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HEALTH CARE AGGRESSION MANAGEMENT TRAINING EVALUATION

An Evaluation of an Aggression Management Training Program to Cope with Workplace
Violence in the Healthcare Sector

Janneke K. Oostrom and Heleen van Mierlo
Erasmus University Rotterdam, The Netherlands

Contact address:

Heleen van Mierlo

Erasmus University Rotterdam

Faculty of Social Sciences, T12-39

PO-Box 1738

3000 DR Rotterdam, The Netherlands

vanmierlo@fsw.eur.nl

+ 31 10 4088691 (phone)

+ 31 10 4089009 (fax)

KEYWORDS: AGGRESSION MANAGEMENT, TRAINING, TRAINING EVALUATION,
INTERNAL REFERENCING STRATEGY

Abstract

Workplace violence is a major occupational hazard for healthcare workers, generating a need for effective intervention programs. The purpose of this study was to evaluate the effectiveness of an aggression management training program. The evaluation design was based on the internal referencing strategy, an unobtrusive and applicable evaluation method that rules out some major threats to internal validity without the need for a control group. On three occasions, training participants completed a questionnaire containing experimental and control variables. As hypothesized, there was a significant improvement in the experimental variables that was larger than the non-significant change in the control variable. We conclude that aggression management training may be an effective instrument in the fight against workplace violence.

An Evaluation of an Aggression Management Training Program To Cope With Workplace
Violence in the Healthcare Sector

Workplace violence is internationally recognized as a major occupational hazard for many organizations and employees. This problem is especially pronounced within healthcare (Beech & Leather, 2006; Ryan & Maguire, 2006). A British National Audit Office survey (2003) showed that violence and aggression accounted for 40% of reported health and safety incidents among healthcare workers. The actual incidence might be even higher, as violent encounters often remain unreported (Badger & Mullan, 2004; Beech & Leather). The widespread nature of healthcare workplace violence has inspired a search for effective interventions, resulting in the development and implementation of a large variety of training programs. Yet, little is known about the effectiveness of such programs, because published examples of systematically performed training evaluations are relatively scarce (Farrell & Cubit, 2005). This may be due partly to the challenges related to the design and implementation of such evaluations. The purpose of this paper is to present a systematic evaluation of a training program designed to help homecare workers cope with aggressive clients.

Healthcare Workplace Violence

Workplace violence refers to incidents in which staff are abused, threatened or assaulted in circumstances related to work, involving an explicit or implicit challenge to their safety, wellbeing, or health (Wynne, Clarkin, Cox, & Griffiths, 1997). Included are physical assault, verbal threats, bullying, and sexual harassment (Beech & Leather, 2006). Potential sources of workplace violence in healthcare settings include both clients and coworkers. The majority of healthcare workers are subjected to workplace violence at least once during their professional careers (Smith-Pittman & McKoy, 1999). Violence has come to be seen as an occupational hazard for healthcare workers that comes with the job (Erickson & Williams-

Evans, 2000). The available statistics on workplace violence show its widespread nature. O'Connell, Young, Brooks, Hutchings, and Lofthouse (2000) reported that 95% of nurses in Australian hospitals had encountered verbal aggression several times in the preceding 12 months. In the Badger and Mullan (2004) study of nurses in the United Kingdom, more than half had experienced an incident of violence or aggression in the 12 months preceding the study.

The social and economic costs of workplace violence are substantial. Workplace violence has major adverse consequences for both healthcare institutions and workers. For institutions, workplace violence represents an important financial drawback because of increased absenteeism, early retirement, and reduced quality of care (Arnetz & Arnetz, 2001; Hoel, Sparks, & Cooper, 2000). For healthcare workers, workplace violence can cause considerable psychological damage, for example, posttraumatic stress (Morrison & Love, 2003), and decreased job motivation (Arnetz & Arnetz).

Intervention and Training

The widespread and costly nature of healthcare workplace violence has led to a search for effective interventions. Training and education, in particular, are considered the primary elements of an organization's strategy for dealing with work-related violence (Beech & Leather, 2006; Chappell & Di Martino, 2000). Although published descriptions of complete courses are scarce, the literature does offer a number of general recommendations regarding the design of aggression management training (Farrell & Cubit, 2005). Training courses often include recognition of violent behavior or persons, recognition of potentially violent situations or people, and preventive behavior or de-escalation strategies (Beech & Leather). Chappell and Di Martino suggested occupation-specific guidelines that may help identify training needs and the skills required to prevent or cope with violence. These authors argued that improved interpersonal skills, knowledge of client aggression, and knowing how to respond to

emotional clients all are important elements in reducing aggression in the healthcare sector. A crucial interpersonal skill for dealing with adverse work situations is assertiveness. Yet, the results of numerous studies suggest that nurses generally are non-assertive (e.g., Holbrook & Freeman Adams, 1999, McCartan & Hargie, 2004). Assertiveness training is included in many workplace violence training programs. Such training is typically directed at helping employees change how they view themselves and establish self-confidence and improved interpersonal communication (Lin et al., 2004).

Although the importance of training in reducing healthcare workplace violence is generally acknowledged, little is known about the effectiveness of such programs (Kruijver, Kerkstra, Francke, Bensing, & van de Wiel, 2000). This is partly due to a lack of published examples of systematically performed training evaluations (Farrell & Cubit, 2005). Possible explanations for this include the costs of evaluation, commercial interests and related fear of negative results, or, in some cases, a lack of knowledge and skills required to design and perform the evaluation (Holt, Boehm-Davis, & Beaubien, 2001; Lewis & Thornhill, 1994).

Studies have been conducted to assess the effectiveness of training in aggression management. Results are inconclusive. Some researchers have suggested that training had no effect (Hahn, Needham, Abderhalden, Duxbury, & Halfens, 2006; Lee, 2001; Needham et al., 2005); others have observed positive effects, specifically of assertiveness training (Lin et al., 2004; Weinhardt, Carey, Carey, & Verdecias, 1998). Interpretation of these results is complicated by the fact that such studies generally have not included control groups; the possibility that results were caused by factors other than the training program can, therefore, not be excluded. An exception is the Arnetz and Arnetz (2000) study, which included a control group. They found that, compared to the control group, healthcare workers who participated in a training program were more aware of risk situations and had gained more knowledge of how risk situations could be handled after the training.

Training Evaluation

The best-known model of training evaluation is that of Kirkpatrick (1994). Kirkpatrick distinguished four levels of evaluation: reaction, learning, behavior, and results. *Reaction* refers to the initial response of participants immediately after the training program; *learning* refers to the increase in knowledge brought about by the training program; *behavior* refers to the extent to which participants apply their newly learned knowledge and skills once back at work; and, *results* refers to changes at the organizational level. Studies of training effectiveness are often based on the reaction level (Alliger, Tannenbaum, Bennet , Traver, & Shotland, 1997; Arthur, Bennett, Edens, & Bell, 2003). This level is relatively easy to measure, but it is not necessarily related to the other levels that may be more meaningful (Alliger et al.).

Once the evaluation level is determined, an appropriate design or strategy for the study needs to be selected¹. An evaluation design should minimize the risk of type I and type II errors. Type I errors refer to a conclusion that the training was effective when it was not, while type II errors refer to the conclusion that the training was not effective when it was. Considered the most appropriate evaluation design (Haccoun & Hamtiaux, 1994), the experimental design requires random assignment of participants to two or three groups. The first group participates in the training program; the second group receives no training; and, if included, the third group receives placebo training. The need for equivalent control groups makes this design very complex and often difficult to implement.

An alternative design that does not require the use of control groups is the *longitudinal design*, involving a single group that is tested before and after the training. Although relatively easy to perform, the longitudinal design is susceptible to type I and type II errors because it does not rule out the possibility that factors other than the training were responsible for an observed improvement between pre- and post-test. Haccoun and Hamtiaux (1994)

proposed an alternative to the longitudinal design: the internal referencing strategy (IRS). This strategy involves the comparison of two sets of dependent variables in a single group: experimental variables (expected to be affected by the training program) and control variables (expected not to be affected by the training program). The training is considered effective if the effect of the training program on the experimental variables is significantly larger than its effect on the control variables.

An important advantage of this design is that it does not require a control group because it effectively controls for the major alternative explanations for observed training effects, also called threats to internal validity. Cook and Campbell (1979) identified 12 threats to internal validity that might result in pre-post training differences. Eight of these threats are based on the lack of comparability of experimental and control groups. These threats do not apply to IRS, because this design does not require a control group. The remaining four threats--history, maturation, testing, and instrumentation--do apply.

History refers to a situation in which an environmental event, unrelated to the training, affects training outcomes. For IRS to rule out history as an alternative explanation for observed training effects, the control variable should be conceptually similar to the experimental variable. If this is the case, it is unlikely that history will differentially affect experimental and control variables (Haccoun & Hamtiaux, 1994).

Maturation refers to a within-subject change that influences training outcomes. If the experimental and control variables are too similar, the risk is of a type II error. For example, an enthusiastic training participant is eager to learn more about closely related concepts, including the concept covered by the control variable. This will positively affect both experimental and control variables. Unless the experimental and control variables are extremely distinct, it is difficult to envisage a maturation effect that would differentially affect experimental and control variables (Haccoun & Hamtiaux, 1994).

Testing or instrumentation effects refer to repeated exposure to the same measures or instruments contributing to a familiarity resulting in enhanced scores on the posttest. This effect should be similar for experimental and control variables, as all variables are included in both the pretest and the posttest. An observed training effect is not likely to be caused by artifacts of testing and instrumentation. Yet, testing and instrumentation effects may result in type II error; if participants do very well on the pretest, a further increase in scores on the posttest will be difficult to discern.

Accordingly, Haccoun and Hamtiaux (1994) concluded that IRS is a design that will identify successful programs, but that may evaluate as ineffective programs that are beneficial. The success of the IRS design relies on the choice of the control variables (Frese, Beimeel, & Schoenborn, 2003; Haccoun & Hamtiaux). A control variable that is very different from the experimental variable will easily yield significant results, but these would be practically meaningless. If, on the other hand, the control variable is too similar to the experimental variable, it is impossible to establish a training effect based on differential development of experimental and control variables. Researchers should select control variables conceptually similar to, but still sufficiently distinct from, experimental variables.

IRS has many important advantages over full experimental designs. The strategy is inexpensive, easy to use, unobtrusive, and, therefore, yields considerably less resistance from management compared to the full experimental design. Despite these advantages, few researchers have applied this design for training evaluation (Frese et al.; Haccoun & Saks, 1998).

In the study reported here, we implemented IRS to evaluate a training program designed to help homecare workers cope with aggressive clients. Homecare workers operate alone and in an isolated setting, making them more vulnerable to violence and aggression than many other healthcare workers (Chappell & Di Martino, 2000). The training program was

developed to increase the assertiveness of homecare workers to enable them to cope with aggressive clients.

Our training evaluation was at the learning and behavior levels (Kirkpatrick, 1994), representing change in knowledge and behavior brought about by the intervention. The experimental variable paralleled the main elements of the training, assertiveness and coping with aggressiveness. Team functioning was included as control variable. Team functioning is conceptually similar to our experimental variables in that it represents interpersonal processes. Although team functioning was not specifically included in this training program, it could have been. Team members can represent an important source of social support, information, or assistance in threatening situations. Team functioning is also sufficiently distinct from the experimental variables in that it is not aimed specifically at adverse working situations. If the training indeed is effective, this should be expressed in an increase in the experimental variable that is larger than a potential increase in the control variable. We hypothesized that:

- (1) After training, trainees will demonstrate higher levels of assertiveness and coping with aggressiveness compared to before the training;
- (2) The increase in assertiveness and coping with aggressiveness will be larger than any potential increase in the control variable.

Method

This study was conducted in 2006 in the Netherlands in close cooperation with a Dutch training agency that implemented the training developed to help employees of a homecare organization cope with aggressive clients. At that time, the organization was confronted with aggression-related problems and had contacted the training agency to set up a training program. Participation was voluntary, both in the training program and in the evaluation study. Participants were 11 domestic aids, 15 home care workers, 7 registered nurses, and 9 newborn and infant care workers. To evaluate the training, we used a

questionnaire to collect data before the training program (T1), immediately after the training program (T2), and 5 weeks after the training program (T3). At T1, 42 participants (100%) completed the questionnaire; at T2, 38 participants (90%), and, at T3, 27 participants (64%) completed the questionnaire. To assess if attrition from the sample was in any way selective, we compared respondents remaining in the study to those who dropped out at either T2 or T3 on all study and demographic variables. None of those yielded significant differences.

The average age of the participants was 47.02 ($SD = 6.40$), and education levels ranged from high school to bachelor's degree. Table 1 provides an overview of the demographic characteristics of the participants.

The Training Program

The training program was developed by a training and consultancy agency in cooperation with the homecare organization. The training program was developed to provide (a) insight into assertiveness and aggression and recognition of violent behavior or persons; (b) insight into the interaction with aggressive persons and the effects of interactions styles on these aggressive persons; and to provide, (c) participants with techniques and skills to help them prevent a potentially threatening situation from occurring. The training program consisted of three parts, each 4 hours long. The parts were separated by 2-3 week periods. In part one of the training program, participants engaged in exercises related to assertiveness, non-verbal aspects of communication, and different communication styles. In addition, participants identified a personal issue or question they wanted to work on or resolve during the training. Part two involved exercises related to feedback, status, and dealing with conflict situations. Participants also worked on their personal issues by means of role-playing. During the third part of the program, participants practiced their behavior through role-playing with professional training actors.

Measures

Participants were asked to fill out a 24-item questionnaire we developed for this study². This questionnaire consisted of statements on a 5-point scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). A higher score represents more knowledge of or insight into the measured variables. Completing the questionnaire took about 10 minutes.

Experimental variables. The questionnaire contained 16 statements on assertiveness and aggression management, and was completed at all three measurement occasions. We developed these statements to capture the objectives of the training program. Based on principal component analysis, two separate scales were constructed: *insight into assertiveness and aggression* (eigenvalue 5.25, 32.82% of variance explained) and *ability to cope with adverse working situations* (eigenvalue 2.24, 13.99% of variance explained) scales. The *insight* scale consists of eight items assessing knowledge and insight, for example, “I can sense when people get aggressive.” Cronbach’s alpha for this scale was .71. The *ability to cope* scale consists of eight items to assess beliefs about ability, for example, “I know how to handle adverse situations.” Cronbach’s alpha for this scale was .78.

Control variable. We used a measure of team functioning that we also developed for this study. The eight item self-report scale assesses team spirit and the extent to which co-workers and managers motivate each other. Team functioning was measured on all three measurement occasions. Examples of items were: “At work, I try to transfer my knowledge to my colleagues,” and “In my department, colleagues motivate each other.” Cronbach’s alpha for this scale was .73.

Results

Table 2 displays the correlations between study variables at Time 3. Insight into assertiveness and aggression, and ability to cope with adverse working situations, were positively related ($r=.54, p<.01$). Table 3 displays the mean scores of all variables at T1, T2, and T3. Mean scale scores were used for all analyses. Differences in degrees of freedom

across analyses are due to missing values. We first tested our expectation that participants would show a significant increase over time in assertiveness and aggression management. The results of the one way repeated measures ANOVA's show significant effects for insight into assertiveness and aggression ($F[2,20]=5.67, p=.01$, Wilks' $\lambda=.64, \eta^2=.36$) and for ability to cope with adverse working situations ($F[2,22]=22.82, p<.01$, Wilks' $\lambda=.33, \eta^2=.67$). The effect size for insight was $d=1.21$ and that for ability to cope, $d=1.42$. As shown in Table 3, the largest significant increase in insight occurred between T1 and T2 ($t=-4.24, p<.01, df=33$), and this increase was maintained between T2 and T3. A significant increase was detected in ability to cope between T1 and T2 ($t[36]=-7.07, p<.01$), and between T2 and T3 ($t[23]=-2.47, p<.01$).

We next tested our expectation that the increase in assertiveness and aggression management would be larger than any potential increase in team functioning with a one-way repeated measures ANOVA for team functioning, a two-way repeated measures ANOVA, and paired sample t-tests. The one-way repeated measures ANOVA yielded no significant results, indicating that team functioning did not increase significantly over time. The two-way repeated measures ANOVA, with time and variable type (experimental and control) as within-subjects factors, showed a significant effect of time and a significant time * variable type interaction, suggesting that the training program affects the experimental variables differently than the control variable over time. The results of the repeated measures ANOVAs are displayed in Table 4.

The *t*-tests on gain scores (mean scale score at T3 – mean scale score at T1) showed that the increase in the experimental variables of insight and ability to cope was significantly larger than the non-significant increase in team functioning (for insight, $t[19]=2.33, p=.03$; for ability, $t[21]=4.54, p<.01$). Participants showed an increase in these experimental variables significantly larger than the non-significant increase in the control variable.

Main and interactive effects of the experimental and control variables are graphically illustrated in Figure 1.

Discussion

Violence and aggression are major occupational hazards in the healthcare sector (Beech & Leather, 2006). Education and training are important instruments that can help prevent work-related violence and enforce coping strategies. Results of our program showed a considerable and significant improvement on the experimental variables of insight into assertiveness and aggression and of ability to cope with adverse working situations, and, thus, support our first hypothesis. These improvements persisted after the training, indicating that the training resulted in enduring changes in knowledge and behavior. Participant's scores on ability to cope showed a further increase after the training. After the training program, participants may have had the opportunity to apply the knowledge and behavior they learned in the training in their everyday work situation. This explanation seems to be supported by our finding that only the scores on behavior and abilities showed a further increase, while scores in knowledge and insight had stabilized.

Our control variable, team functioning, increased slightly but non-significantly during the training period. Moreover, the increase in the experimental variables was significantly larger than the non-significant increase in Team functioning. Because IRS is based on the assumption that the training is effective if the increase in the experimental variable is larger than a potential increase in the control variable, our results support the effectiveness of the aggression management training.

There are several limitations to our study. The most important is our exclusive reliance on self-reported measures. Our results might have been more convincing if we had been able to supplement the self-reported data with data from, for example, supervisors or colleagues. Collecting such data requires that the knowledge or behavior of interest can be observed by

others and measured. This is often problematic, especially when it concerns behavior in very specific, infrequent situations. We acknowledge this as a drawback in the present study and recommend that researchers make every attempt to include data sources other than self-report.

Our evaluation did not cover Kirkpatrick's (1994) fourth evaluation criterion of improved organizational effectiveness. Learning and behavior represented adequate evaluation criteria that are more informative than the common practice of evaluating only initial reactions of participants immediately after the training. Still, the criteria of learning and behavior do not incorporate the longer-term gains of the training program for the organization, which, given the considerable expenses involved in large scale training programs, would offer valuable information. Studying the organization-level effects of a training program is a challenging endeavor, given the numerous external influences on organizational effectiveness.

As we did not measure behavior, but rather participants' beliefs in their abilities to cope with adverse working situations, we may not fully have captured Kirkpatrick's behavior level. Although we believe these two aspects are closely related, they are not the same. A work sample test or a supervisor judgment of actual work behavior role-playing might have been a more accurate measure of the behavior level.

Other potential limitations include sample attrition and the fact that participation in the training program was voluntary. Most notable is the loss of 36% of the respondents between T2 and T3. This may be explained by the T1 and T2 questionnaires being filled out and collected in the training setting, whereas the T3 questionnaires were sent to participant's home address 5 weeks after the training to be returned by mail. Yet, comparison of participants who left to those who remained in the study yielded no significant differences on any of the study variables, leading us to conclude that attrition was random and unlikely to have affected our results. Because of the voluntary nature of the training program, we were

unable to control for possible selection effects. Employees who participated in the training program apparently were motivated and willing to learn. This may have contributed to the effectiveness of the training. Given the large effect sizes, however, it seems unlikely that less motivated employees would not have benefited from the training program.

A final potential limitation of our study relates to the choice of the control variable. This is a general problem in the implementation of the IRS (Frese et al., 2003). The experimenter selects the control variable and, to an important extent, this choice determines the likelihood of detecting significant differences between the experimental and control variables. In our study, team functioning was included as the control variable. The homecare workers worked in teams, and, by providing a platform for support and problem solving, the work team can potentially fulfill an important role in managing workplace violence. Including a measure of team functioning can yield useful information for both the participants and their management, even though it was not included in our training program.

IRS has several important advantages; it has the potential to rule out the main threats to internal validity of evaluation studies (Frese et al., 2003) and is a relatively easy but effective method of evaluating training programs. Organizations spend large amounts of money on education and training, but few evaluations of them are reported in the literature, and few move past Kirkpatrick's (1994) level of initial reactions³. A systematic evaluation at all levels of Kirkpatrick's model for training evaluation will provide better understanding of the benefits of training programs. IRS is unobtrusive and applicable for evaluating most training programs, because no control group has to be used. We hope that the publication of this report will disseminate the merits of this design and increase the number of published systematic evaluations of training program effectiveness.

Training in assertiveness and aggression management is an effective intervention to deal with violence and aggression. Our training program was consistent with prevailing

conceptualizations of aggression management, and it enabled healthcare workers better to recognize and cope with workplace violence. Aggression and violence constitute a serious and growing problem for many organizations, especially for those in the healthcare sector.

Although training alone will not suffice to solve the workplace violence problem, teaching workers how to cope with potentially threatening situations is a good place to start.

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^[1] We provide only a brief description of the most relevant designs. The interested reader is referred to, for example, Haccoun and Hamtiaux (1994) or Frese, Beigel, & Schoenborn (2003).

^[2] Items are available from the authors on request.

^[3] We should note here that it is well possible that, in practice, many more systematic training evaluations are performed than is reported in the literature. In the context of the present paper we refer exclusively to the scarcity of registered or published evaluation studies.

Table 1.

Demographic Characteristics of Study Participants

		<i>N</i>	%
Sex:	Female	42	100.0%
	Male	0	0.0%
Years of experience:	< 3 years	7	16.7%
	3 – 5 years	13	31.0%
	5 – 10 years	8	19.0%
	> 10 years	14	33.3%
Hours a week:	< 20 hours	15	35.7%
	20 – 30 hours	20	47.6%
	> 30 hours	7	16.7%
Age:	< 40	5	11.9%
	40 – 50 year	20	47.6%
	> 50 year	17	40.5%
Job type:	Domestic aid	11	26.2%
	Home care	15	35.7%
	Registered nurse	7	16.7%
	Newborn & infant care	9	21.4%

Table 2.

Correlations Between Study Variables (T3)

Variables	No.	1	2
1. Insight into assertiveness and aggression	8	--	
2. Ability to cope with adverse working situations	8	.54*	--
3. Team functioning	8	.11	.21

* $p < .01$ ($N = 27$)

No. = number of items

Table 3.

Means and Standard Deviations for all Variables

Variables	<i>N</i>	<i>M</i>	<i>Sd</i>
Insight into assertiveness and aggression			
Time 1	42	3.64	0.34
Time 2	38	3.96	0.33
Time 3	27	4.05	0.42
Ability to cope with adverse working situations			
Time 1	42	3.11	0.53
Time 2	38	3.69	0.43
Time 3	27	3.86	0.38
Team functioning			
Time 1	42	3.61	0.47
Time 2	38	3.79	0.52
Time 3	27	3.72	0.45

Table 4.

Results of Repeated Measure ANOVAs

	<i>df</i>	<i>F</i>	η^2
One-way repeated measures ANOVAs			
Insight into assertiveness and aggression	2,20	5.67*	.36
Ability to cope with adverse working situations	2,22	22.82**	.67
Team functioning	12,18	2.72	.23
Two-way repeated measures ANOVA's			
Main effect: Time	2,17	12.05**	.59
Main effect: Type of variable	1,18	.02	.00
Interaction effect: Time*Type of variable	2,17	7.97**	.48

* $p < .05$, ** $p < .01$

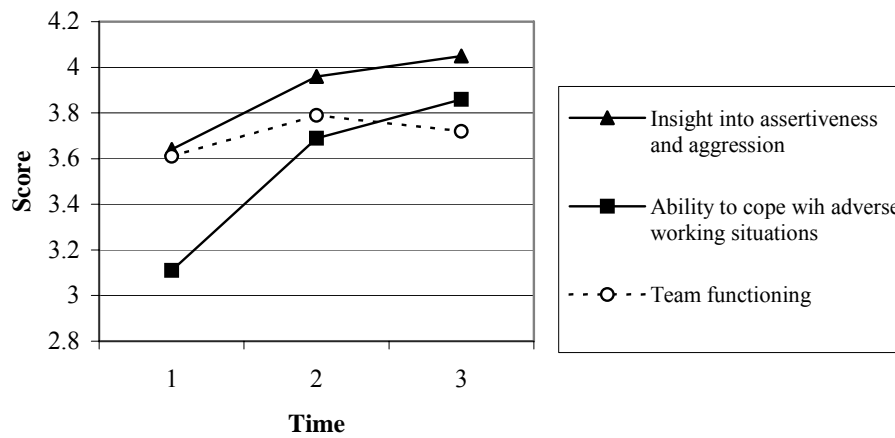


Figure 1. Main and Interactive Effects of the Experimental and Control Variables.