_ANX3 Cross-Lags
 PH_ANX3 ON PH_PVIC1 (B16);
 PH_ANX3 ON PH_PER1;
 PH_ANX3 ON PH_DEP1@0;

 PH_PVIC1 ON BOY1 SWE1 IMM1 AGE1;
 PH_PER1 ON BOY1 SWE1 IMM1 AGE1;
 PH_DEP1 ON BOY1 SWE1 IMM1 AGE1;
 PH_ANX1 ON BOY1 SWE1 IMM1 AGE1;
 PH_PVIC2 ON BOY1 SWE1 IMM1 AGE1;
 PH_PVIC3 ON BOY1 SWE1 IMM1 AGE1;
 PH_PER3 ON BOY1 SWE1 IMM1 AGE1;
 PH_DEP3 ON BOY1 SWE1 IMM1 AGE1;
 PH_ANX3 ON BOY1 SWE1 IMM1 AGE1;

 BOY1 WITH SWE1 IMM1 AGE1;
 SWE1 WITH IMM1 AGE1;
 IMM1 WITH AGE1;

 BOY1 WITH PVIC1@0 PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0;
 SWE1 WITH PVIC1@0 PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0;
 IMM1 WITH PVIC1@0 PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0;
 AGE1 WITH PVIC1@0 PER1@0 DEP1@0 ANX1@0 PVIC2@0 PVIC3@0 PER3@0 DEP3@0 ANX3@0;

 [boy];
 [swedish];
 [immigran];
 [age];
 [pvict1_1];
 [pvict2_1];
 [pvict3_1];
 [Pper1_1];
 [Pper2_1];
 [Pdep1_1];
 [Pdep2_1];
 [Pdep3_1];
 [Panx1_1];
```

```
[Panx2_1];
[Panx3_1];
[pvict1_2];
[pvict2_2];
[pvict3_2];
[pvict1_3];
[pvict2_3];
[pvict3_3];
[Pper1_3];
[Pper2_3];
[Pdep1_3];
[Pdep2_3];
[Pdep3_3];
[Panx1_3];
[Panx2_3];
[Panx3_3];

[BOY1@0];
[SWE1@0];
[IMM1@0];
[AGE1@0];
[PVIC1@0];
[PER1@0];
[DEP1@0];
[ANX1@0];
[PVIC2@0];
[PVIC3@0];
[PER3@0];
[DEP3@0];
[ANX3@0];
[PH_PVIC1@0];
[PH_PER1@0];
[PH_DEP1@0];
[PH_ANX1@0];
[PH_PVIC2@0];
[PH_PVIC3@0];
[PH_PER3@0];
[PH_DEP3@0];
[PH_ANX3@0];

OUTPUT:
SAMPSTAT;
TECH1;
STANDARDIZED;
```