

# **Empirical Analysis of the InAccord Model of Conflict Resolution: Mediation and Arbitration Data from Romania, 2012 to 2015**

By Anders Corr, Ph.D., Judge M. Sue  
Kurita, and Robert Waters, Ph.D.<sup>1</sup>



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<sup>1</sup> Excelsior College of Albany New York commissioned this assessment of the InAccord Model of Conflict Resolution by Corr Analytics. Excelsior College is a non-profit, accredited (by Middle States) college established by the State of New York as Regents College in 1971. The study is coauthored by Anders Corr, Ph.D., Judge M. Sue Kurita, J.D., and Robert Waters, Ph.D. Authors are listed alphabetically by last name. Dr. Anders Corr is the principal of Corr Analytics Inc, founded in New York City in 2013. Judge M. Sue Kurita serves as a judge in El Paso, Texas. Dr. Robert Waters is Dean of the School of Public Service at Excelsior College. The authors are grateful to: Shauna Ries, President of Mediators Without Borders, for assistance with theories to test, and comments throughout; Corina Andrei and Alexandru Grigoras, for their work in Romania, and provision of data; for conceptualization of the study, Laban Coblenz, formerly head of International Development at Excelsior College, and now at the International Thermonuclear Experimental Reactor in Cadarache, France; and Chester Yow of Brigham Young University for research assistance, data entry, and replication of statistical programming. Data and R statistical programming code are available for replication purposes from Anders Corr at [corr@canalyt.com](mailto:corr@canalyt.com).

## Abstract

The InAccord model of conflict resolution was developed in Boulder, Colorado by Mediators Without Borders, starting in 1994. The following principles form the theoretical foundation of the model: conflict is normal, inevitable, and workable; disputants should be empowered to work successfully with conflict; empowerment derives from transparency, reflecting, reframing, and questioning; and disputants create enduring solutions through exploration of their emotions. Mediators Without Borders has implemented the InAccord model in the United States, Brazil, Nigeria, Romania, the Bahamas, Italy, France, Switzerland, UK, Japan, Hungary, Ethiopia, and Germany. Our quantitative empirical analysis of mediation data, collected by an InAccord practitioner in Romania from 2012 to 2015, uses multivariate quasibinomial logit regression, multiple imputation, and maximum likelihood methods. We find significant positive correlations between understanding of the model among 29 disputants ( $n=29$ ), and their feelings of empowerment after participating in the InAccord process. The mean change in empowering feelings (forgiveness, peace, happiness, gratitude, empathy, and hopefulness) is 0.17 ( $\sigma=1.24$ ) per feeling, per disputant. In other words, disputants improved by an average of 0.17 points on a 1-4 scale for each empowerment feeling singly, with a standard deviation of all empowering changes of  $\sigma=1.27$ . Disempowering feelings (anger, guilt, anxiety, depression, fear, and humiliation) decreased by an average of 0.33 ( $\sigma=0.80$ ) per feeling, per disputant. Summing the absolute value of all changes per each of 29 individuals showed a mean improvement across all feelings of 3.00 ( $\sigma=7.76$ ) per disputant. While these results are not significantly different from zero change from a Bayesian perspective, due to a limited number of observations, they do show maximum likelihood improvement. We utilized: multiple imputation to estimate missing data, as well as maximum likelihood, quasibinomial logit regression, and other quantitative methods of causal inference. A simple linear regression of the variable “Understanding InAccord Techniques”, which ranges from 1 to 4, on “Total Feeling Change”, which has a theoretical range of -36 to +36 (12 feelings multiplied by 3 point changes in either a positive or negative direction), shows that for every one point improvement on understanding InAccord techniques, total feelings are predicted to improve 6.67 ( $\sigma 2.26$ ) points over the course of the mediation, a statistically significant result. We are confident that improving understanding of InAccord techniques from the minimum to the maximum level (a change of 3 points) predicts a 20-point improvement in feelings of disputants, a good indicator of resolution success resulting from the InAccord process.

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## Introduction

The InAccord Model of conflict resolution was developed by the Mediators Without Borders team, based in Boulder Colorado, starting in 1994.<sup>2</sup> The process is founded on theoretical principles of fairness, justice, and dignity, and was developed to apply to all human conflict, including between couples, neighbors, organizations, and countries. The approach sees conflict as normal, inevitable, and workable; disputants should be empowered to work successfully with conflict; empowerment derives from transparency, reflecting, reframing, and questioning; and disputants create enduring solutions through exploration of their emotions. A typical mediation between individuals is limited to four hours.

Mediators Without Borders expanded from implementation of the InAccord Model in the United States, to develop it in Brazil, Nigeria, Romania, the Bahamas, Italy, France, Switzerland, United Kingdom, Japan, Hungary, Ethiopia, and Germany. Mediators Without Borders is a for-profit corporation, and is currently franchising its InAccord approach with affiliates worldwide. This study utilizes data on implementation of the InAccord model with a Romanian affiliate between 2012 and 2015.

Excelsior College, based in Albany, New York, entered into an academic partnership with Mediators Without Borders in March 2014. Mediators Without Borders will provide mediation coursework to its students, who are envisioned to become directors of Mediators Without Borders' affiliates world-wide.<sup>3</sup> Excelsior College contracted with Corr Analytics in 2015 to provide analysis of the Romanian data, which is the genesis of this paper.

## The Data

Data utilized in this analysis of InAccord mediations in Romania originates from the Mediators Without Borders team in Romania, which collected data through surveys of each disputant at the beginning and end of the InAccord process, as well as during the intermediate stages of the process. Data collection on disputants before, during, and after mediation (three *phases* of the InAccord process), as well as during four *stages* of phase two, is theorized by the InAccord model as an integral part of the process in that the data collection itself assists disputants in arriving at a negotiated agreement.

The Romania team used two versions of survey instrument, one older paper version starting in 2012, and a later Excel version starting in 2015. The paper version was only available in the Romanian language, and we translated it to English for the data analysis. The questions in the two versions of the survey were sometimes different, and the different surveys sometimes omitted questions from the other survey. What follows is a description of all the data collected in both surveys, which were compiled into a single dataset with consequent missing data. Some of the data was also not collected during the mediation. We used multiple imputation methods to estimate missing data, a process described more fully in the appendix.

The surveys are mostly on a four-point Likert Scale. Some of the questions on the older paper survey were nominal, semi-ordinal variables, and had five categories. If at any point in the process a disputant lacks understanding or is not satisfied with the previous stage of the process, the mediator is, according to the InAccord Process, supposed to initiate a private meeting (a caucus) for clarity with each party. This likely led to less variation in the data than had mediators not responded to lack of understanding by disputants.

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<sup>2</sup> Ries, Shauna, and Susan Harter. *In Justice, In Accord*. Bradenton, FL: Book Locker, 2012.

<sup>3</sup> Lesczinski, Mike. "Mediators Without Borders, Excelsior College Partner on International Education Initiative." *Excelsior Life*, March 3, 2014. Accessed September 5, 2015. <http://news.excelsior.edu/mediators-without-borders-excelsior-college-partner-international-education-initiative/>.

## Phase I Data Collection

Phase I of the InAccord process in Romania is a pre-mediation assessment. Initial questions in Romania include material on: approaches to conflict in the family, home, during play, and at work; frequency of empowering feelings (forgiveness, peace, happiness, gratitude, empathy, and hopefulness) and disempowering feelings (anger, guilt, anxiety, depression, fear, and humiliation); expectations of saving time, money, and relationships through participation in the InAccord mediation; expectations of a fair mediator, process, and solution; level of conflict in the neighborhood or region of the disputant; and how conflict is handled by the disputant, including in the workplace or organization, if the dispute took place in such a location.

## Phase II Data Collection

Phase II of the InAccord process in Romania is a “mediation intervention” and is divided into four stages. Stage 1 includes sharing of perspectives. Stage 2 develops the agenda and option generation. Stage 3 develops a Joint Solution Statement. Finally, Stage 4 crafts the Memorandum of Agreement (MoA).

### First Stage

After the first phase of an InAccord mediation in Romania, which tracks but may be slightly different than the way InAccord is currently being taught, disputants begin the first stage of Phase II by reporting to each other and the mediator, in a joint session, on their understanding of the issues, their own interests, and the other side’s interests. Stage 1 (of Phase II) concludes with data collection on the disputants’ satisfaction and understanding of Stage 1, and their capacity to implement the three InAccord “Touchstone Skills” of questioning, reflecting, and reframing.

### Second Stage

As part of the second stage of the InAccord approach in Romania, disputants are surveyed on their understanding of the agenda, options, Touchstone Skills, evidence, roles, issues, InAccord techniques, and InAccord process, as well as their satisfaction with the mediator, and satisfaction and understanding of Stage 2 and options generated for the agreement.

### Third Stage

The third stage of the InAccord approach in Romania includes a survey of disputants on their understanding and satisfaction with the facts of the case, their understanding of listening and framing techniques, as well as shared interests from Stage 1 that provides the common purpose to frame the first paragraph of the Memorandum of Agreement (MoA). This underscores the disputants’ satisfaction with the joint statement created during this stage.

### Fourth Stage

At stage 4 of the InAccord Approach, disputants have agreed on chosen options and create a SWOT (strengths, weaknesses, opportunities and threats) analysis for each option. The mediator also facilitates the specifics for the final agreement: who, what, where, when, and how for each option. The mediator surveys disputants on satisfaction and understanding of Stage 4, including the Memorandum of Agreement, skills learned, compromises required, and perception of ability to implement the MoA.

## Phase III Data Collection

Phase III of the InAccord process in Romania includes signing of the Memorandum of Agreement, and an exit survey. The survey includes questions on: all twelve of the empowerment and disempowerment feelings; understanding and opinion of the InAccord approach and resulting agreements and consequences of agreements; satisfaction with the mediator and his or her facilitation and documentation; opinion of whether all relevant information was revealed, and the level of the disputants' participation, as well as opinion on the transparency and self-determination of the InAccord approach and facilitation of the Mediator; whether expectations were fulfilled of saving time, money, and relationships; and satisfaction and understanding of the resolution.

## Data Entry

Three data coders conducted all data entry on both survey instruments from Romania. The final combined dataset is titled "InAccord Data Romania AC06.xls" and is available upon request from the authors for replication purposes. This dataset is in comma-separated (.csv) format. The original data was input using Google Sheets by three coders separated by geography. When coders encountered missing or unclear entries on survey sheets, they contacted the Romanian affiliate who provided corrections and insight. All data input was double checked by at least one other coder.

## Hypotheses

The following four hypotheses will be tested below. They focus on the change in feelings of the disputants, as this is believed to be an indicator of resolution success.

$H_1$ : Empowerment feelings, taken singly, improve after the InAccord process.

$H_2$ : Disempowerment feelings, taken singly, improve after the InAccord process.

$H_3$ : A sum of all changes in empowerment and disempowerment shows improvement after the InAccord process.

$H_4$ : Understanding InAccord techniques is correlated with improvement in empowerment and disempowerment feelings.

Figures 1-4 below, and their associated analyses, correspond in number to these hypotheses.

## Data Analysis

We conducted extensive data analysis on data provided by the Mediators Without Borders affiliate in Romania, including tests of hypotheses above, as well as additional hypotheses formulated prior to data analysis with Shauna Reis of Mediators without Borders. The authors also conducted general data mining to find plausible relations within the data for further exploration and testing.

Analytical coding was conducted using R Statistical Software (Version 3.2.2 Patched). A second programmer double-checked all original coding and replicated results. R code and original data for this analysis is available from the authors for replication purposes.

## Empowerment Change

The first hypothesis,  $H_1$ , is that empowerment feelings, taken singly, improve after the InAccord process. We can see in Figure 1 below that there is indeed an average (mean) positive change of 0.17 per empowerment feeling, per disputant, after progressing through the InAccord process. From a maximum likelihood perspective, this shows that the InAccord process is associated with positive change in empowerment feelings among disputants. Changes are negative-skewed, and the positive tail of the distribution is heavier than the negative side.

The red line in Graph 1 shows the heavier positive tail most clearly with a kernel density estimation (KDE) that fits the data better than an assumed normal distribution (the green curve).<sup>4</sup> More respondents had strongly positive, rather than strongly negative, changes in empowerment.

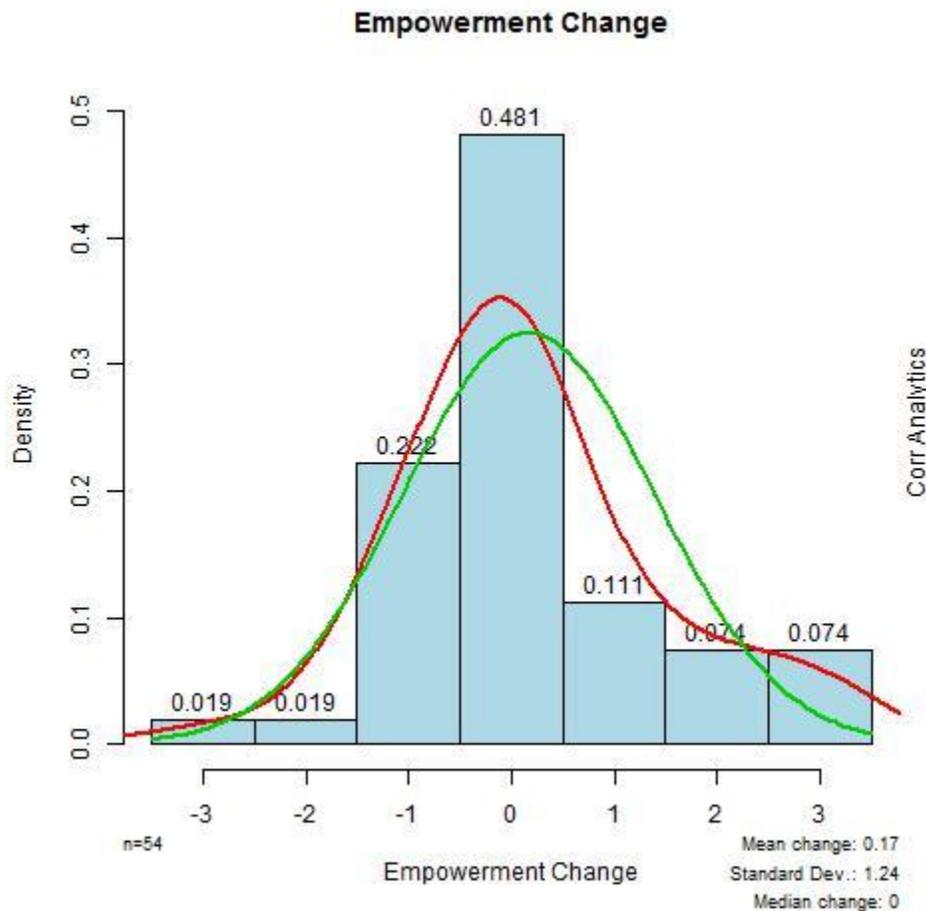


Figure 1: Empowerment Change.

However, the standard deviation of 1.24 for all empowerment changes is quite high relative to mean change, and so from a Bayesian perspective we cannot reject the null hypothesis. The scale of change for any particular feeling is 1 to 4, creating a maximum length of 3 units of change per feeling. Approximately 48% of  $n=54$  observations are clustered around zero change.

<sup>4</sup> The gaussian KDEs in graphs 1-3 use Silverman's rule-of-thumb bandwidth, multiplied by 1.5 to decrease overfitting.

## Disempowerment Change

As with the first hypothesis, the second hypothesis suggests that the *InAccord* process has a positive effect on feelings. Disempowering feelings should decrease after the mediation process. The second hypothesis,  $H_2$ , is that disempowering feelings, taken singly, improve after the *InAccord* process. Data observations that are numerically positive, as with empowering feelings, show positive improvement, that is, fewer disempowering feelings.

We can see in Figure 2 below that there is indeed an average (mean) positive improvement of 0.33 per disempowering feeling, per disputant, after progressing through the *InAccord* process. This shows that the *InAccord* process is associated with decreased disempowering feelings among disputants from a maximum likelihood perspective. Changes are strongly right-skewed, creating a stronger positive mean compared with empowerment feelings. In other words, *InAccord*, according to this data, is better at decreasing negative feelings, than increasing positive feelings. The red line is Silverman's gaussian kernel density estimation, and again fits the data far better than the green normal distribution.

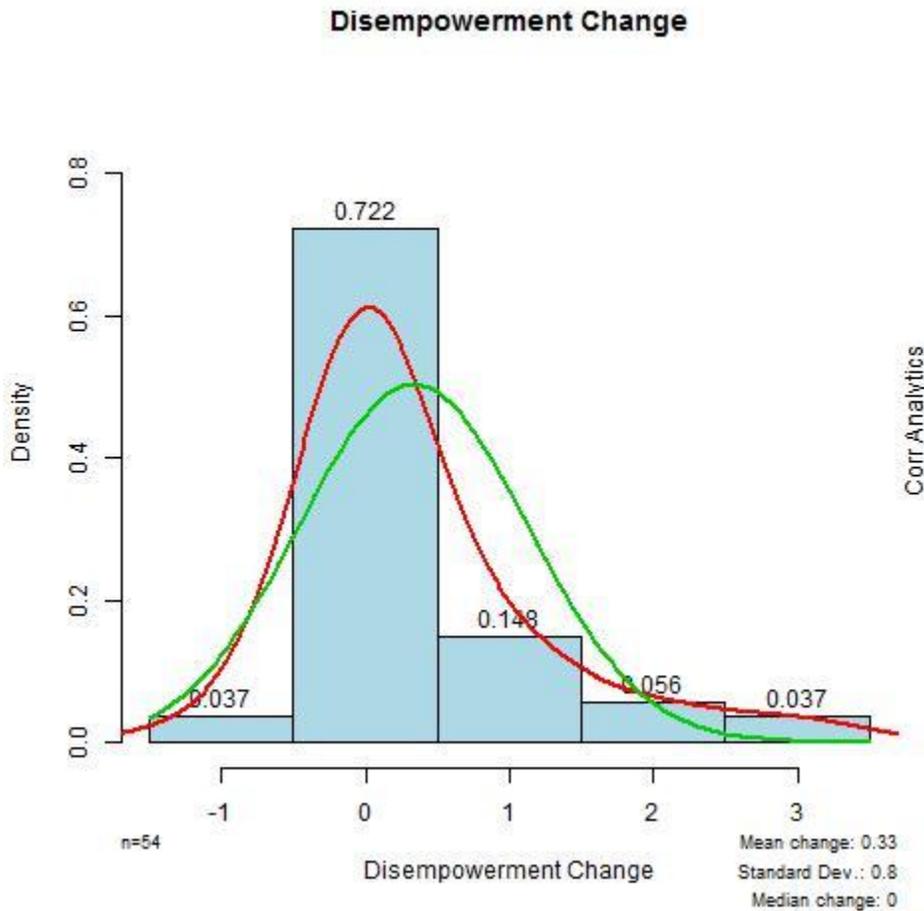


Figure 2: Disempowerment Change

The standard deviation of 0.8 for all disempowerment changes is again too high relative to mean change for Bayesians to reject the null hypothesis accompanying  $H_2$ . Approximately 72% of  $n=54$  observations cluster around zero change.

## Total Emotional Change

The third hypothesis suggests that the InAccord process improves all feelings -- the sum of improvements in empowerment and disempowerment. That is,  $H_3$  hypothesizes that a sum of all changes in empowerment and disempowerment shows improvement after the InAccord process.

With the previous two hypotheses, we looked at each emotion of each of nine persons for whom we have this particular emotion data, yielding  $n=54$  (nine persons multiplied by six emotions each). When summing all emotional change per person to test  $H_3$ , the number of observations collapses to  $n=9$  disputants.

Figure 3 below shows that mean positive improvement of all summed emotions is 3 per disputant, after progressing through the InAccord process. This is substantial emotional improvement from a maximum likelihood perspective.

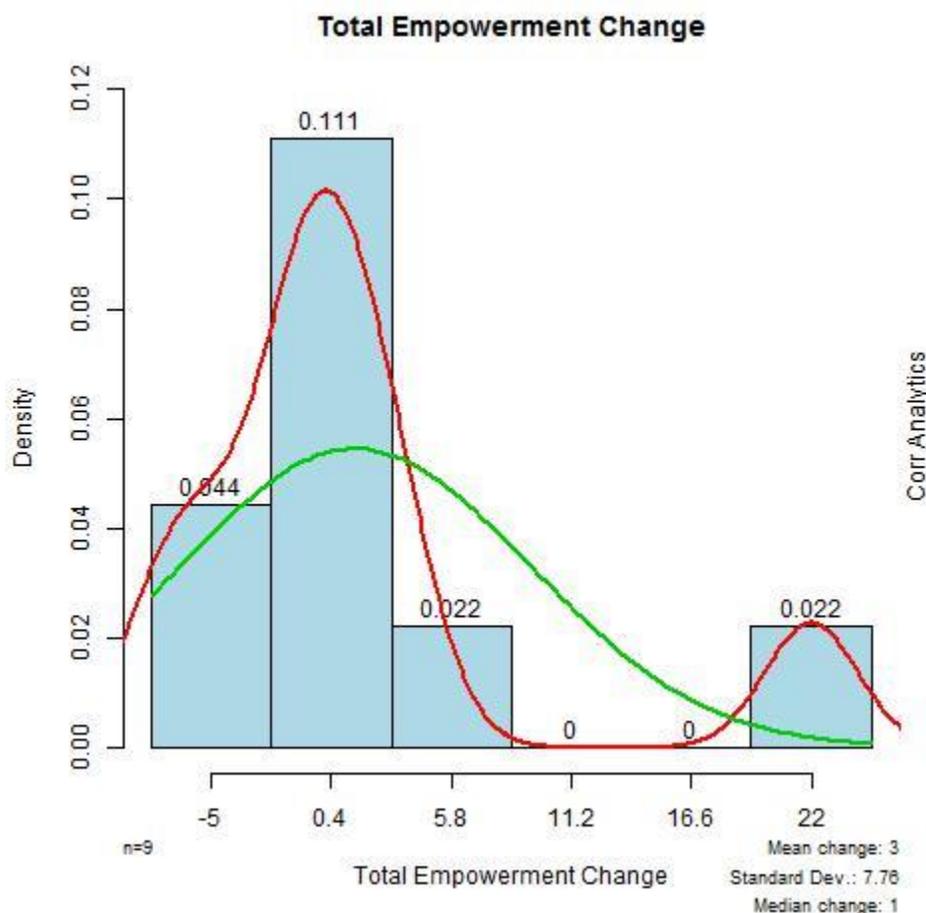


Figure 3: Total Empowerment Change. Note that bar heights do not sum to 1 because each bar spans a length of five. Bar heights are multiplied by five to equal 1.

Changes are again positive-skewed, plus the median change is +1, creating a substantially positive mean. Silverman's gaussian kernel density estimation, even with its bandwidth multiplied by 1.5 to increase smoothing, appears to overfit the data on this variable. But the green normal distribution does worse since it is not truncated near -5 and a large proportion of its density function is in negative territory far from observed data. An unconventional poisson distribution that allows for negative observations would best fit the data, and is left for future research.

Despite a mean 3-point improvement in emotions among disputants, we cannot reject the null hypothesis because the standard deviation is too high at 7.76, more than twice the mean change.

### Effect of Disputants’ Understanding of *InAccord*, on Total Emotional Change

The final hypothesis,  $H_4$ : *Understanding InAccord techniques is correlated with improvement in empowerment and disempowerment feelings*, looks at the effect of InAccord on feelings from a different angle. Rather than simply observing mean change from before the InAccord process to after the process, we attempt to predict total feeling change by level of understanding of InAccord questioning techniques at Phase II, Stage 2 of the process. This is the first question asked of respondents on their level of understanding of InAccord, and is a good instrument for understanding of the InAccord process as a whole.

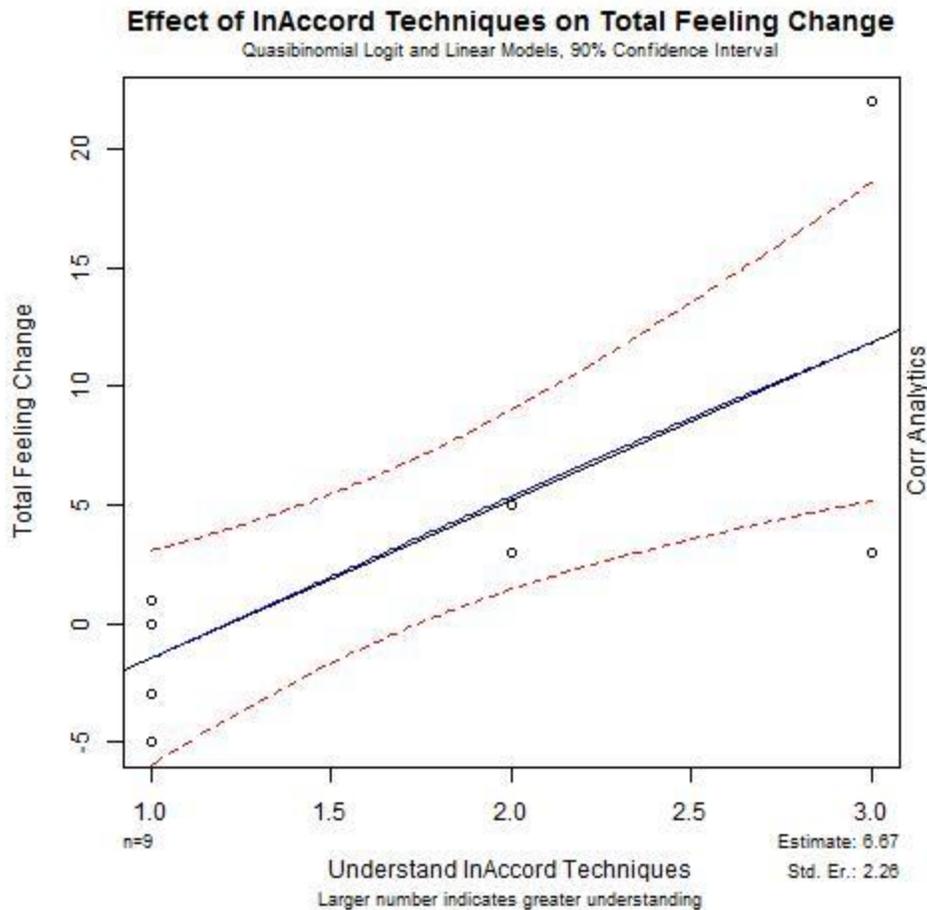


Figure 4: Effect of InAccord Techniques on Total Feeling Change. Note that n=9 disputants, but two observations (1,1) are identical and graphed over each other.

We begin by plotting our observations, with the variable *Understanding InAccord Techniques* on the x-axis, and *Total Feeling Change*, with a theoretical range of -36 to +36 (twelve feelings, multiplied by a length of 3 points of possible change, in either a positive or negative direction). In our observed sample of nine disputants, actual change in total summed feeling improvement ranged from -5 to 22. We then ran a linear regression on the data to produce

an estimate (6.67) of the effect of *Understanding InAccord Techniques* on *Total Feeling Change*. We also ran a quasi-binomial logit model to account for limits of the dependent variable of -36 and +36. The quasi-binomial regression line, in blue, appears substantially the same as the linear regression line, in black.

The standard error of the linear model,  $\sigma = 2.26$ , is sufficiently small that we can reject the null hypothesis. We are 90% confident that  $H_4$  is true: *Understanding InAccord techniques is correlated with improvement in empowerment and disempowerment feelings*. The 90% confidence intervals for the linear regression line are drawn on Figure 4.

The linear estimate implies that we are highly confident that improving understanding of InAccord techniques from the minimum to the maximum level (a change of 3 points) predicts a 20-point improvement in feelings resulting from the InAccord process.

## Future Research

While this analysis of the Romanian data yields encouraging results for the *InAccord* model, additional research would be useful. The authors are exploring opportunities to continue research through:

1. Large-n studies,
2. Cross-national studies, and
3. Analysis of data from natural experiments and randomized controlled trials (RCT).

This study is based on only 29 surveys from Romania. Mean missingness per variable was 53%. This in some cases led to inconclusive analysis, which can be improved through larger-n studies (ideally, 1,500 or more fully-completed surveys).

As culture likely plays a role in conflict resolution causes, effects, and relationships, the authors are exploring opportunities for cross-national studies, including in the countries where InAccord is currently being practiced, or likely will in the near future be practiced: United States, Brazil, Nigeria, Romania, the Bahamas, Italy, France, Switzerland, United Kingdom, Japan, Hungary, Ethiopia, and Germany. We plan to use indicator variables in the data analysis to find country or culture-level effects.

The gold standard in causal inference is the experiment, properly vetted and approved by an institutional review board (IRB). The InAccord model is well suited for natural experiments and randomized control group trials. In some cases judges will be prone to either refer cases to mediation, or not prone to do so. Cases are randomly assigned to judges. Differences in outcomes between cases assigned to judges can then be assessed as a key metric from a natural experiment.

A randomized controlled trial is an experiment that includes randomization and a control group. For example, if a budget is available, and after IRB approval, the opportunity to participate in the experiment could be offered in a particular locale by Mediation Without Borders. Participants would be fully informed in advance that they will be randomized into a control group (not receiving mediation services), treatment group (receiving the InAccord model), and alternative treatment group (non-InAccord mediation). Metrics, for example satisfaction with relationships among disputants, empowerment feelings, and disempowerment feelings, would be measured before, in the middle of, and after mediation, in all study groups, including the control group. Differences in changed feelings between groups would indicate the efficacy of InAccord compared with other mediation methods.

## Conclusion

Data from Romania on the InAccord model of conflict resolution provides strong evidence of the model's efficacy. From a maximum likelihood perspective, InAccord improves emotional mood among disputants, a good indicator of resolution success. We see improvements in both empowerment and disempowerment feelings. Strong evidence for the robustness of this finding is found in the statistically significant estimate associated with hypothesis  $H_4$ :

*Understanding InAccord techniques is correlated with improvement in empowerment and disempowerment feelings.*

We are confident that improving understanding of InAccord techniques from the minimum to the maximum level (a change of 3 points) predicts a 20-point improvement in feelings. Improvement in the feelings of disputants from the InAccord process is a good indicator of resolution success.

## Appendix: Data Missingness

The data from Romania between 2012 and 2015 is subject to extensive missingness. We had data from only 29 disputants, surveys were not fully filled out, and much of the data was spatially collinear, meaning for example that on some surveys all answers on a single page were coded with the same answer. As shown in Figure 5 below, the mean missingness of data per variable is 53%, with 49% of columns having about 65% missingness.

Data preparation included multiple imputation using Stef Van Buren's MICE R statistical code that implements multivariate imputed datasets through chained equations.<sup>5</sup> Missingness was sufficiently high such that we could only obtain two imputed datasets from which to conduct regression analysis. We also used listwise deletion for some analyses.

All difference of means tests above utilize non-imputed data and conduct removal of missing data. The original dataset is 29 rows by 108 columns. Twelve identification variables, (for example, dates of mediation and names of mediators), were stripped prior to multiple imputation of data. This left 96 columns of potentially useful data. Variables with either zero variance ( $\sigma^2 = 0$ ) or greater than 11 missing observations (<40% observed values) were deleted from the data so the imputation would converge. The final dataset from which imputations were created included only 27% of variables. Figure 5 below shows that most variables of the original 108 had approximately 49% of data missing.

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<sup>5</sup> <https://cran.r-project.org/web/packages/mice/mice.pdf>, accessed September 5, 2015.

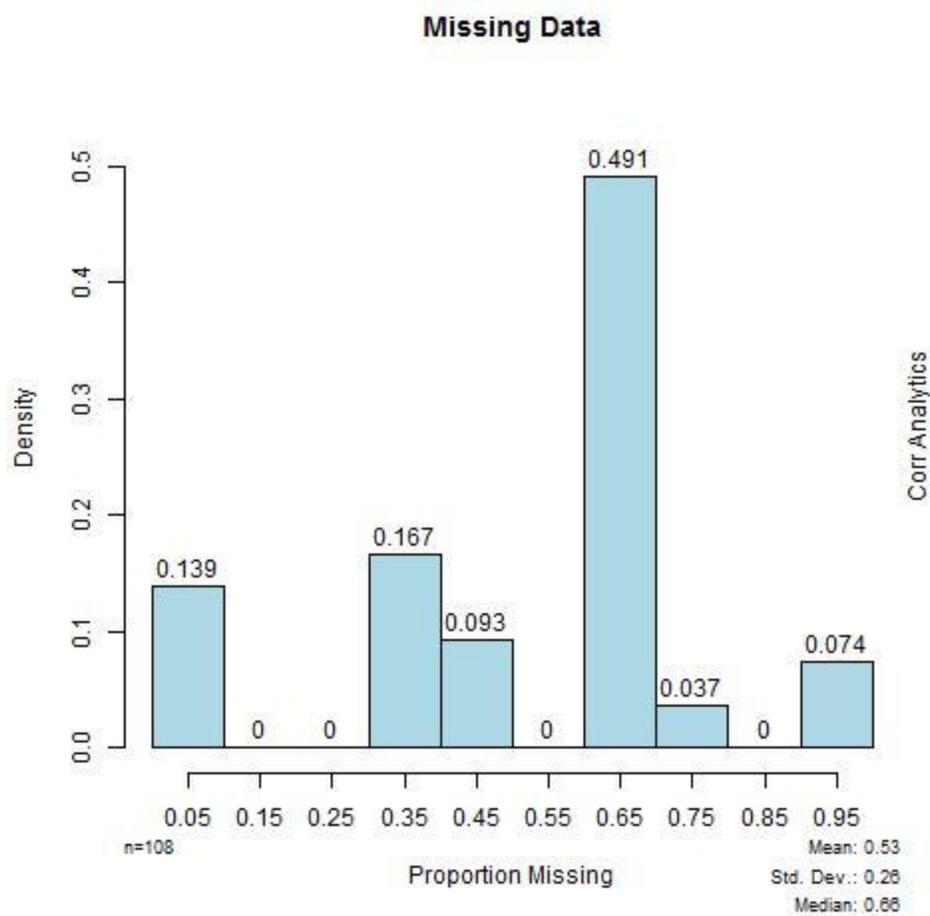


Figure 5: Missing Data