

The relationship between teambuilding and ‘Return on Investment’

Do teams perform better after participating in a teambuilding task focused on communication?

MASTER THESIS

Jermain Mamadeus
ANR 674188



Supervisor: Mariëlle Stel

Second reader: Marieke van den Tooren

Tilburg School of Behavioral Science

Work and Organizational Psychology 2014

Abstract

Since little is known about the effect from teambuilding on objective team performance, an experiment was done to examine this effect. The focus in this paper lied on ‘communication’ and ‘cohesion’ as a mediators of objective performance outcomes, since communication and cohesion are the most important aspects of an effective team (Shuffler, DiazGranados & Salas, 2011). In this study we examined how participating in a teambuilding task focused on ‘communication’ (i.e. independent variable), influenced ‘Return on Investment’ (i.e. dependent variable) in a post-teambuilding task for small teams. One hundred eighty three participants participated in the experiment and there were two conditions; groups who participated in the teambuilding task (experimental condition) and groups who did not (control condition). During the intervention all participants completed questionnaires on ‘communication’ and ‘cohesion’. Analyses showed that no effect was found from ‘condition’ on communication, cohesion or ‘Return on Investment. Participating in the teambuilding task did not affect ‘communication’, ‘cohesion’ or ‘Return on Investment’.

Introduction

Teams are very important in our lives, for instance in our hospitals, in our sport arenas, in our offices and in our daily interactions. Many times we depend on teams to overcome complex tasks. But how can we develop these teams in an effective way? Often 'teambuilding' seems to be an interesting tool. However, limited research has been done on the relation between teambuilding and objective performance outcomes and no evidence has been found yet for the effect of teambuilding on objective performance outcomes. When such an effect is found, organizations who want to perform better on their team performances, will probably use teambuilding more often. Furthermore, teambuilding is often used as a fun outing of the team instead of an real intervention, especially since the objective effect of a teambuilding intervention is not so clear. Hence, we decided to investigate whether teambuilding has a positive effect on objective performance outcomes. In order to find out which aspects are most likely to create a team building task that ensures the pre-desired positive effect on the objective performance outcome, a literature study has been conducted in order to create the final research question of this experiment.

Teams

Literature provides us with various definitions of 'teams'. According to Heffner, Goodwin, Salas, and Cannon-Bowers (2000) a team can be defined as "a distinguishable set of two or more people who interact, dynamically, interdependently, and adaptively toward a common and valued goal/objective/mission, who have each been assigned specific roles or functions to perform, and who have a limited life-span of membership" (p. 273). Furthermore, Reilly and Jones (1974) mentioned that team members have to commit to the starting point, that working together as a group, makes them more efficient rather than working individual on it. Since there are so many definitions of what a 'team' exactly is, we decided to come up

with our own composite definition (based on former mentioned definitions) to make sure who, how, when and what to include in this experiment so that we are all on the same page. In this paper we basically took the definition of Heffner et al (2000) and extended this definition with the component of having a ‘shared responsibility’, because members of a team who have the same goals should also have a shared responsibility.

In order to determine which components should be included in a teambuilding task, it is useful to know which aspects exactly make a team more effective. Literature provides us with certain characteristics. According to Mician and Rodger (2000) there are three different levels of characteristics of effective teams (i.e. organizational structure, team processes and individual contribution). Organizational structure and individual contributions refer to antecedent conditions (input) and team processes generally refer to throughput (Mician & Rodger, 2000). Organizational structure exist of the following characteristics: clear purpose, appropriate culture, specified task, distinct roles, suitable leadership, relevant members and adequate resources. Individual contribution exist of: self-knowledge, trust, commitment and flexibility. Team processes exist of: coordination, communication, cohesion, decision making, conflict management, social relationships and performance feedback (Mician & Rodger, 2000). Since, this papers focusing on team processes, the most important aspects (i.e. communication and cohesion) were included in the final research question.

Teambuilding

Since the increasing frequency of team-based forms of organizing, companies try to enhance their overall team performance in many different ways (Porras and Berg, 1978; Salas, 2008). A very popular, and often used, manner to enhance this team performance is ‘teambuilding’ (Porras and Berg, 1978; Klein, DiazGranados, Salas, Burke, Lyons & Goodwin, 2009). However, the exact definition of what ‘teambuilding’ precisely beholds is not so clear when analyzing the current literature. For instance, Schein (1999) defined team

building as a class of formal and informal team-level interventions that focusses on improving social relations and clarifying roles, as well as solving task and interpersonal problems that affect team functioning. While, Klein et al. (2009) argues that the definition of 'teambuilding' can be split up into two different categories (i.e. qualitative and quantitative teambuilding). Initially teambuilding was mainly focused on improving interpersonal relations (e.g. qualitative teambuilding). Nowadays teambuilding focuses more and more on achieving certain quantitative goals and team results as well (Klein, et al., 2009).

Furthermore, literature points out an, on the surface similar looking, phenomenon called: 'Team training'. However, team training and teambuilding differ in many important ways (Tannenbaum, Beard & Salas, 1992). Team training is skill-focused (i.e. it is focused on gaining specific competencies), typically includes a practice component, and is done in context (Tannenbaum et al, 1992). A team training is also generally formal and systematic (Shuffler, DiazGranados & Salas, 2011). Teambuilding on the other hand, does not target skill-based competencies, is not systematic in nature, and is typically done in settings that do not approximate the actual performance environment (Tannenbaum et al, 1992).

Although literature differs in the definition of teambuilding, the literature agreed up on four basic components of teambuilding (i.e. goal setting, interpersonal relationships, problem solving and role clarification), (Klein et al, 2009). Teambuilding is focused on one or more of these components in order to enhance several outcomes. There are four main outcomes: cognitive-, affective-, process- and performance outcomes (Klein et al, 2009). In order to find out which components affects which outcomes in which extent, the effectiveness of teambuilding was examined more closer.

Effectiveness of teambuilding

Results from a study by Salas, Rozell, Mullen and Driskell (1999) have suggested that there is no overall effect from team building on team performance. However, meta-analytic

results shows mixed evidence. For instance in the relationship between teambuilding and cohesion it is proven that teams participating in a teambuilding feel more cohesive (Senécal, Loughhead, & Bloom, 2008). Also in the relationship between goal setting and teambuilding it is proven that teambuilding influences the perception of how team members perceive the solidity of their own team, and team members felt like they communicate in a more effective way (Newin, Bloom, & Loughhead, 2008). In addition, reviews by Shuffler et al. (2011) and Klein et al. (2009) suggest that team building has a positive moderate effect across all team outcomes. In terms of specific outcomes, team building is most strongly related to affective and process outcomes (Klein et al., 2009). Examining the effects of the teambuilding components, goal setting and role clarification have the biggest effect on affective and process outcomes (Klein et al., 2009). In this review of Klein et al. (2009), the researchers also examined the effect of team-training on these outcomes. The results showed that team training is effective on all outcomes. However, if you compare teambuilding with team training the results show that teambuilding has a bigger effect on affective outcomes, which is not so illogical since teambuilding mainly focuses on interpersonal relations (Klein et al, 2009). T

Theoretically, one could reason that an intervention focused on improving the team functioning would result in positive outcomes on one or more outcomes (i.e. cognitive-, affective-, process-, performance outcomes) since already is proven that teams who for example focusing on ‘goal setting’ were more cohesive (Senécal, Loughhead, & Bloom, 2008) and that teams felt like more of a real team because of following a teambuilding intervention (Newin, Bloom, & Loughhead, 2008).

Cohesion and communication regarding performance outcomes

According to Klein et al. (2009) limited research had been done on teambuilding and its effect on objective performance outcomes (rather than subjective performance outcomes). Objective performance is rated with objective standard norms (e.g. height, money spent); for

example one could say that “teams perform better because they spent less money”. Subjective performance is measured via an more indirect way (e.g. via affective reactions); for example one could say that “teams ‘feel’ better after participating in a teambuilding task, so therefore we would assume that these teams would perform better”. Even Klein et al. (2009) did not mention any big different results in their meta-analyses between objective and subjective performance outcomes. Therefore we decided to focus on objective performance outcomes in relation to teambuilding, especially since objective performance outcomes might be more attractive and might speak more to the imagination of organizations who want to be part of a teambuilding intervention. More specifically, this objective performance outcome will be called ‘return on investment’(ROI) in this paper. ROI is the total amount of money spend divided by the height of the tower (i.e. $N_{\text{Materials used}} * 500 / \text{Height construction}$). In this way we examined the effect from the teambuilding on the amount of money spend and height of the build construction. ROI was chosen because it would show us an objective rate of the effect of the teambuilding and is an attractive way of showing the effect (when there is one) to external party's. It is transparent, easy to understand and there is little known about objective performance outcomes of teambuilding interventions and the return of investment.

To find out which aspects of teambuilding should be included in the teambuilding task, we looked up on the current relevant literature. Since we already know that cohesion is one of the aspects which seems to be important to teambuilding (Senécal et. al., 2008), we looked upon more evidence of the relationship between cohesion and teambuilding. Shuffler et al. (2011) states that cohesion influence the affective outcomes. Cohesive teams are more likely to serve the team rather than individual interests (Thompson, Kray & Lind, 1998). The most important members of a cohesive team are overall more productive on various tasks than are members of non-cohesive teams (Thompson et al., 1998). Hence, one could argue that cohesive teams are more productive than less cohesive teams. However, it could also be the

case that teams who are more productive, become more cohesive. In this experiment, cohesion was included as a pre-measurement factor in order to examine if teams who scored higher on cohesion also scored better on a performance task. In addition, communication is one of the other important aspects of a teambuilding intervention (Klein et al., 2009).

Communication influences both affective and process outcomes (Klein et al., 2009), but little is known about its mediating influence on objective performance outcome. What we do know is that sport teams who followed a teambuilding intervention, had the perception that their own team communicated in a more efficient way compared to competitive teams (Newin, Bloom, & Loughhead, 2008). However, no objective performance outcomes were measured in this study. In view of the fact that affective and process outcomes are the highest outcomes caused by teambuilding, we thought that incorporating ‘communication’ as a mediating factor in this experiment would be interesting, since ‘communication’ covers affective and process outcomes (Shuffler et al., 2011).

Research Hypotheses

The main hypothesis that will be tested is: “How does participating in a teambuilding task, focused on ‘communication’, influence the objective performance outcome of a post-teambuilding task for small teams?”. More specifically, do teams who participating in a communication-teambuilding task, objectively perform ‘better’ (controlled with the variable Return on Investment) in a post-performance task than teams who did not participate in the teambuilding task? In addition, the following hypotheses will be tested:

1. Teams participating in the teambuilding task will have a higher ROI compared to teams who do not participate in this task.
2. A higher score on communication leads to a higher ROI.
3. A higher score on cohesion leads to a higher ROI.

4. Teams participating in the teambuilding task will score higher on communication compared to teams who do not participate in this task.

5. Teams participating in the teambuilding task are more cohesive compared to teams who do not participate in this task.

Method

Participants

One hundred eighty three participants (39 men and 144 women, mean age 20.08 years, $SD=2.15$) participated in the experiment whereby they had to form small teams (i.e. three participants in each team). Briefly, 61 teams participated in this whole experiment. The participants were all students and were rewarded with subject hours or €8,-.

Research design & variables

An experimental between subjects-design was used. There were two conditions, the experimental and control condition. The independent variable is: condition. The dependent variables are: cohesion and communication and the amount of money spend divided by the height of the tower in cm, which results in the 'return on investment' (i.e. ROI). Furthermore, 'communication' and 'cohesion' were also used as independent variables in order to control for any effect from communication and/or cohesion on ROI.

Procedure & Materials

For each step during the experiment, the instructor used PowerPoint slides as a tool (see appendix A). For each condition the same PowerPoint slides have been used, with the exception of slide/activity four and five. These activities were left out the experiment during the control condition because they concern the manipulation and were only communicated to teams in the experimental condition.

Firstly the instructor of the experiment welcomed the team members and told the participants that they had to fill in a consent form (see Appendix B) on a computer. After that, the instructor told the participants that they will form a team and that this experiment is focused on 'teams'. Content wise, the instructor did not shared any more information about the experiment, with the exception of instructions/goals concerning the specific task(s).

The participants participated in two acquaintance games and a blind fold rope task. Subsequently, the experimental condition participated in a teambuilding task (i.e. LSD lecture and a second blindfold rope task which made them apply the LSD technique). After these tasks, both conditions filled in a questionnaire focused on cohesion and communication and participated in the 'Marshmallow Challenge'. At the end of the experiment participants were rewarded with subject-hours or €8,-.

In the beginning the participants participated in two acquaintance games. The first game was a 'ball throwing game'. The participants were ordered to make a circle and throw the ball to another participant. The participant who catches the ball says his name and has to throw it to another participant who does the same. As the ball moves around the circle, everyone in the team gets to learn one another's name. This game took 3 minutes to participate in.

The second acquaintance game is called: 'the world map' game. The participants had to position themselves on an imaginary map of the world beginning with where they were born. Then the participants had to move to where they went to school, location of their first job, location of favorite trip and a place in the world they would most like to travel. Both games were designed to get to know each other on a more personal level and to make the group become more of a team. For the manipulated condition this game took 5 minutes to participate in. However, for the control condition both games had to be stretched into 10 minutes longer to counterbalance the equal time spend together as a team, since the

manipulated group will participate in a teambuilding task that takes 10 minutes. Thus, each game took 10 minutes longer for the control group.

After the acquaintance games both conditions participated in a 'blindfolded rope task'. The teams formed a circle with arms outstretched, they drop hands and sit down. The team members were blindfolded and the instructor putted a rope in the middle of the circle. The members were instructed to form a perfect 'T' form with the rope. When team members felt that the task was completed, they were allowed to take off the blindfolds to see the result for themselves.

When previous task was executed, only the experimental condition underwent an LSD lecture (i.e. Listening, Summarize, Interrogating; in Dutch this is: Luisteren, Samenvatten, Doorvragen). This lecture was implemented in order to make the team members (aware of how to) communicate in a more effective way. This lecture includes tactics, strategies and effective ways to communicate. This lecture took 10 minutes to participate in. After the LSD-lecture the manipulated group redid the 'blindfold polygon task, however instead of forming a 'T' they now had to form a 'sandglass' in order make them apply what they had learned in the LSD lecture (learning effect). This task took about 5 minutes again.

After these tasks, both groups (i.e. manipulated and control condition) filled in the adapted Group Cohesion Questionnaire-23 (GCQ-23, see appendix C) and the adapted ACP-360 Communication questionnaire (see appendix D). The GCQ-23 was used to measure how each team/participant scored on 'cohesion' ($\alpha=0.885$). An example of a question is, "This group does not bother me", or "I feel accepted in this group". The adapted GCQ-23 consist of 17 items, which are scored by using six point Likert scales ranging from 0 (really agree) to 6 (really not agree). In the experiment an adapted version of the ACP-360 ($\alpha=0.893$). was used to measure how each team/participant scored on 'communication'. An example of a question

is, “Team members are open for feedback”. The ACP-360 consist of 17 items and is measured with five-point Likert scales which ranging from 0 (totally agree) to 5 (I totally do not agree).

The final task was the objective performance task. Both conditions participated in a performance task whereby they had to build a tower with different materials. This task is called ‘Marshmallow Challenge’. The task was quite simple: in 20 minutes teams had to build the tallest free-standing structure out of spaghetti, tape, string, and one marshmallow. The marshmallow needed to be on top of the construction. In order to include a factor for return on investments, we added the ‘money-factor’. Team members had to buy material with a certain amount of starting money (€50.000,-) and each member was confined in buying one particular product. They had a starting amount of €50.000,- and were free to use all the money they wanted. Each product cost them €500,-. To measure the objective effectiveness of each team, different steps were taken. Firstly we looked at the height of the tower (in cm’s). Secondly we looked at the total amount of money spend. Finally, we combined these two outcomes to look at the balance between these two outcomes; this resulted in a specific number which was called ‘Return on Investments’ (i.e. $N_{\text{Materials used}} * 500 / \text{Height construction}$). At the end of the experiment participants were rewarded with subject-hours or €8,-.

Results

After the experiment had been carried out completely, all teams with fallen constructions as an end result (i.e. 0 cm) were omitted from the analyses; N.B. there were seven teams in the experimental condition and five in the control condition). This was done because it would give a distorted picture of the results, since these teams basically had no ROI. After this data was omitted, 147 participants remained, that is 49 teams. The results in this paper cover the outcomes of these 49 teams (26 experimental groups, 23 control groups).

Furthermore, a few outliers have been found on the communication and condition

data, but since they did not influence the data in a negative way and these outliers are part of the results, the choice was made not to omit these outliers from analyses. The remaining data was used in the analyses. For every condition, the mean ROI, communication and cohesion score (and the associated standard deviations) were calculated (see table 1).

Table 1

Mean (& SD) of 'Return on Investment', 'Communication' and 'Cohesion' per condition.

Condition	ROI	Communication	Cohesion
Experimental	307.552 (251.53)	4.195 (0.30)	4.752 (0.43)
Control	241.305 (97.01)	4.177 (0.28)	4.762 (0.32)

Note: ROI= Return on Investment (i.e. $N_{\text{Materials used}} \cdot 500/H$)

The normal distribution of 'communication', 'cohesion' and ROI was calculated using the K-S test. Communication scores did not deviate from normality in both conditions (i.e. control condition, $D(23) = .16, ns$; experimental condition, $D(26) = .11, ns$.) In addition, also the cohesion scores did not deviate from normality in both the conditions (i.e. control condition $D(23) = .17, ns$; experimental condition, $D(26) = .12, ns$). Finally ROI scores were tested, and also these scores did not deviate from normality in both conditions (i.e. control condition $D(23) = .21, p < .05$; experimental condition, $D(26) = .24, p < .001$).

Relation between condition and Return on Investment

An Mann-Whitney test was conducted between 'condition' and Return on Investment to control whether condition has a significant influence on ROI (ROI is not normally distributed). Results showed that there was no significant difference in the score for the experimental condition ($Mdn=233.11$, $SD=251.53$) and the control condition ($Mdn=212.77$) on ROI; $U = 281.00$, $z = -.361$, $p = .724$, $r = .01$. This means that this hypothesis was not supported. $r_s = .01$, $p = .934$. Despite the fact that ROI is a variable which represent both the costs each team made and the height of the structures ($ROI = \text{costs}/\text{height}$), there is also

examined if an effect could be found from height and costs on ROI individually. However, also for these analyses no significant correlations/effects have been found ($p > .05$).

Relation between communication and Return on Investment

A Spearman correlation was conducted to assess the relationship between communication and ROI (ROI is not normally distributed). Results showed that there was no significant correlation between communication and ROI ($r_s = .012$ $n=49$ $p=0.934$). This hypothesis is not supported.

Relation between cohesion and Return on Investment

A Spearman correlation was conducted to assess the relationship between cohesion and ROI (ROI is not normally distributed). Results showed that there was no significant correlation between cohesion and ROI ($r_s = -.082$ $n=49$ $p=0.575$). This hypothesis is not supported.

Relation between condition and communication

An independent T-test was conducted to control whether condition has a significant influence on communication. Results showed that there was no significant difference in the score from the experimental condition ($M=4.20$, $SD=.30$) and the control condition ($M=4.18$, $SD=.028$) on communication; $t(47)=-.217$, $p=.829$, $r = .03$. This hypothesis is not supported.

Relation between condition and cohesion

An independent T-test was conducted to control condition has a significant influence on cohesion. Results showed that there was no significant difference in the score from the experimental condition ($M=4.75$, $SD=.43$) and the control condition ($M=4.76$, $SD=0.32$) on cohesion; $t(47)=-.09$, $p=.926$, $r = .01$. This hypothesis is not supported.

Discussion

The research question we examined was: “do teams who participate in a communication-teambuilding task, perform better in a post-performance task, compared to teams who did not participate in this teambuilding task?” Examined the results of this paper, we can say that participating in this specific teambuilding task does not lead to a higher ROI.

Furthermore, communication had no influence on ROI. The same goes for cohesion. In addition, neither it mattered in which condition a group participated, examined the score of communication or cohesion. Overall, no specific condition scored significantly higher on communication or cohesion. Furthermore, it is also examined if an correlation could be found between condition and height and/or costs individually. However, also for these analyses no significant correlations have been found. Briefly, none of the hypothesis were supported.

Teambuilding had no effect in this experiment. Looked at the results and the manipulation part of the experiment, a possible reason no effects have been found could be due to the way the manipulation part was set up. The manipulation part was possibly too short. The manipulation part only took about 10 minutes longer, which afterwards seems to be too short. The participants probably did not had enough time to learn from the task and to apply potential learned aspects in the up following ‘Marshmallow Challenge’.

Another important aspect is the small sample-size that was used. To meet the predetermined effect-size of 0.30, with an alpha of 0.05 and a power of 0.80, a total sample size of 90 groups was needed. After omitting inefficient data from analyses, only 49 groups were left to be included for the interpretation of the results. This is only half of the predetermined sample-size. In future research a bigger sample-size is expedient.

Furthermore, in both conditions the individuals were given certain authorities, each individual could only buy one of the materials available. Maybe this made the participants feel even less like a real team and did it distracted them from the main goal (i.e. build the

tallest free-standing structure out of the available materials, with as little money as possible) and made them think about the division of labor. But then again, the fact that they were obligated to communicate with each other in order to buy material, one could reason that the participants actually felt like more of a real team instead of when they were not obligated to communicate to each other. The participants had to make decisions in conformity. Furthermore, it is usually the case that individuals in real-life teams also have different duties and authorities in organizations. So for the participants to form a team with members which each had his own authority, maybe did not feel so unnatural after all; instead it probably made them feel like more of a natural team.

In sight of the other important aspects that makes a team more effective (e.g. cohesion, role clarification and coordination), future research should include one or more of these other aspects in the manipulation. Perhaps communication was not the most important/influential aspect to be focused on. When different aspects that makes a team more effective will be included in the manipulation, a more holistic picture could be drawn of the objective effect from teambuilding on teams. Furthermore, previous research shows that cohesion and communication do affect teams, we now can conclude it just does not show an effect in this specific setting with small teams (i.e. three participants each team). Therefore future research should focus on larger teams and different aspects that have influence on teams and their performances.

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Appendix A

Slides



Introductie



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Activiteit 1

Bal-naam-woord spel

- Vorm een cirkel
- Fase 1 (7x):**
Bal in de hand = eigen naam noemen en één zelf beschrijvend woord uitspreken. Vervolgens de bal naar een ander gooien die hetzelfde doet.
- Fase 2:**
Alle namen van de groep noemen (slechts twee dus) en de bal gooien naar de tweede persoon die je hebt genoemd. Hierbij noem je ook één van de zelf beschrijvende woorden van degene waar de bal naar toe wordt gegooid.



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Activiteit 2

Wereld map spel

- Iedereen positioneert zichzelf op dezelfde plaats in de betreffende ruimte. De begeleider wijst een plek aan.
- Verplaats jezelf op een denkbeeldige wereld map, met als startpunt de plaats waar je bent geboren.
- Om de beurt verplaatsen de groepsleden zich naar de volgende locaties of gebeurtenissen, in de onderstaande volgorde:
 1. Geboorteplaats
 2. Basisschool
 3. Middelbare school
 4. Eerste baan
 5. Meest leuke trip (al geweest)
 6. Favoriete vakantiebestemming (nog naartoe te gaan)
- Bij elke verplaatsing geef je aan hoe deze periode eruit zag (punt 1 t/m 4). Punt 5: waarom specifiek die vakantiebestemming?
- Bij elke verplaatsing geef je aan hoe deze periode eruit zag (punt 1 t/m 4). Punt 6: waarom specifiek die vakantiebestemming?



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Activiteit 3

Blindfold Rope Task

- Effectieve verbale communicatie is vereist voor deze taak.
- Ieder team lid krijgt een blinddoek om.
- Langs alle team leden wordt een touw op de vloer gelegd.
- Doel:** lokaliseer het touw en werk samen om het touw in de vorm van een T te leggen.
- Wanneer iedereen denkt dat de taak volbracht is, licht dan de proefleider in.



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Activiteit 4

- Wat vonden jullie van de vorige activiteit?
- Hoe ging het?
 - Wat ging er goed?
 - Wat ging er minder goed?
- Hoe zou het beter kunnen?

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Activiteit 4

Communicatie

- Luisteren
 - Wat zegt iemand?
 - Hoe zegt iemand iets?
- Samenvatten
- Doorvragen

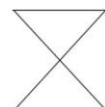


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Activiteit 5

Blindfold Rope Task

- Effectieve verbale communicatie is vereist voor deze taak.
- Ieder team lid krijgt een blinddoek om.
- Langs alle team leden wordt een touw op de vloer gelegd.
- Doel:** lokaliseer het touw en werk samen om het touw in de vorm van een zandloper te leggen.
- Wanneer iedereen denkt dat de taak volbracht is, licht dan de proefleider in.



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Activiteit 6

Vragenlijst

- Vul individueel de vragenlijst in
- Sluit het scherm **NIE**T af wanneer om het wachtwoord wordt gevraagd

Activiteit 7

The Marshmallow Challenge

- **Doel:** Bouw een zo hoog mogelijke en zo goedkoop mogelijke toren die in staat is het gewicht van een marshmallow te dragen.
- Materialen:
 - Spaghetti (€ 500,-)
 - Touw (€ 500,-)
 - Tape (€ 500,-)
- Materialen dienen gekocht te worden bij de proefleider. Ieder team lid kan slechts één soort materiaal kopen.
- Het team ontvangt een budget van € 50.000,- waar alle team leden gebruik van mogen maken.



Afsluiting

- Vragenlijst
 - Debrief
- Bedankt voor jullie deelname



Appendix B

Consent form



Het doel van deze studie is het onderzoeken van groepsprocessen. In deze studie zal je verschillende taken in een groep van drie personen uitvoeren. Daarnaast zul je enkele vragenlijsten beantwoorden. De studie duurt ongeveer een uur. Aan het eind van de studie zul je een proefpersoon uur of €8,- als vergoeding ontvangen voor je deelname. Als je besluit je terug te trekken uit de studie ontvang je deze vergoeding niet.

Er zijn geen fysieke of emotionele risico's in dit onderzoek. Er zijn, naast de vergoeding, ook geen directe voordelen voor jou als proefpersoon. Het is toegestaan om participatie te weigeren en je terug te trekken van het onderzoek op ieder moment zonder dat daar negatieve gevolgen tegenover staan. Individuele privacy zal worden gewaarborgd in alle gepubliceerde en geschreven data die resulteert uit de studie. Geen persoonlijk identificeerbare informatie zal kenbaar gemaakt worden aan de onderzoekers. Je ANR en naam zullen alleen gebruikt worden om proefpersoonuren bij te schrijven. Deze gegevens zullen apart gehouden worden van de verdere data.

Dit onderzoek loopt de hele maand Februari, we verzoeken je dan ook het onderzoek niet met medestudenten te bespreken omdat dit de resultaten zou kunnen beïnvloeden.

Als je vragen hebt over het onderzoek of de procedures voel je dan vrij om contact op te nemen met één van de onderzoekers: D. Rietveld (d.rietveld@tilburguniversity.edu), J.J. Mamadeus (j.j.mamadeus@tilburguniversity.edu), M.M.A. Heidenrath (m.m.a.heidenrath@tilburguniversity.edu), M.P. Grootendorst (m.p.grootendorst@tilburguniversity.edu). Of met onze begeleider Dr. M. Stel (m.stel@tilburguniversity.edu, tel: 013 466 874).

Appendix C

Adapted ACP-360 Communication Questionnaire



Lees de onderstaande stellingen en bepaal in hoeverre deze stellingen van toepassing zijn voor de opdrachten die je zojuist met de groep hebt uitgevoerd.

	Helemaal mee oneens	Mee oneens	Noch mee eens, noch mee oneens	Mee eens	Helemaal mee eens
De teamleden luisteren actief naar elkaar.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden geven elkaar de gelegenheid om hun mening te uiten.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden delen relevante informatie met elkaar met betrekking tot de taak.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden communiceren duidelijk en helder naar elkaar.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden staan open voor suggesties van alle leden.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden maken beslissingen op basis van inbreng/informatie van alle teamleden.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden zijn bereid om elkaar te confronteren met problemen of onduidelijkheden.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden zijn in staat om consensus te bereiken over meningsverschillen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden staan open voor het krijgen van feedback.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De teamleden dragen iets bij aan het groepsproces.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik luister actief naar mijn teamleden.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik geef de teamleden de gelegenheid om hun mening te uiten.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik praat veel over zaken die niets met de taak te maken hebben.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik communiceer informatie helder en duidelijk naar mijn teamleden.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik sta open voor suggestie van mijn teamleden.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik sta niet open voor feedback van het team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik neem actief deel aan het groepsproces.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D

Adapted CGQ-23 Cohesion Questionnaire

	Erg mee oneens	Mee oneens	Een beetje mee oneens	Een beetje mee eens	Mee eens	Erg mee eens
Over het algemeen doet iedereen mee in deze groep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In een andere, soortgelijke, groep zouden er wat mij betreft dezelfde soort mensen in mogen zitten als nu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik voel me betrokken bij wat er in de groep gebeurt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deelname aan deze groep levert mij weinig op (denk hierbij niet alleen aan eventuele proefpersoonuren of een gedelijke vergoeding)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zijn mensen in de groep die ik als persoon graag mag	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De groep laat me koud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik probeer met groepsleden mee te denken als ze ergens niet uitkomen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Na deze bijeenkomst zou ik de mensen uit deze groep willen blijven ontmoeten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik voel me buiten de groep staan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik vind dit een prettige groep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik schiet maar weinig op met deze groep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er zitten mensen in de groep met wie ik ook buiten deze bijeenkomst zou willen omgaan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In deze groep werken we goed samen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik voel me geaccepteerd door de groep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De groep vormt een eenheid, ook al zijn er individuele verschillen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik voel afstand tussen sommige groepsleden en mijzelf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De uitgevoerde activiteiten met deze groep bevorderen mijn persoonlijke ontwikkeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>