# *'Distance separates only the bodies, not the minds'*

***The effect of the quality of Leader-Member Exchange on the relationship between Physical Distance and Job Satisfaction & Organizational Commitment***

*'Afstand scheidt slechts de lichamen, niet de geesten'*
Erasmus


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# Contents

# Abstract

Recently a Dutch bank/insurance company has decided to stimulate employees to work from their homes half of their work time. Top management raised the question what effect a low frequency of interaction in person between leaders and members has on the job satisfaction and organizational commitment of members. This research expects a moderating effect of the quality of Leader-Member Exchange (LMX) on the relationship between physical distance and job satisfaction and organizational commitment.

557 of the 1096 employees (51%) who received an invitation to participate in the research completed the 43 item questionnaire. After factor analysis and reliability analysis, hypotheses were tested using hierarchical regression analysis.

The results show that LMX *mediates* the negative effect of physical distance on job satisfaction. Job satisfaction turns out to be a partial mediator between LMX and organizational commitment. The most important conclusion of this research is that when leaders and members do not often interact in person, investing in a good relationship quality is more important than in traditional office settings.

# 1 Introduction

The introduction of new technologies in companies influences the way people work. Because of developments in internet and mobile communication devices, employees are no longer tight to their offices and desks. Consequently, work processes change as well. For example, many companies have facilitated the possibility for employees to work from their homes in the recent decade. In addition, meetings with people working at different locations more often take place through web-based applications, such as chat or web conferencing, instead of travelling long distances to attend meetings. The adoption of these innovations causes a change in the way members of the organization interact and cooperate.

Recently a Dutch bank/insurance organization has decided to introduce a new, more flexible way of working (*'Het Nieuwe Werken'*). In the future situation, all employees (including secretaries and top management) will choose a location and a device that best fits their task of that moment. The office will be redesigned from a traditional office where everyone has his or her own desk and where managers have their own office, towards an office environment that is organized around the different activities employees perform. There will be individual 'cockpits' for tasks that require concentration, round couches and 'living room tables' for less formal meetings, 'production areas' where people can work on their laptops, make phone calls and consult their colleague, meeting rooms with round table devises, etc. In addition to this innovation in the office concept, all employees will be stimulated to work from their homes. The ambition is to work in the office only 50% of the work time. The most modern ICT applications (e.g. instant messaging, video chat, web based share points for documents) and communication devices (e.g. smart phones) support this new style of working.

In the process of designing the organizational change process, top management raised the question what this new way of working, and the inherent increased physical distance between leaders and members, would mean for the way members perceive their job.

The possibility of working anytime anywhere has implications for the interaction between leaders and members. Where in traditional office settings leaders and members see each other regularly, these modern developments make that leaders and members less often interact in person. The most important cause of the decrease in interaction is the fact that employees of the bank/insurance company will work from their homes a substantial amount of the work time. In order to shed some light on the effects of this change, this research focuses on the influence of the frequency by which leaders and members interact in person - on the outcome variables organizational commitment and job satisfaction.

The following chapter presents the theoretical framework of this research. Based on the theoretical framework, the research variables are defined and hypotheses are formulated. Existing literature conceptualizes distance differently across studies; some see it as a multi dimensional construct (e.g. Napier & Ferris, 1993), others define it one-dimensionally (e.g. Howell et al., 2005). This research focuses on physical distance in terms of 'interaction frequency': the frequency by which

leaders and members actually *see* each other in person. Little interaction is conceptualized as high physical distance, much interaction as low physical distance.

Overall, studies on the effects of distance between leaders and members, in whatever form, conclude a negative effect on employee and organizational outcomes. For example, Podsakoff, MacKenzie & Bommer (1996) showed that physical distance in the leader-follower relationship is positively related to perceptions of group role conflict and negatively related to group altruism.

Based on existing scientific research the expectation of this research is that physical distance between leaders and members (i.c. a low frequency of interaction in person) will have a negative relation with the outcome variables organizational commitment and job satisfaction. A negative relation means that when physical distance between the leader and member is high (leaders and followers see each other less often), scores on job satisfaction and organizational commitment are low.

The expectation of this research is that the negative impact of physical distance on job satisfaction and organizational commitment differs according to the quality of the relationship between leaders and members. A measure that is often used to qualify the quality of a relationship between a leader and a member is the Leader-Member Exchange (LMX) theory. When leaders and members share a high quality relationship, the negative impact of physical distance on job satisfaction and organizational commitment is expected to be less strong. In other words, the expectation of this research is that the quality of Leader Member Exchange moderates the negative relationship between physical distance and job satisfaction and organizational commitment.

To sum up, the central research question of this thesis is: *Does Leader-Member Exchange (LMX) have a moderating effect on the relationship between physical distance (i.c. frequency of interaction in person) between the leader and the member and job satisfaction and organizational commitment?*

The next chapter describes the research method. This research focuses on the influence of physical distance (in terms of frequency of interaction in person) in the *current* working situation. This means there was only one measurement time (instead of a longitudinal measurement of groups of employees for whom the frequency of interaction will change). 557 respondents filled out a 42 item, multiple-choice questionnaire. After factor analysis and reliability analysis, the items are grouped in scales and subscales.

The hypotheses are tested using correlation analysis and multiple regression analysis. The results of these analyses are described in chapter 4. The final chapter discusses the research results and presents recommendations for further research.

The research results can contribute both practically and scientifically. Practically, this research can give the organization in which this research is conducted some insight in the role physical distance, in terms of frequency of interaction in person, plays in the current working situation. This might reduce the uncertainty about what effect the new way of working, with the inherent reduction in the frequency of interaction in person, might have on employees' job satisfaction and organizational commitment. The scientific relevance lies in broadening of the understanding of the effect of physical distance in working situations. No previous research was found which related physical distance between leaders and followers to organizational commitment.

# 2 Theoretical framework

This chapter presents the theoretical framework of this research. The central research variables are defined using existing academic literature. Previous studies related to the scope of this current research are addressed. Based on this theoretical elaboration, research hypotheses are formulated, which aim to answer the central research question of this research.

## *2.1 Distance*

*'There is perhaps no construct that is so fundamental to interpersonal interactions in organizations, yet so incompletely understood, than distance'* (Napier & Ferris, 1993, p. 321).

The introduction of this research addressed that in the near future, employees of a Dutch bank/insurance company will work in a new office environment. In addition, all employees will be working from their homes half of their work time. Consequently to these changes in the organizations, leaders and members will more often cooperate at distance. This paragraph first presents some background on the concept 'distance in organizations'. Next will be explained why 'frequency of interaction in person' is chosen as a focus for this research.

More than fifteen years ago, Napier and Ferris (1993) wrote the first integrative article on the effect of distance in organizations. The authors state that developing a comprehensive image of the role distance plays in organizations is hard, because previous research has examined only two or three of these variables in isolation. This has lead to contradictory results with limited applicability, conclusions or generalizability. *'Distance has taken on meanings ranging from perceived similarity (…) to visibility (…) and opportunity to interact with subordinated (…) to relative in-group/out-group status* (Napier & Ferris, 1993, p. 350).

Napier & Ferris (1993, p. 326) propose a multidimensional model called *'dyadic distance'*, defined as *'a multidimensional construct that describes the psychological, structural and functional separation, disparity or discord between a supervisor and a subordinate'.*

*Psychological distance* refers to the 'psychological effects of real and perceived differences between the supervisor and the subordinate'. These similarities and differences include demographic distance (age, race, gender), power distance (the follower's acceptance of power differentials between the follower and the leader), perceived similarity (the degree to which the individual believes (s)he is similar to the target individual), and values similarity (similarity of believes, values or attitudes).

*Structural distance* refers to 'aspects of distance brought about by physical structure (e.g. physical distance), as well as organizational structure (e.g. span of management control and centralization) and supervision structure (e.g. frequency of leader-member interaction)'. These variables are all associated with 'the amount of interaction in the dyad, which is allowed or encouraged'.

*Functional distance* refers to the degree of closeness and quality of the functional working relationship between the supervisor and the subordinate; in essence, whether the subordinate is a member of the in-group or the out-group. Napier and Ferris (1993, p. 337) argue that functional

distance consists of affect, perceptual congruence (i.e. mutual understanding), latitude (i.e. the degree of follower empowerment) and relationship quality (i.e. sense of closeness). They propose that less functional distance leads to higher performance evaluations, higher subordinate satisfaction and lower subordinate withdrawal. Judge and Ferris (1993) demonstrated that the more opportunities leaders had to observe follower performance, the higher they rated follower performance. In defining functional distance, Napier & Ferris (1993) have used the Leader-Member Exchange (LMX) theory as a starting point. LMX is one of the research variables in this research. This overlap is addressed later on.

Napier and Ferris (1993) propose a model of conceptual relationships between these variables. They argue that psychological distance and structural distance have a positive relationship with functional distance. In other words, organizational members who rate high psychological or high structural distance from their leader, also tend to rate high functional distance. The authors argue functional distance relates negatively to subordinate performance (high functional distance – low performance) and subordinate satisfaction (high functional distance – low satisfaction), and positively to subordinate withdrawal (high functional distance – high withdrawal).

Almost a decade later, Antonakis & Atwater (2002) made a second attempt to write an integrative article on the effect of distance in organizations. They focus primarily on the impact of distance on leadership.

Academics often define leadership as *'an influencing process that results from follower perceptions of leader behaviour and follower attributions of leader dispositional characteristics, behaviour and performance'.* Antonakis & Atwater (2002) also state that distance between a leader and his or her followers is an essential concept for understanding leadership processes. The authors state for example that the effectiveness of a leader depends on matching the degree of closeness that members expect in various contexts. Another example is that distance can be seen as a neutralizer, which reduces the effect that leader behaviours have on others.

In their definition of distance, Antonakis & Atwater (2002) focus specifically on the leader-member dyad. They define leader distance as *'the configual effect of leader-follower physical distance, perceived social distance and perceived interaction frequency'.*

*Social distance* is, generally speaking, equal to Napier & Ferris' 'power distance' (an aspect of psychological distance). Antonakis & Atwater (2002, p. 682) define social distance as: *'perceived differences in status, rank, authority, social standing, and power, which affect the degree of intimacy and social contact that develop between followers and a leader'*. The authors state that leaders can appear to be very distant to members when they are physically distant from members, when they maximize their power and status by using their elevated social position and when they maintain infrequent contact with members. Because there is always a hierarchical separation between a leader and his or her members, leadership is per definition accompanied by social distance.

*Physical distance* is simply defined as 'how far or how close followers are located from their leader'. The authors state specifically that, contrary to what some authors presume, social distance and physical distance are different constructs. For example, a leader can be located nearby, but can be socially distant (higher up in the hierarchy, does not speak often to subordinates, etc).

Antonakis and Atwater (2002, p. 686) define *perceived frequency of leader-follower interaction* as the perceived degree to which leaders interact with their followers. Antonakis and Atwater (2002, p.) argue that this dimension is independent of social and physical distance. *'Although physical distance may make it likely that leader-follower contact is infrequent, physical distance does not cause infrequent leader-follower contact'.*

Studies that are more recent often take a one-dimensional view on distance. For example, Howell et al. (2005) found that physical distance between leaders and members (i.e. *'how close their* [organizational members'] *workspace was to their manager'*) negatively moderated the relationship between contingent reward leadership and business unit performance.

Although both Napier & Ferris (1993) and Antonakis & Atwater (2002) underline the multi-dimensional character of the concept of distance in organizations, this current research will focus on one specific aspect. *Physical interaction frequency,* or: the frequency by which leaders and members actually *see* each other, is chosen as the central independent variable. This definition resembles Antonakis & Atwater's (2002) 'perceived interaction frequency'.

This focus is chosen because in the bank/insurance company in which the research is conducted, top management worries about the effects of the reduced frequency by which leaders and members *see* each other in person. Because all employees will work from their homes a substantial amount of the work time and leaders will no longer have their own office in which members can find them, leaders and members will interact more often without physically seeing each other. The other definitions of 'distance' described above are not directly relevant in this respect. By examining the role this kind of physical distance has in the current working situation, this research might reduce the uncertainty of the outcomes of the organizational change.

In the rest of this current research, little interaction in person is conceptualized as high physical distance, much interaction in person as low physical distance. The effect of forms of interaction in which leaders and followers do not see each other, such as a telephone call or emailing, are not taken into account.

## *2.2 Job satisfaction*

Job satisfaction is the degree to which people like their job (Spector, 1997). High job satisfaction has been repeatedly linked to reduced employee turnover (e.g. Lee & Mowday, 1987; Meyer, 1993). When job satisfaction drops, employee absenteeism tends to rise (Scott & Taylor, 1985; Steele & Rentsch, 1995). The question if there is a direct link between job satisfaction and employee productivity is heavily debated. Iffaldano & Muchinski (1985) state that if there is a relationship at all, it is rather weak. This variable is chosen as a dependent variable because one of the goals of the organizational change in the Dutch bank/insurance company is to improve employees' job satisfaction.

## *2.3 Organizational commitment*

Whereas job satisfaction refers to an attitude towards specific aspects of a job, organizational commitment is regarded as a global attitude to the organization as a whole. Mowday, Steers and Porter (1979, in: Rollinson, 2002) define organizational commitment as: *'an attitude towards the organization as a whole, reflecting the individual's acceptance of its goals and values, his or her willingness to expend effort on its behalf and an intention to remain with the organization'*. Although there is some debate on the source of organizational commitment, the current view is that organizational commitment emerges from a process of social exchange (Rollinson, 2002). The employee gives the organization his or her commitment because the organization offers something valuable in return. Organizational commitment is the second dependent variable in this research.

## *2.4 Leader-Member Exchange*

An important factor related to job satisfaction and organizational commitment is the quality of the relationship between leaders and members (Golden & Veiga, 2008). This relationship is conceptualized in the Leader-Member Exchange (LMX) theory (Northouse, 2004).

The Leader-Member Exchange theory conceptualizes leadership as a process centred on the *interactions* between leaders and members. In other words, it focuses on the dyadic relationship between a leader and a member. The notion that the quality of the exchange between the leader and each of his or her members differs, made the theory innovative compared to previous theories of leadership (Northouse, 2004; Boies & Howel, 2006).

Early studies showed two general types of linkages between leaders and members, called the in-group and the out-group. In-group linkages are those that are based on expanded and negotiated role responsibilities. Out-group linkages are based on the formal employment contract. Within a work-unit members become part of the in-group or the out-group based on how well they work with the leader and how well the leader works with them. Personality and other personal characteristics are related to this process.

The LMX-theory builds on three dimensions: the degree to which leaders and followers have mutual *respect* for each other's capabilities, the degree to which they feel a deepening sense of reciprocal *trust* and the degree to which they have a strong sense of *obligation* to one another (Northouse, 2004).

## *2.5 Hypotheses*

LMX has repeatedly proved to be positively related to positive outcomes for employees, such as higher job satisfaction, wellbeing, leader satisfaction, organizational commitment and citizenship behaviours (Hooper & Martin, 2008; Golden & Veiga, 2008). A high LMX has also been linked to perceived organizational support and high performance, which results in higher overall unit performance within the organization (Stinger, 2006). Based on these previous research findings, LMX is likely to be positively related to job satisfaction and organizational commitment.

**Hypothesis 1:** LMX is positively related to job satisfaction

**Hypothesis 2:** LMX is positively related to organizational commitment

A number of authors have argued that physical distance may negatively affect how well leaders are able to work with their members, due to a potential reduction in the quality of interactions between leaders and members. The main argument of these authors is that leaders will have less opportunity to build relationships that result in effective member performance.

Graen (1976) proposed that in-group and out-group members enjoy different rewards and benefits, but also different levels of satisfaction and performance ratings, based on the relative closeness (or distance) in their working relationship with their supervisor.

Bass (1990) noted that distance has a negative effect on the quality of the exchange and reduces the leader's influence because of *'reduced richness of information transmission'*. Napier and Ferris (1993) suggest that *'subordinates who feel they have access to their supervisors, and who actually interact on a more frequent basis, are hypothesized to develop a better, closer relationship'* (p. 344) than people who interact less frequently. Howell et al (2005) explain this by stating that physically distant leaders may be seen as less active by members, and less capable of providing timely recognition and rewards.

Howell and Hall-Merenda (1999) argued that physical distance has a moderator effect between leaders' behaviour and LMX. Antonakis & Atwater (2002) go a step further by arguing that the effectiveness of a leader depends on the extent to which he or she is successful in matching the degree of closeness that members expect of the leader in various contexts. They state for example, that how leaders are perceived and whether members accept leaders can be partially explained by the distance that exists between leaders and their members.

These previous research findings would suggest a negative relation between the frequency by which leaders and members see each other in person (physical distance) and the quality of their relationship (LMX).

**Hypothesis 3:** Physical distance is negatively related to LMX

However, it could be argued that for some groups of people, this relation is less strong than for others. It is likely that the number of years a member works for the organization (tenure), the number of years a leader and a member work together, the member's level of education, and the type of work influence the time a member needs to interact with his or her leader in order to have a high quality relationship. Members who work longer for the organization might be less dependent on their leader because they already know their way around. Members that work with their leader for a longer period of time may not need to interact as frequently because they know better what is expected from them by the leader. Members with higher educational levels might be more used to accomplishing tasks independently. Some jobs may require more supervision or interaction between leaders and members than others. These factors may influence the need for interaction, and in that way influence members' expectations and perceptions of their interaction with their leader.

**Hypothesis 4a:** The negative relation between physical distance and LMX is moderated by tenure

**Hypothesis 4b:** The negative relation between physical distance and LMX is moderated by length of cooperation

**Hypothesis 4c:** The negative relation between physical distance and LMX is moderated by level of education

**Hypothesis 4d:** The negative relation between physical distance and LMX is moderated by function group

Burrows et al. (1996) found that distant leaders negatively impacted follower satisfaction. Although no scientific research was found on the relation between interaction frequency with the leader and organizational commitment, a negative relation is likely. Little interaction with the leader could make members feel less committed to the organization.

**Hypothesis 5:** Physical distance is negatively related with job satisfaction

**Hypothesis 6:** Physical distance is negatively related with organizational commitment

The central aim of this research is to clarify whether or not it matters how often leaders and members see each other in person, for how satisfied and committed they are. The expectation is that the strength of the (supposed) negative effect of physical distance (frequency of interaction in person) on job satisfaction and organizational commitment depends on the quality of the relationship between leaders and members. In other words, the expectation is that LMX moderates the negative relationship between physical distance and job satisfaction and organizational commitment.

**Hypothesis 7:** LMX moderates the negative relation between physical distance and job satisfaction

**Hypothesis 8:** LMX moderates the negative relation between physical distance and organizational commitment

Hypotheses 7 and 8 are the central hypotheses of this study. The hypotheses are displayed in

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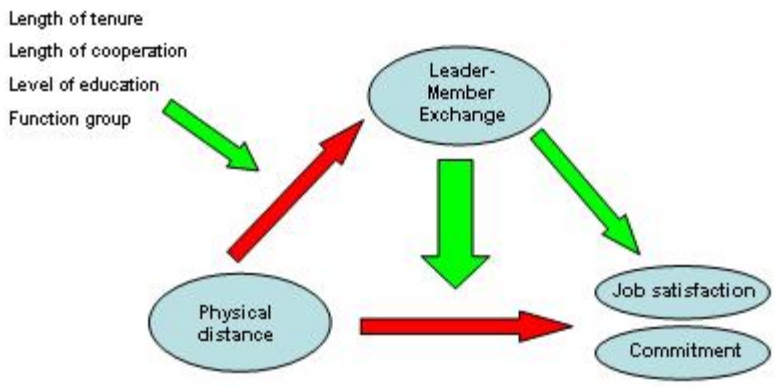


Figure 1:

*Hypotheses*

# 3 Method

In this chapter the method by which this research is conducted is described. In paragraph 1, the background of respondents, and the procedure of data assembly is addressed. In paragraph 2, the measurements of the constructs are described. In order to check whether the items actually form the scales they are intended to form, factor analysis is performed. The reliability of the scales is checked using Crohnbach's reliability analysis.

## *3.1 Respondents and procedure*

Respondents are employees of a Dutch bank/insurance company. Employees work for the Bank's back offices (26%), and for the Insurer's IT department (74%). Demographics of the respondents are displayed in Appendix 1.

The research data were collected through a web based survey. An overview of the items in the questionnaire is displayed in Appendix 2. An email with an invitation to participate was sent to 1096 employees. The email contained a short introduction of the background of the researcher and the research. The topic of the questions was addressed ('questions concern the relationship with your leader, and your level of job satisfaction'). The exact scope of the research was not explained in order to avoid a social desirability bias. The questionnaire was available for 10 days. After 5 days, a reminder was sent to employees who did not yet start or complete the questionnaire.

Due to internet restrictions, 40 employees (3,6%) reported not to be able to open the website. Unfortunately this problem could not be solved. 596 employees (54%) started to fill out the questionnaire, 557 (51% of total, 93% of employees who started) completed it. It took respondents eleven to sixteen minutes to complete all questions. Because only 7% of all respondents who started to fill out the questionnaire did not complete it, and the overall complete sample is large, incomplete response was deleted from the dataset.

## *3.2 Measurements*

*Physical distance*

In the questionnaire, four 'Physical distance' items were included, asking respondents how often they see and interact with their leader. For example: "How often do you see your leader on average during a work related meeting?". The items asked how often they see each other one-on-one, informally, and without having contact. Respondents answered on a 7 point scale, ranging from "Less than once a month" to "Continuously".

Factor analysis showed that the item: "How often do you see your leader without having contact?" loaded highest on another factor than the other three physical distance items (Appendix 3).

Reliability analysis of this scale with all four items, resulted in $\alpha = .62$ ($n = 4$). Deleting the item "How often do you see your leader without having contact?", resulted in a slightly higher alpha: $\alpha = .64$ ($n = 3$). This is still rather weak (a reliability of .7 or higher is preferred) (Appendix 4).

*Leader-Member exchange*

LMX is measured using the items of the LMX 7 Questionnaire (Gaen & Uhl-bien, 1995 in: Northouse, 2004, p. 165). This is a validated scale, often used in scientific research (e.g. Schriesheim et al., 1999). An example of an item is: "How well does your leader understand problems you encounter in your work and what you need to do your work properly?" Respondents answered on a 5 point scale.

Factor analysis showed that all 7 items load a .6 or higher on this factor (Appendix 3).

The reliability of this scale is α = .88 (n = 7), which is quite good. Deleting one of these items would result in a lower alpha (Appendix 4).

*Organizational commitment*

Organizational commitment is measured using items of the commitment questionnaire by Meyer and Allen (1997). Per subscale[1] (affective, continuous, normative commitment) items were selected based on face validity. Examples of items from each of the scales: affective commitment: "I am proud to be a member of this organization", continuous commitment: "When I would leave this organization now, this would disorganize my life too much", normative commitment: "Even if it would work in my advantage, I do not feel it would be right to leave this organization now". Respondents answered on a 5 point scale, ranging from "I do not agree" to "I agree". In total, fifteen Organizational Commitment items were included in the questionnaire.

Factor analysis shows that four of the items that are supposed to measure affective commitment, load on the same factor. The item "I think I can feel at home just as good at another organization, as at this organization" and item "I do not feel I belong to this organization" load higher on other factors (Appendix 3).

Reliability analysis of all six items that were supposed to measure Affective Commitment resulted in α = .72 (n = 6). Deleting the item "I think I can feel at home just as good at another organization, as at this organization" resulted in α = .748 (n = 5). Also deleting item "I do not feel I belong to this organization" made α = .749 (n = 4) (Appendix 4).

Four items concerning continuous commitment were included in the questionnaire. Item "If I would not already invested this much in the organization, I would be thinking about working somewhere else" did not load on the same factor as the other three items.

Continuous commitment items show a reliability of α = .50 (n = 4). When item "If I would not already invested this much in the organization, I would be thinking about working somewhere else" was deleted, alpha grew to α = .68 (n = 3), which is not very high. Deleting one of the items would not result in a larger alpha.

Factor analysis shows that the five normative commitment items all load on the same factor. These items show a reliability of α = .74 (n = 5). Deleting item "I do not feel any obligation to stay with my current employer" resulted in α = .76 (n = 4).

[1] In this chapter, factor analysis and reliability analysis of *subscales* is performed. For the scope of this thesis, this is not necessary because hypotheses are tested based on the total scales. This extra reliability analyses are done to make further analysis on sub scale level possible in case the research results indicate that this is necessary.

When all the items of these sub scales were taken together, the reliability analysis of the total organizational commitment scale resulted in an alpha of α = .82 (n = 11).

*Job satisfaction*

The job satisfaction scale is derived from items of an Achmea Arbo job satisfaction research. Relevant items were selected based on face validity. Items are related to four subscales: colleagues ("I am satisfied with the cooperation with my colleagues"), the job ("I am happy with my job"), information and communication ("I receive enough information about the results of my job"), and working for this organization ("Taking everything into account, I am happy that I work for this organization"). Respondents answered on a 5 point scale, ranging from "I do not agree" to "I agree".

In the factor analysis, the three items concerning satisfaction with colleagues all load on the same factor. The reliability of the subscale Colleagues is α = .82 (n = 3).

Factor analysis shows that, besides the three items concerning satisfaction with the job, the items 'Taking everything into account, I enjoy working for this organization', 'I do not feel I belong to this organization' (an affective commitment item), and 'If I would not have invested in this organization as much, I would consider working somewhere else' (a continuous commitment item) also load on this factor.

Reliability analysis of these six 'job' items results in α = .75 (n = 6). Deleting item 'If I would not have invested in this organization as much, I would consider working somewhere else' results in α = .77 (n = 5). Also deleting items "I spend a large part of my time on activities I find annoying" and "I do not feel I belong to this organization" results in α = .83 (n = 3).

The items 'Taking everything into account, I enjoy working for this organization', and 'I feel I do not get paid enough for this job' were supposed to measure satisfaction with working for this organization. The first item is now included in the previously stated subscale 'job'. The second item did not show a logical factor loading and is therefore not taken up in further analysis.

Although both items on satisfaction with information about results of their work and communication in the organization load on the same factor, they do not form a reliable subscale: α = .60 (n = 2). These items are therefore analyzed further on item level.

Reliability of the all items of these subscales taken together, results in an alpha of α = .79 (n = 8) for the total Job Satisfaction scale.

*Other measures*

Respondents were asked their level of education, how long they are working for this organization, how long they are working together with their leader, their age and their sex. One of the items asked respondents in which function group their job could be placed. This measure was not included in further analysis because it proved to be an unreliable measure: many respondents reported they could not recognize their job in the stated descriptions. This means hypothesis 4d (cannot be answered and it will not be taken into consideration in the next chapter.

# 4 Results

In order to test the hypotheses stated in chapter 2, this chapter describes the results of several correlation and regression analyses. Table 2 shows the means, standard deviations and Pearson correlation coefficients of the research variables. All variables, except physical distance, are measured using a 5-point Likert scale. Physical distance was measured on a scale from 1 to 7.

The hypotheses are first analysed using these Pearson correlations. Because many of the research variables correlate to one another, there is a chance that the correlation between two variables is also partially caused by a third or a fourth variable. Therefore, the relationships between variables, when controlling for the effect of other research variables, are also addressed. This is done using hierarchical multiple regression as described by Pallant (2007).

*Hypothesis 1: LMX is positively related to job satisfaction*

As was expected, LMX shows a positive relation to job satisfaction ($r = .44$; $p < .01$) (Table 2). In other words: when respondents rate a higher quality LMX, they also report higher job satisfaction.

Table 1 shows that when the influence of the variables age, education, tenure, length of cooperation, organizational commitment and distance is controlled for, the relation between LMX and job satisfaction becomes slightly lower, but is still significant ($r = .38$; $p < .01$). This hypothesis is thereby confirmed.

Table 1:

*Hierarchical multiple regression of the relation between LMX and Job Satisfaction, controlling for Age, Education, Tenure, Length of Cooperation and Physical Distance and Organizational Commitment*

| | | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Age | -.01 | .02 | .02* |
| | Education | -.04 | | |
| | Tenure | .14* | | |
| | Cooperation | -.04 | | |
| Model 2 | Age | -.00 | .04 | .02** |
| | Education | -.02 | | |
| | Tenure | .14* | | |
| | Cooperation | -.04 | | |
| | Distance | -.16** | | |
| Model 3 | Age | .05 | .15 | .10** |
| | Education | -.01 | | |
| | Tenure | .08 | | |
| | Cooperation | -.04 | | |
| | Distance | -.15** | | |
| | Commitment | .32** | | |
| Model 4 | Age | .02 | .27 | .12** |
| | Education | -.05 | | |
| | Tenure | .09 | | |
| | Cooperation | -.09* | | |
| | Distance | -.02 | | |
| | Commitment | .25** | | |
| | LMX | .38** | | |

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

Table 2:

*Means, standard deviations and Pearson correlations of Physical distance, LMX, Organizational commitment, Job satisfaction, Tenure, Length of cooperation with the leader and Level of education of the member, of 557 employees working for a Dutch bank/insurance company*

| | M | SD | 1. | 2. | 3. | *3a.* | *3b.* | *3c.* | 4. | *4a.* | *4b.* | *4c.* | *4d.* | 5. | 6. | 7. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Physical distance | 14.62 | 3.29 | 1 | | | | | | | | | | | | | |
| 2. LMX | 26.55 | 4.48 | -.32** | 1 | | | | | | | | | | | | |
| 3. Org. Commitment | 32.28 | 7.11 | -.04 | .21** | 1 | | | | | | | | | | | |
| *3a. Affective* | 12.97 | 3.10 | -.04 | .25** | .80** | 1 | | | | | | | | | | |
| *3b. Continuous* | 8.79 | 2.71 | -.03 | .08* | .74** | .43** | 1 | | | | | | | | | |
| *3c. Normative* | 10.52 | 3.29 | -.08* | .16** | .80** | .44** | .37** | 1 | | | | | | | | |
| 4. Job Satisfaction | 30.48 | 4.13 | -.16** | .44** | .34** | .37** | .25** | .18** | 1 | | | | | | | |
| *4a. Colleagues* | 12.40 | 2.00 | -.06 | .23** | .08* | .10** | .11** | -.02 | .73** | 1 | | | | | | |
| *4b. Work* | 11.99 | 2.10 | -.13** | .34** | .43** | .48** | .28** | .24** | .82** | .37** | 1 | | | | | |
| *4c. Results* [1] | 3.32 | .88 | -.18** | .46** | .18** | .18** | .09* | .15** | .54** | .17** | .31** | 1 | | | | |
| *4d. Communication* [1] | 2.77 | .86 | -.13** | .24** | .23** | .19** | .17** | .19** | .52** | .12** | .33** | .43** | 1 | | | |
| 5. Tenure | 8.49 | 8.82 | .01 | .05 | .12** | -.01 | .25** | .05 | .14** | .02 | .18** | .13** | .04 | 1 | | |
| 6. Cooperation | 1.97 | 2.14 | .00 | .13** | .04 | .05 | .09* | -.04 | .00 | -.08* | .06 | .09* | -.02 | .30** | 1 | |
| 7. Education | 2.91 | .83 | .11** | .03 | -.09* | .06 | -.19** | -.09* | -.09* | -.04 | -.11** | -.01 | -.03 | -.33** | -.09* | 1 |

Sig. (1-tailed) * p < .05 ** p < .01

[1] Measured on item level

*Hypothesis 2: LMX is positively related to organizational commitment*

Table 2 shows that LMX is positively related to organizational commitment ($r = .21$; $p < .01$): when respondents rate a high quality relationship with their leader, they also tend to rate higher organizational commitment. This relation is less strong than the relation between LMX and job satisfaction described above.

When controlled for the influence of the variables age, education, tenure, relation, physical distance and job satisfaction, the relation between organizational commitment drops even further but is still significant ($r = .09$; $p < .05$) (Table 3).

Table 3 also shows that when LMX is added to this model, this variable only contributes an additional 1% of the proportion of explained variance of organizational commitment. However, this contribution is significant on the $p < .05$ level ($\Delta R^2 = .01$, $p < .05$). This hypothesis is therefore confirmed. The practical value of this small but significant relationship will be further elaborated on in the discussion.

Table 3:

*Hierarchical multiple regression of the relation LMX and Organizational Commitment, controlling for Age, Education, Tenure, Length of Cooperation, Physical Distance and Job Satisfaction*

| | | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Age | -.14* | .03 | .03** |
| | Education | -.04 | | |
| | Tenure | .18** | | |
| | Cooperation | .01 | | |
| Model 2 | Age | -.14** | .03 | .00 |
| | Education | -.04 | | |
| | Tenure | .18** | | |
| | Cooperation | .01 | | |
| | Distance | -.02 | | |
| Model 3 | Age | -.14** | .13 | .10** |
| | Education | -.03 | | |
| | Tenure | .13* | | |
| | Cooperation | .02 | | |
| | Distance | .03 | | |
| | Job Satisfaction | .33** | | |
| Model 4 | Age | -.15** | .14 | .01* |
| | Education | -.04 | | |
| | Tenure | .14* | | |
| | Cooperation | .01 | | |
| | Distance | .05 | | |
| | Job Satisfaction | .29** | | |
| | LMX | .09* | | |

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

*Hypothesis 3: Physical distance is negatively related to LMX*

Physical distance is negatively related to LMX ($r = -.32$; $p < .01$). This means that respondents who see their leader less often (high physical distance), report a lower quality relationship.

When the effects of age, education, tenure, the length of cooperation between the leader and the member, and organizational commitment and job satisfaction is controlled for, the relation between physical distance and LMX is only slightly lower and still significant: $r = -.27$ ($p < .01$) (Table 4). Adding physical distance to the model is a significant contribution. This hypothesis is thereby confirmed.

Table 4:

*Hierarchical multiple regression of the relation between Physical Distance and LMX, controlling for Age, Education, Tenure, Length of Cooperation, Job Satisfaction and Organizational Commitment*

| | | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Age | .01 | .02 | .02* |
| | Education | .05 | | |
| | Tenure | .02 | | |
| | Cooperation | .13** | | |
| Model 2 | Age | .04 | .06 | .04** |
| | Education | .06 | | |
| | Tenure | -.02 | | |
| | Cooperation | .13** | | |
| | Commitment | .21** | | |
| Model 3 | Age | .02 | .21 | .15** |
| | Education | .07 | | |
| | Tenure | -.05 | | |
| | Cooperation | .14** | | |
| | Commitment | .07 | | |
| | Job Satisfaction | .41** | | |
| Model 4 | Age | .04 | .29 | .07** |
| | Education | .10* | | |
| | Tenure | -.05 | | |
| | Cooperation | .14** | | |
| | Commitment | .08* | | |
| | Job Satisfaction | .37** | | |
| | Distance | -.27** | | |

* p < .05 ** p < .01

*Hypothesis 4a: The negative relation between physical distance and LMX is moderated by tenure*

Tenure in itself does not show a significant relation to either physical distance (r = .01; n.s.) or LMX (r = .05; n.s.) (Table 2). This means that the length of time by which a member works for the organization, does not affect the quality of the relationship, or the degree of physical distance with his or her leader.

Table 5, model 2 shows that the original relation between physical distance and LMX (r = -.32; p < .01) is not changed when controlled for the effect tenure. Adding the standardized interaction term (model 3) does not result in a significant change in explained variance ($\Delta$R2 = .00, n.s.). This means tenure does not moderate this relation and therefore hypothesis 4a is not confirmed.

Table 5:

*Tenure as a moderator in the relationship between Physical distance and LMX*

| | | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Tenure | .05 | .00 | .00 |
| Model 2 | Tenure | .05 | .11 | .10** |
| | Distance | -.32** | | |
| Model 3 | Tenure | .05 | .11 | .00 |
| | Distance | -.32** | | |
| | zTenure * zDistance | .05 | | |

* p < .05 ** p < .01

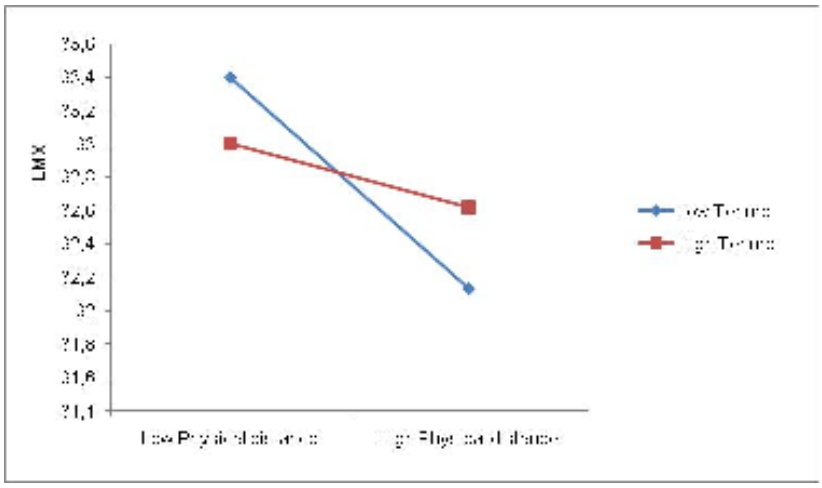


Figure 2:

*Tenure as a moderator in the relationship between Physical distance and LMX*

*Hypothesis 4b: The negative relation between physical distance and LMX is moderated by the length of cooperation*

The length of cooperation shows a weak but significant relation with LMX (r = .13; p < .01). This means that when the period by which members cooperate with their leader is longer, they tend to report a higher quality relationship. Although significant, this effect is not very large.

When the effect of length of cooperation is controlled for, the strength of the relation between physical distance and LMX (Table 2) remains the same (r = -.32; p < .01) (Table 6). This means that the length of time by which leaders and members cooperate, does not affect the relation between physical distance and LMX. Hypothesis 4b is therefore not confirmed.

Table 6:

*Length of Cooperation as a moderator in the relationship between Physical distance and LMX*

| | | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Cooperation | .13** | .02 | .02** |
| Model 2 | Cooperation<br>Distance | .13**<br>-.32** | .12 | .02** |
| Model 3 | Cooperation<br>Distance<br>zCooperation * zDistance | .13**<br>-.32**<br>.04 | .12 | .00 |

* p < .05  ** p < .01

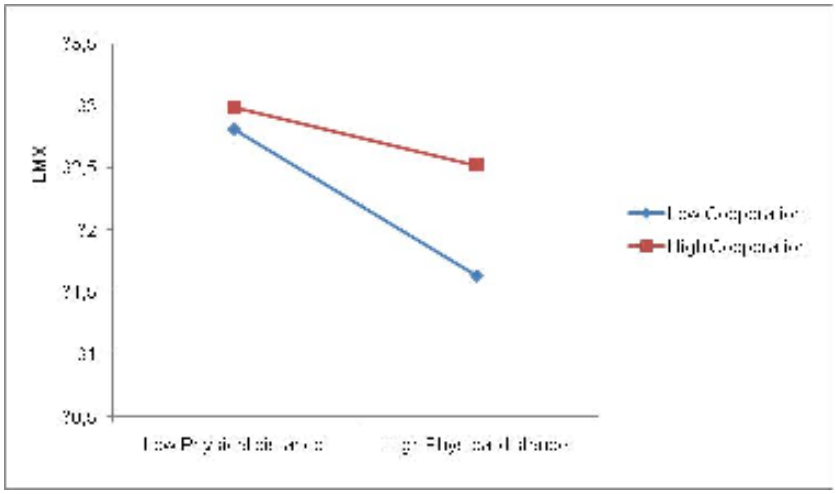


Figure 3:

*Length of Cooperation as a moderator in the relationship between Physical distance and LMX*

*Hypothesis 4c: The negative relation between physical distance and LMX is moderated by level of education*

Physical distance and level of education are positively related (r = .11; p < .01), which means that there is a tendency that people who report to see their boss less often, are the higher educated ones. This relation is quite weak however. There is no significant relation between education and LMX (r = .03; n.s.), which means that the level of education of a member shows no relation to the reported quality of LMX.

When the effect of education on the relation between physical distance and LMX is controlled for, the relation between physical distance and LMX is hardly affected (from r = -.32 to r = -.33). The standardized interaction term does contribute significantly, which means there is no moderator effect of education (Table 7). Hypothesis 4c is therefore not confirmed.

Table 7:

*Level of Education as a moderator in the relationship between Physical distance and LMX*

| | | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Education | .03 | .00 | .00 |
| Model 2 | Education<br>Distance | .06<br>-.33** | .11 | .11** |
| Model 3 | Education<br>Distance<br>zEducation * zDistance | .06<br>-.33<br>-.03 | .11 | .00 |

* p < .05 ** p < .01

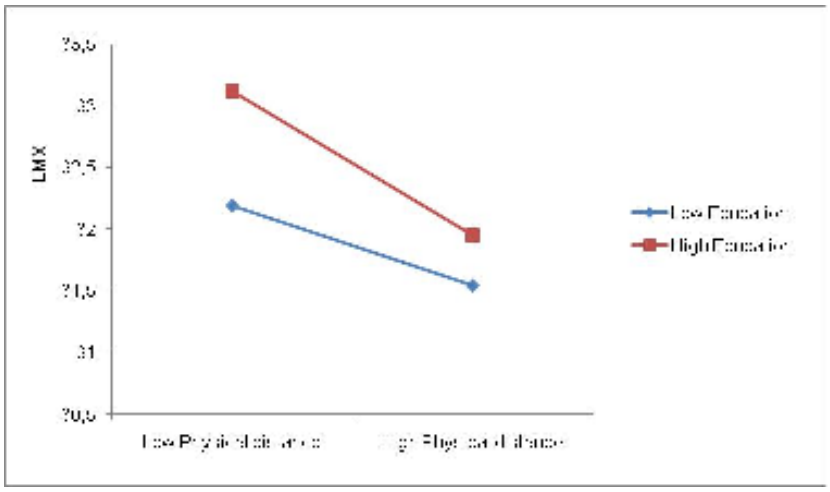


Figure 4:

*Level of Education as a moderator in the relationship between Physical distance and LMX*

*Hypothesis 5: Physical distance is negatively related with job satisfaction*

Physical distance shows a negative relation with job satisfaction (r = -.16, p < .01) (Table 2). When respondents see their leader less often (high physical distance), they tend to report a lower job satisfaction. However, this relation is quite small.

When this relation is controlled for by the other variables (except LMX, because this is the scope of hypothesis 7), the relation is hardly affected (r = -.15, p < .01) (Table 8). Table 8 shows that physical distance explains a significant 2% of the variance in job satisfaction. Therefore this hypothesis is confirmed. However, organizational commitment explains a larger part of the variance in job satisfaction (∆R2 = .11, p < .01) than physical distance ($\Delta R^2$ = .02, p < .01).

Table 8:

*Hierarchical multiple regression of the relation between Physical distance and Job satisfaction, controlling for Age, Education, Tenure, Length of cooperation, and Organizational commitment*

| | | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Age | -.01 | .02 | .02* |
| | Education | -.05 | | |
| | Tenure | .14* | | |
| | Cooperation | -.04 | | |
| Model 2 | Age | .03 | .13 | .11** |
| | Education | -.03 | | |
| | Tenure | .08 | | |
| | Cooperation | -.04 | | |
| | Commitment | .33** | | |
| Model 3 | Age | .43 | .51 | .02** |
| | Education | -.01 | | |
| | Tenure | .08 | | |
| | Cooperation | -.04 | | |
| | Commitment | .33** | | |
| | Distance | -.15** | | |

* p < .05 ** p < .01

*Hypothesis 6: Physical distance is negatively related with organizational commitment*

The relation between physical distance and organizational commitment is very weak (r = .04), and not significant. In other words, the frequency by which respondents see their leader, does not affect their reports of organizational commitment. Therefore hypothesis 6 is not confirmed.

*Hypothesis 7: LMX moderates the negative relation between physical distance and job satisfaction*

Physical distance is negatively related to job satisfaction with r = -.16 ($p < .10$). LMX is positively related to job satisfaction (r = .44; $p < .01$). Table 9 shows that physical distance only explains 3% of the variance in job satisfaction ($\Delta R^2 = .03$, $p < .01$).

Table 9 shows that the interactionterm does not explain any variance in job satisfaction ($\Delta R^2 = .00$, n.s). In other words, LMX does not moderate the relationship between physical distance and job satisfaction. Figure 10 displays this graphically. Hypothesis 7 is therefore not confirmed.

Model 2 shows that when LMX is added to the model, the effect of physical distance on job satisfaction drops to -.02 and is no longer significant ($\beta$ = -.02, n.s.). In other words, the relationship of physical distance with job satisfaction is completely dependent on the effect of LMX. Because there is a significant effect of physical distance on LMX (r = - .32; $p < .01$), LMX can be said to mediate the effect of physical distance on job satisfaction. This means that physical distance influences the quality of LMX, and the LMX influences members' job satisfaction.

The hypothesis is not confirmed, because this is not a moderation effect. In stead, a mediation effect was found. This effect will be further discussed in the following chapter (discussion).

Table 9:

*LMX as a moderator in the relationship between Physical distance and Job Satisfaction*

| | | $\beta$ | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Distance | -.16** | .03 | .03** |
| Model 2 | Distance<br>LMX | -.02<br>.43** | .19 | .17** |
| Model 3 | Distance<br>LMX<br>zLMX * zDistance | -.01<br>.44**<br>-.06 | .20 | .00 |

* p < .05 ** p < .01

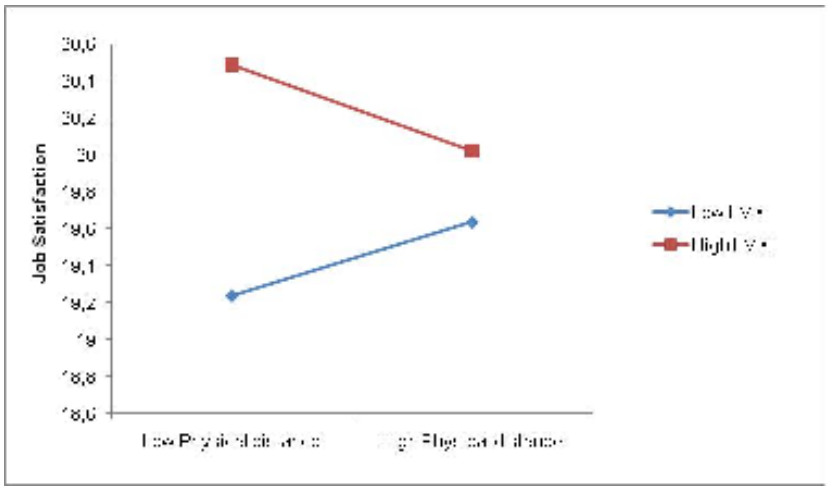


Figure 5:

*LMX as a moderator in the relationship between Physical distance and Job satisfaction*

*Hypothesis 8: LMX moderates the negative relation between physical distance and organizational commitment*

Hypothesis 6 showed that physical distance is not related to organizational commitment (r = .04; n.s.). Table 10 shows that adding the standardized interaction term to this model, does not result in a significant rise in the explained variance ($\Delta R^2$ = .00, n.s.). This hypothesis is not confirmed.

Table 10:

*LMX as a moderator in the relationship between Physical distance and Organizational commitment*

| | | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|
| Model 1 | Distance | -.04 | .00 | .00 |
| Model 2 | Distance | .03 | .05 | .04** |
| | LMX | .22** | | |
| Model 3 | Distance | .03 | .05 | .00 |
| | LMX | .21** | | |
| | zLMX * zDistance | .05 | | |

* p < .05 ** p < .01

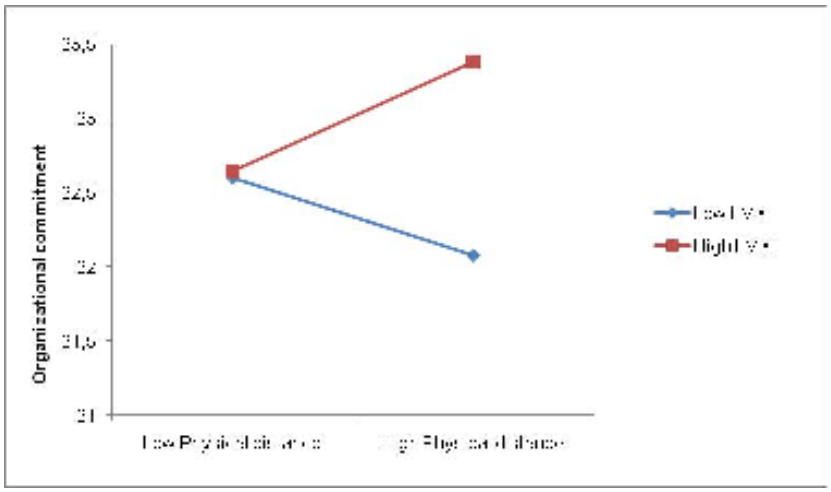


Figure 6:

*LMX as a moderator in the relationship between Physical distance and Organizational commitment*

# 5 Discussion

This chapter discusses the research results of this research. The research results are first shortly summarized and where relevant, new insights are tested. The practical value of the results is described and then discussed in the light of the theories that were presented in the theoretical framework. Strong and weak points of this research are highlighted and alternative explanations are presented for hypotheses that were not confirmed. Based on all this, recommendations for further research are presented.


Figure 7:
Summary of the research results

Figure 7 summarizes the most important results of this research. Physical distance, in terms of the frequency by which members report to interact with their leader in person, was the central independent variable of this research. Hypothesis 3 stated that physical distance would relate negatively to LMX. This hypothesis is confirmed ($r = -.32$, $P < .01$), which means that members who see their leaders less often, report a lower Leader-Member Exchange (LMX) quality. The expectation that LMX and job satisfaction are positively related (hypothesis 1) is also confirmed ($r = .44$, $p< .01$). This means that people who report a high quality LMX, also report higher job satisfaction.

Physical distance shows a negative relationship with job satisfaction ($r = -.16$, $p < .01$) (hypothesis 5), which means that people who report to see their leader less often, report lower job satisfaction. The most important conclusion of this research is that this relationship *disappears* ($r = -.02$, n.s.) when the effect of LMX is controlled for. This means LMX mediates the relation between physical distance and job satisfaction.

Preacher & Leonardelli's (2003) 'interactive calculation tool for mediation tests' is used to test if this mediation effect is significant. First, this tool asks for the unstandardized regression coefficients for the *'associations'* between (a) the independent variable (physical distance) and the mediator (LMX), and (b) the mediator and the dependent variable (job satisfaction) (resp. -.32 and .44). Second, it asks for ($s_a$) the standard error of (a) and ($s_b$) the standard error of (b) (resp. .055 and .035). All three tests (Sobel-test, Aroian-test and Goodman-test) show a p-value smaller than .01 (Appendix 5), which means the mediation effect of LMX between physical distance and job satisfaction is significant.

This conclusion is in line with the model proposed by Napier and Ferris (1993). In their conceptual model, they propose that structural distance (the concept that includes physical distance in its definition) has a positive relationship with functional distance (the concept that closely resembles low-LMX). The authors state that functional distance consequently has a negative relationship with 'subordinate satisfaction'.

It is important to focus on the meaning of these results. The disappearance of the direct effect of physical distance on job satisfaction means that if members see their leader only little, this does not mean they are automatically dissatisfied with their job. It *does* mean they are more likely to report a lower LMX quality than members who see their leaders often. However, the variance in LMX quality is only explained for ($-.32^2$) 10.24% by the frequency of interaction in person. The other 90% of LMX is explained by other factors.

Subsequently, members who report a low relationship quality with their leader are also likely to report a lower satisfaction with their job. The quality of the relationship with the leader explains ($.44^2$) 19.36% of the variance in job satisfaction. This is quite a lot, and an important reason why both leaders and members should invest in a good relationship quality. Still, a low LMX quality is not the end of the world for a persons' job satisfaction: the other 80% of the variance in job satisfaction is explained by other factors.

Now the second part of Figure 7 is discussed. Hypothesis 1, (*'LMX shows a positive relation with job satisfaction'*) was confirmed ($r = .44$, $p < .01$). At first, hypothesis 2 (*'LMX shows a positive relation with organizational commitment'*) was confirmed as well ($r = .22$, $p < .01$). However, when the effect of job satisfaction is controlled for, the relationship between LMX and organizational commitment drops, but is still significant ($r = .09$, $p < .05$).

Although significant, a correlation coefficient of .09 is very small. It means less than 1% ($.09^2$) of the variance in organizational commitment is explained by LMX. This effect is too small to be of any practical value. Table 2 showed a significant relation between job satisfaction and organizational commitment ($r = .34$, $p < .01$). In other words, a member's commitment to their organization is related to his or her satisfaction with the job. The quality of the relationship they have with their boss only plays a very small unique role in explaining their organizational commitment. Because of the significant positive relation between LMX and job satisfaction, a mediator effect of job satisfaction on the relationship between LMX and organizational commitment is likely.

Preacher & Leonardelli's (2003) 'interactive calculation tool for mediation tests' is used to test this premise. The standard error of the regression analysis between LMX and job satisfaction is .04. The standard error of the relationship between job satisfaction and organizational commitment is .07. All three tests (Sobel-test, Aroian-test and Goodman-test) show a p-value smaller than .01 (Appendix 5), which means the mediation effect of job satisfaction on the relationship between LMX and organizational commitment is significant. Because there also is a (small, but) significant relationship between LMX and organizational commitment, job satisfaction has a *partial* mediator effect.

These were the most important conclusions of this research. Let us now look at the other hypotheses that were not confirmed.

Hypotheses 4a, b, c and d stated the negative relationship between physical distance and LMX is moderated by respectively the length of the member's tenure, the number of years the member and the leader are cooperating, the member's level of education, and the function group to which the member's tasks belong. All these hypotheses were rejected.

That hypothesis 4a and 4b were not confirmed could be caused by the way length of tenure and length of cooperation were measured. Respondents were asked to rate the length of tenure and the length of time they cooperate with their leader in half years (e.g. "2.5 years"). It could be that these variables only have effect in the first (short) period a member and a leader work together, and that the effect disappears after a while. It is not very likely that an employee who just started working for a company and sees his leader only one or two times in his first month, builds up a relationship based on respect, trust and obligation. Further research could focus on the effect of the number of *weeks* or *days* a member and a leader work together.

Hypothesis 4c looked at the effect of the level of education of members. Appendix 1 shows that a large group of respondents (n= 319; 57%) reports 'HBO' as level of education. This skewness could cause the fact that this hypothesis was not confirmed. Further research should strive for an equal distribution in levels of education to reliably test this hypothesis.

Hypothesis 4d could not be tested because some people reported they could not recognize their function and tasks in the given categories. Further research should include a more reliable measure to see if the kind of job members perform affects the relations found in this research.

Hypothesis 6 (*'Physical distance is negatively related to organizational commitment'*) was not confirmed ($r = .04$, n.s.).

A weakness of this research concerns the reliability of the measure for physical distance. It showed a reliability of $\alpha = .64$. Some authors state this is 'enough' to draw conclusions (Nunnally & Bernstein, 1994), while others name it 'undesirable' (Evers, 2001). The reliability of this measure should be improved in further research. A suggestion to objectify the rating of the frequency of interaction in person, is to ask respondents for a longer period of time (e.g. 6 months), to rate how often they interact with their leader in person.

In order to construct a more complete image of the impact of distance on variables as LMX, job satisfaction and organizational commitment, further research should focus on the other definitions of distance discussed in the theoretical framework. For example the effect of social distance on LMX could be researched further. Social distance was defined by Atonakis & Atwater (2002, p. 682) as *'perceived differences in status, rank, authority, social standing, and power, which affect the degree of intimacy and social contact that develop between followers and a leader'*. Higher social distance could influence the degree to which a member and a leader interact, and subsequently affect the quality of the LMX.

Another weakness is that some respondents reported that negatively stated items were sometimes hard to interpret. Reliability analysis showed that these items often did not contribute to a solid alpha, or did not load on a certain factor. Further research should be more aware when including these kinds of items.

Because research results are based on the current situation in the bank/insurance company, it is important to note that predictive value for the future situation is limited. The work environment and the way of interacting will change substantially, which might alter the relations found in this research. Further research could take a longitudinal outlook, to see if the relations found in this research change due to the organizational change.

It could be particularly interesting to see what the introduction of new communication devices alters in the relations found in this research. Further research could focus on the question whether this negative effect between physical distance and LMX is moderated by the use of other, modern ways of communication, such as web conferencing (by which leaders and members can see one another on the screen of their laptop). In this respect it could also be interesting to look at research by Burrows (1996) on 'substitutes for leadership'; factors such as intrinsic satisfaction which substitute the effect of leadership on members of the organization.

These research findings have an important practical implication. The fact that physical distance in terms of interaction frequency has a negative impact on LMX, could be worrying. However, based on these research results, the conclusion that it would be better to refrain from letting people work at distance from their leader would not be accurate. It is more important to acknowledge that the interaction between a leader and a member when working separated from each other, and thereby not seeing each other very often, deserves more attention than in traditional office settings.

It is important to note that pursuing higher employee job satisfaction is not achieved by increasing the frequency by which leaders and members interact. Investing in the *quality* of the interaction is a better way to achieve this goal. This is underlined by the research results of Howell & Hall-Merenda (1999). These autors showed that LMX produced high follower performance, irrespective of physical distance between leaders and followers.

Moreover, it is important to note that it is not quite logical to assume that the frequency of interaction automatically leads to good leader-member exchanges. The optimal degree of interaction between a leader and a member and the satisfaction of a member with his leader is contingent on situational variables. In situations of task ambiguity for example, a member would require more frequent task or socio-emotional interaction with the leader (Atonakis & Atwater, 2002) compared to tasks which are more clear, or for which the member is better skilled.

Based on the results of this research, the title should be adjusted slightly: When distance separates the bodies, it takes consideration and dedication not to let it separate the minds.

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# Appendices

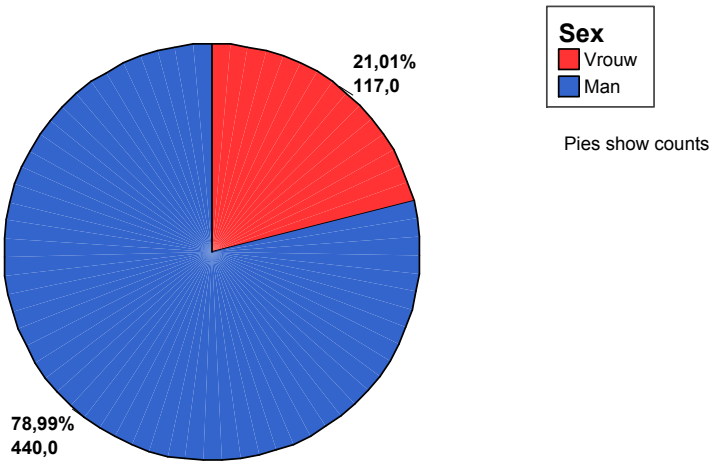
## *Appendix 1: Demographics respondents*

Table 11:

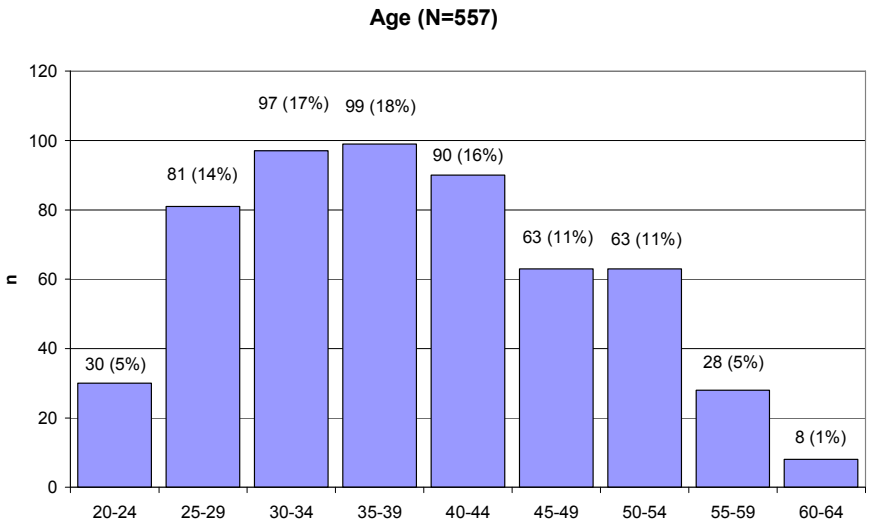
*Demographics 557 respondents Dutch Bank/Insurance company*

| | Category | Percentage | |
|---|---|---|---|
| **Sex** | Man | 440 | 79% |
| | Woman | 117 | 21% |
| **Age** | 20-24 | 30 | 5% |
| | 25-29 | 81 | 14% |
| | 30-34 | 97 | 17% |
| | 35-39 | 99 | 18% |
| | 40-44 | 90 | 16% |
| | 45-49 | 63 | 11% |
| | 50-54 | 63 | 11% |
| | 55-59 | 28 | 5% |
| | 60-65 | 8 | 1% |
| **Level of education** | Alleen voortgezet onderwijs | 32 | 6% |
| | MBO | 105 | 19% |
| | HBO | 319 | 57% |
| | WO | 82 | 15% |
| | WO+ | 19 | 3% |
| **Function group** | Call centre employee | 14 | 3% |
| | Production employee | 84 | 15% |
| | Project/knowledge worker | 281 | 50% |
| | Staffing/policy employee | 41 | 7% |
| | Manager/leader | 109 | 20% |
| | Mobile (ambulant) employee | 1 | |
| | Secretary/supporting employee | 18 | 3% |
| | Facility/executive employee | 9 | 2% |

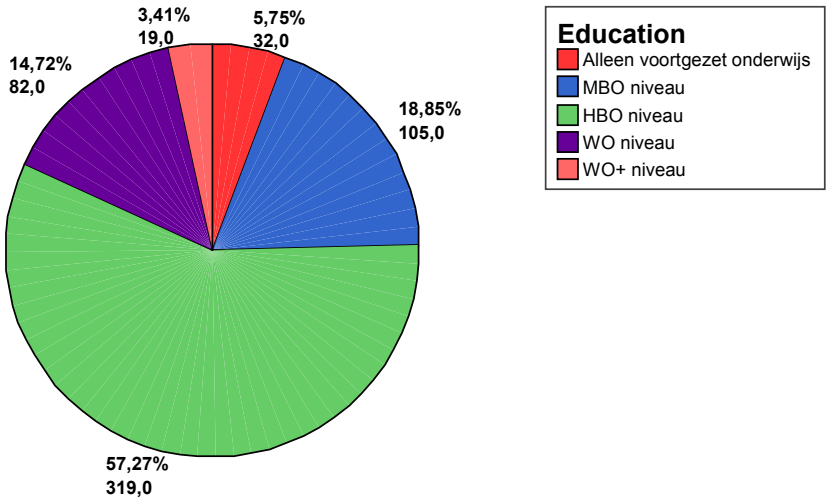
Sex



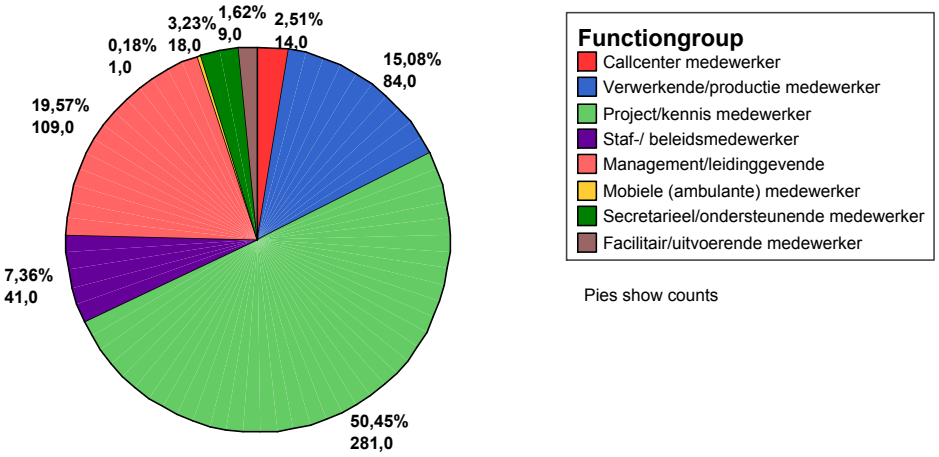

Age




Level of education



Function group



## *Appendix 2: Questionnaire*

| Variable | Question | Values |
|---|---|---|
| | *We beginnen met een aantal vragen over u en uw werk.* | |
| Sex | Bent u een man of een vrouw? | 1, Man<br>2, Vrouw |
| Age | Wat is uw leeftijd? | ... jaar |
| Education | Wat is uw opleidingsniveau? | |
| Function group | Hieronder staan een aantal functiegroepen. In welke functiegroep passen de werkzaamheden waarmee u het grootste deel van uw tijd vult? | 1: Callcenter medewerker:<br>*Medewerker die met name telefonische verwerkende werkzaamheden uitvoert en direct klantcontact heeft*<br>2: Verwerkende/productie medewerker:<br>*Medewerker die met name digitale en/of analoge informatie verwerkende werkzaamheden uitvoert en eventueel indirect klantcontact heeft*<br>3: Project/kennis medewerker:<br>*Medewerker die individueel en in wisselende samenwerkingsverbanden projectmatig nieuwe dienstverlening, producten en kennis ontwikkelt.*<br>4: Staf-/ Beleidsmedewerker:<br>*Medewerker die staf en beleidsondersteunende werkzaamheden verricht, bijvoorbeeld juridisch, HRM, communicatie, financieel, etc.*<br>5: Management/ Leidinggevende:<br>*Directie, management, teamleiding}*<br>6: Mobiele (ambulante) medewerker:<br>*Medewerker die de werkzaamheden met name buiten SNS REAAL hoofdlocaties verricht, bijvoorbeeld accountmanagers}*<br>7:Secretarieel/ondersteunende medewerker:<br>*Medewerker die secretarieel ondersteunende werkzaamheden verricht voor met name management en leidinggevenden*<br>8: Facilitair/uitvoerende Medewerker:<br>*Technische dienst, catering, postkamer, beveiliging, receptie, etc.* |
| Tenure | Hoe lang werkt u al voor deze organizatie? Graag afronden op halve jaren, met komma! (Bijv. 2,5) | ... jaar |

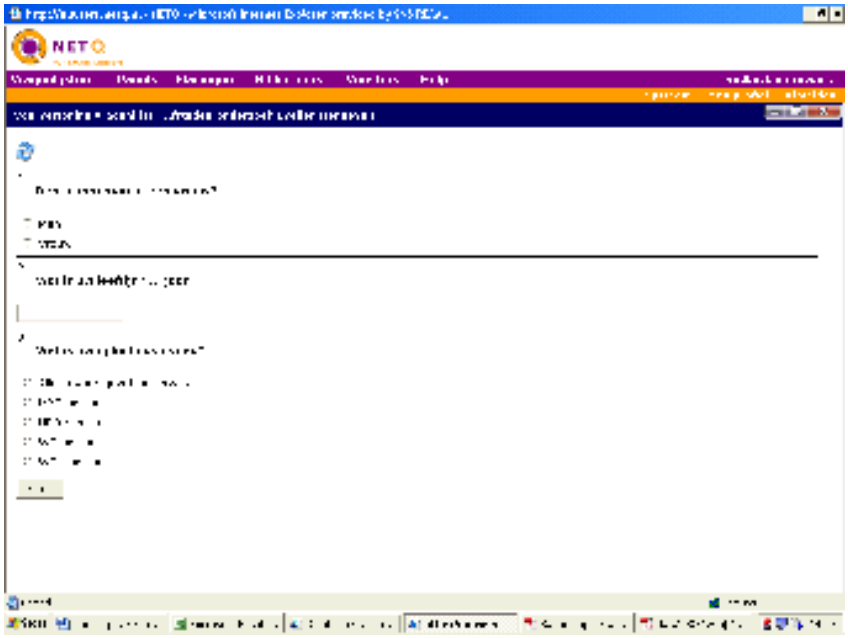
| Variable | Question | Values | Recoded |
|---|---|---|---|
| | *Nu volgen een aantal vragen over hoe vaak uw direct leidinggevende bij u in de buurt is, hoe vaak u hem of haar **ziet**. Klik op het vakje dat op u van toepassing is.* | | |
| | Hoe vaak ziet u uw direct leidinggevende… | | |
| DistanceA | … bij een werk gerelateerd overleg waar ook anderen bij zijn? | 1: Minder dan één keer per maand<br>2: Een enkele keer per maand<br>3: Eens per week<br>4: Enkele keren per week<br>5: Bijna elke dag wel eens<br>6: Enkele keren per dag<br>7: De hele dag door | **X** |
| DistanceB | … bij een werk gerelateerd overleg waar geen anderen bij zijn? (1-op-1) | | **X** |
| DistanceC | … op een informele manier? | | **X** |
| DistanceD | … zonder dat u contact heeft? | | **X** |
| Relation | Hoe lang is uw leidinggevende al uw leidinggevende? Graag afronden op halve jaren, met komma (bijv. 2 of 2,5) | … jaar | |
| | *Nu volgen een aantal uitspraken over het werken bij deze organizatie. Met 'deze organizatie' wordt het onderdeel van SNS REAAL bedoeld waarvoor u werkzaam bent.* | | |
| | In hoeverre zijn de volgende stellingen op u van toepassing? | | |
| CommitmentAffectiveA | Ik vind het leuk om buiten mijn werk over deze organizatie te praten | 1: Niet van toepassing<br>2<br>3<br>4<br>5: Geheel van toepassing | |
| CommitmentAffectiveB | Ik heb het idee dat de problemen van de organizatie ook mijn problemen zijn | | |
| CommitmentAffectiveC | Ik denk dat ik mij even gemakkelijk bij een andere organizatie thuis kan voelen als bij deze organizatie | | **X** |
| CommitmentAffectiveD | Ik voel me emotioneel verbonden met deze organizatie | | |
| CommitmentAffectiveE | Ik ben trots dat ik deel uitmaak van deze organizatie | | |
| CommitmentAffectiveF | Ik heb niet het gevoel dat ik bij deze organizatie hoor | | **X** |

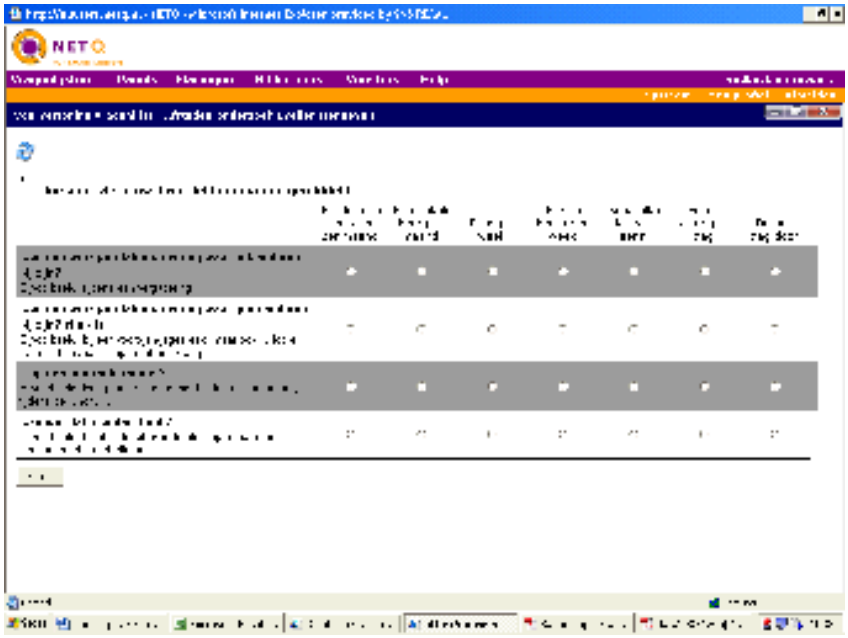
| Variable | Question | Values | Recoded |
|---|---|---|---|
| | In hoeverre zijn de volgende stellingen op u van toepassing? | | |
| CommtContinuousA | Zelf als ik er zelf voor zou kiezen de organizatie te verlaten, zou dat erg moeilijk voor mij zijn | 1: Niet van toepassing<br>2<br>3<br>4<br>5: Geheel van toepassing | |
| CommtContinuousB | Wanneer ik deze organizatie nu zou verlaten, zou ik een te groot deel van mijn leven overhoop halen | | |
| CommtContinuousC | Het zou me niet teveel pijn doen wanneer ik deze organizatie nu zou verlaten | | **X** |
| CommtContinuousD | Als ik niet al zoveel in deze organizatie had geïnvesteerd, zou ik erover gaan denken ergens anders te gaan werken | | **X** |
| | In hoeverre zijn de volgende stellingen op u van toepassing? | | |
| CommitmentNormativeA | Ik voel geen enkele verplichting bij mijn huidige werkgever te blijven werken | 1: Niet van toepassing<br>2<br>3<br>4<br>5: Geheel van toepassing | **X** |
| CommitmentNormativeB | Zelfs als het in mijn voordeel zou werken, heb ik niet het gevoel dat het juist zou zijn om deze organizatie nu te verlaten | | |
| CommitmentNormativeC | Ik zou me schuldig voelen als ik deze organizatie nu zou verlaten | | |
| CommitmentNormativeD | Deze organizatie verdient mijn loyaliteit | | |
| CommitmentNormativeE | Ik zou deze organizatie niet gauw verlaten omdat ik een verplichting voel naar de mensen hier | | |

| Variable | Question | Values | Recoded |
|---|---|---|---|
| | *Nu volgen enkele vragen over de relatie tussen u en uw leidinggevende* | | |
| LMX1 | Weet u doorgaans hoe tevreden uw direct leidinggeven de is met wat u doet? | | |
| LMX2 | Als u problemen tegenkomt in uw werk, begrijpt uw direct leidinggevende dan wat u nodig heeft om uw werk goed te kunnen doen? | 1: Niet<br>2: Een beetje<br>3: Soms wel, soms niet<br>4: Redelijk vaak<br>5: Zeer vaak | |
| LMX3 | Hoe goed herkent uw leidinggevende uw potentieel? | | |
| LMX4 | Als u een probleem heeft, hoe groot is dan de kans dat uw direct leidinggevende zijn of haar invloed zal gebruiken om u te helpen? | 1: Niet<br>2: Klein<br>3: Gemiddeld<br>4: Redelijk<br>5: Volledig | |
| LMX5 | Hoe groot is de kans dat uw direct leidinggevende voor u in de bres zal springen in een moeilijke situatie? | 1: Niet aanwezig<br>2: Klein<br>3: Gemiddeld<br>4: Hoog<br>5: Zeer hoog | |
| LMX6 | Ik heb voldoende vertrouwen in mijn leidinggevende om zijn of haar beslissingen te verdedigen op het moment dat hij of zij niet aanwezig is om dat zelf te doen. | 1: Niet<br>2: Een beetje<br>3: Soms wel, soms niet<br>4: Redelijk vaak<br>5: Zeer vaak | |
| LMX7 | Hoe zou u de werkrelatie met uw direct leidinggevende karakteriseren? | 1: Zeer ineffectief<br>2: Slechter dan gemiddeld<br>3: Gemiddeld<br>4: Beter dan gemiddeld<br>5: Zeer effectief | |

| Variable | Question | Values | Recoded |
|---|---|---|---|
| | *Tot slot volgen hier nog 12 vragen over uw werk.* | | |
| | In hoeverre zijn de volgende stellingen op u van toepassing? | | |
| JSColleaguesA | Ik ben tevreden over de samenwerking met collega's uit mijn team | | |
| JSColleaguesB | Ik voel me veilig om problemen met collega's te bespreken | 1: Niet van toepassing<br>2<br>3<br>4<br>5: Geheel van toepassing | |
| JSColleaguesC | De onderlinge sfeer met collega's is goed | | |
| JSInfCommA | De communicatie in deze organizatie verloopt goed | | |
| JS InfCommB | Ik krijg voldoende informatie over de resultaten van mijn werk | | |
| JSWorkA | Mijn werk is zinvol | | |
| JSWorkB | Ik ben tevreden met mijn werk | | |
| JSWorkC | Ik ben een te groot deel van mijn tijd kwijt aan werkzaamheden die ik vervelend vind | | **X** |
| JSWorkD | Alles overwegend heb ik het prima naar mijn zin bij deze organizatie | | |
| JSWorkE | Ik vind dat ik voor het werk dat ik doe eigenlijk niet voldoende wordt betaald | | **X** |

Print-screens questionnaire:





E-mail with invitation to participate:

Beste collega,

Sinds begin juli loop ik stage bij SNS REAAL, bij het programma Het Nieuwe Werken. Ik studeer Organizatiepsychologie aan de Universiteit van Utrecht. Naast mijn stagewerkzaamheden voer ik ook een onderzoek uit.

**Zou je misschien willen meewerken aan mijn afstudeeronderzoek?**

In de vragenlijst komen vragen aan de orde over jou en je werk, en jouw relatie met je leidinggevende.
Het is belangrijk om hierbij te vertellen dat je antwoorden volledig vertrouwelijk zullen worden behandeld. Je persoonlijke gegevens (zoals je naam) worden niet geregistreerd, en er wordt ook niet gevraagd voor welke afdeling je werkt.

Het invullen van de lijst duurt ongeveer **10 minuutjes**.
https://uurespondents.netq.nl/nq. cfm?r=6298F4A5-219B-FB46-81F6-FD1CC8F6E418&s=u

Mocht je geïnteresseerd zijn in de resultaten van het onderzoek, stuur dan even een mailtje. Dan zorg ik dat je een kopie krijgt van het onderzoeksverslag!

Alvast bedankt!

Vriendelijke groet,

Evelien Hennevelt

*SNS REAAL afd. Het Nieuwe Werken*
*Croeselaan 1, 3521 BJ Utrecht, kamer A15.10*
*Telefoon: 06 24709623 / 030 2915135*

## *Appendix 3: Factor analysis*

**Rotated Factor Matrix(a)**

| | Factor | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| LMX5 - Hoe groot is de kans dat uw direct leidinggevende voor u in de bres zal springen in een moeilijke situatie? | ,752 | | ,114 | | | | | | -,102 |
| LMX7 - Hoe zou u de werkrelatie met uw direct leidinggevende karakteriseren? | ,735 | | ,110 | | | | -,153 | | |
| LMX4 - Als u een probleem heeft, hoe groot is dan de kans dat uw direct leidinggevende zijn of haar invloed zal gebruiken om u te helpen? | ,701 | | ,113 | | ,139 | | | | |
| LMX6 - Ik heb voldoende vertrouwen in mijn direct leidinggevende om zijn of haar beslissingen te verdedigen op het moment dat hij of zij niet aanwezig is om dat zelf te doen. | ,684 | | ,213 | | | | | | |
| LMX2 - Als u problemen tegenkomt in uw werk, begrijpt uw direct leidinggevende dan wat u nodig heeft om uw werk goed te kunnen doen? | ,679 | ,108 | | | | ,132 | -,106 | ,148 | |
| LMX3 - Hoe goed herkent uw direct leidinggevende uw potentieel? | ,677 | ,174 | | | | | | ,108 | ,170 |
| LMX1 - Weet u doorgaans hoe tevreden uw direct leidinggevende is met wat u doet? | ,606 | ,162 | | ,100 | | | -,138 | ,129 | |
| JWB - Ik ben tevreden met mijn werk | ,146 | ,839 | ,203 | ,165 | ,165 | | | | |
| JOA - Alles overwegend heb ik het prima naar mijn zin bij deze organizatie | ,221 | ,630 | ,337 | ,106 | ,199 | ,182 | | ,173 | |
| JWA - Mijn werk is zinvol | ,130 | ,559 | ,266 | | ,209 | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| JWC - Ik ben een te groot deel van mijn tijd kwijt aan werkzaamheden die ik vervelend vind | | ,464 | | | | ,136 | -,138 | | |
| CAF - Ik heb niet het gevoel dat ik bij deze organizatie hoor | ,104 | ,392 | ,327 | | | ,228 | | | |
| CCD - Als ik niet al zoveel in deze organizatie had geïnvesteerd, zou ik erover gaan denken ergens anders te gaan werken | | ,334 | | -,115 | | | | ,170 | |
| CAE - Ik ben trots dat ik deel uitmaak van deze organizatie | ,105 | ,266 | ,679 | ,196 | | ,282 | | ,232 | -,132 |
| CAD - Ik voel me emotioneel verbonden met deze organizatie | ,140 | | ,621 | ,198 | | ,331 | | | ,147 |
| CAA - Ik vind het leuk om buiten mijn werk over deze organizatie te praten | ,122 | ,180 | ,557 | ,113 | | | | | |
| CAB - Ik heb het idee dat de problemen van de organizatie ook mijn problemen zijn | | | ,514 | ,218 | | ,117 | | -,148 | ,256 |
| CNC - Ik zou me schuldig voelen als ik deze organizatie nu zou verlaten | | | ,102 | ,731 | | ,187 | | | |
| CNE - Ik zou mijn organizatie niet gauw verlaten omdat ik een verplichting voel naar de mensen hier | | -,106 | ,157 | ,713 | | ,151 | | | |
| CNB - Zelfs als het in mijn voordeel zou zijn, heb ik niet het gevoel dat het juist zou zijn om deze organizatie nu te verlaten | | ,113 | | ,607 | -,111 | ,183 | | | |
| CND - Deze organizatie verdient mijn loyaliteit | ,175 | ,118 | ,331 | ,428 | | ,104 | | ,253 | |
| CNA - Ik voel geen enkele verplichting om bij mijn huidige werkgever te blijven werken | | | | ,316 | | ,284 | | ,145 | |
| JCA - Ik ben tevreden over de samenwerking met collega's uit mijn team | | ,191 | | | ,800 | | | | |
| JCC - De onderlinge sfeer met collega's is goed | ,159 | ,172 | | | ,796 | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| JCB - Ik voel me veilig om problemen met collega's te bespreken | ,149 | | | | ,687 | | | | |
| CCA - Zelfs als ik er zelf voor zou kiezen deze organizatie te verlaten, zou dat erg moeilijk voor mij zijn | | | ,204 | ,234 | | ,750 | | | |
| CAC - Ik denk dat ik mij even gemakkelijk bij een andere organizatie thuis kan voelen als bij deze organizatie | | ,121 | | ,158 | | ,522 | | ,108 | |
| CCB - Wanneer ik deze organizatie nu zou verlaten, zou ik een te groot deel van mijn leven overhoop halen | | | | ,201 | | ,519 | ,101 | | |
| CCC - Het zou me niet teveel pijn doen wanneer ik deze organizatie binnenkort zou moeten verlaten | | ,200 | ,184 | | | ,504 | | | |
| DB - bij een werk gerelateerd overleg waar geen anderen bij zijn? (1-op-1) | -,242 | -,100 | | | | | ,619 | | |
| DA - bij een werk gerelateerd overleg waar ook anderen bij zijn? | | | | | | | ,611 | | |
| DC - op een informele manier? | -,246 | | | | | | ,524 | | ,423 |
| JIA - De communicatie in deze organizatie verloopt goed | ,152 | ,217 | | ,102 | | ,141 | | ,563 | |
| JIB - Ik krijg voldoende informatie over de resultaten van mijn werk | ,402 | ,183 | | | | | | ,447 | ,105 |
| DD - zonder dat u contact heeft? | | | | | | | ,276 | | ,426 |
| JOB - Ik vind dat ik voor het werk dat ik doe eigenlijk niet voldoende wordt betaald | ,112 | | | | | | | ,126 | ,333 |

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 7 iterations.

*Appendix 4: Reliability analysis*

## DISTANCE

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,619 | ,641 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| DA - bij een werk gerelateerd overleg waar ook anderen bij zijn? | 13,68 | 13,885 | ,366 | ,210 | ,574 |
| DB - bij een werk gerelateerd overleg waar geen anderen bij zijn? (1-op-1) | 13,49 | 13,261 | ,428 | ,254 | ,536 |
| DC - op een informele manier? | 14,64 | 11,084 | ,534 | ,287 | ,444 |
| DD - zonder dat u contact heeft? | 14,62 | 10,815 | ,325 | ,164 | ,639 |

*When deleting item DD:*

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,639 | ,645 | 3 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| DA - bij een werk gerelateerd overleg waar ook anderen bij zijn? | 9,49 | 6,096 | ,441 | ,210 | ,553 |
| DB - bij een werk gerelateerd overleg waar geen anderen bij zijn? (1-op-1) | 9,30 | 5,729 | ,499 | ,253 | ,477 |
| DC - op een informele manier? | 10,45 | 5,198 | ,418 | ,179 | ,598 |

## ORGANIZATIONAL COMMITMENT

AFFECTIVE COMMITMENT

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,724 | ,729 | 6 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| CAA - Ik vind het leuk om buiten mijn werk over deze organizatie te praten | 16,36 | 11,989 | ,448 | ,278 | ,689 |
| CAB - Ik heb het idee dat de problemen van de organizatie ook mijn problemen zijn | 16,57 | 12,393 | ,409 | ,243 | ,700 |
| CAC - Ik denk dat ik mij even gemakkelijk bij een andere organizatie thuis kan voelen als bij deze organizatie | 17,05 | 13,512 | ,240 | ,106 | ,748 |
| CAD - Ik voel me emotioneel verbonden met deze organizatie | 16,52 | 11,160 | ,612 | ,438 | ,638 |
| CAE - Ik ben trots dat ik deel uitmaak van deze organizatie | 16,07 | 11,307 | ,674 | ,488 | ,626 |
| CAF - Ik heb niet het gevoel dat ik bij deze organizatie hoor | 15,54 | 12,134 | ,410 | ,199 | ,701 |

*When deleting CAC:*

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,748 | ,753 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| CAA - Ik vind het leuk om buiten mijn werk over deze organizatie te praten | 13,79 | 9,153 | ,492 | ,270 | ,711 |
| CAB - Ik heb het idee dat de problemen van de organizatie ook mijn problemen zijn | 14,00 | 9,592 | ,438 | ,241 | ,730 |
| CAD - Ik voel me emotioneel verbonden met deze organizatie | 13,95 | 8,717 | ,606 | ,429 | ,668 |
| CAE - Ik ben trots dat ik deel uitmaak van deze organizatie | 13,50 | 8,880 | ,663 | ,474 | ,652 |
| CAF - Ik heb niet het gevoel dat ik bij deze organizatie hoor | 12,97 | 9,625 | ,392 | ,191 | ,749 |

*When deleting CAF:*

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,749 | ,752 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| CAA - Ik vind het leuk om buiten mijn werk over deze organizatie te praten | 9,71 | 5,933 | ,483 | ,265 | ,726 |
| CAB - Ik heb het idee dat de problemen van de organizatie ook mijn problemen zijn | 9,92 | 6,132 | ,465 | ,241 | ,734 |
| CAD - Ik voel me emotioneel verbonden met deze organizatie | 9,87 | 5,529 | ,618 | ,427 | ,648 |
| CAE - Ik ben trots dat ik deel uitmaak van deze organizatie | 9,42 | 5,877 | ,622 | ,432 | ,651 |

CONTINUOUS COMMITMENT

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| ,495 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| CCA - Zelfs als ik er zelf voor zou kiezen deze organizatie te verlaten, zou dat erg moeilijk voor mij zijn | 9,90 | 4,333 | ,478 | ,225 |
| CCB - Wanneer ik deze organizatie nu zou verlaten, zou ik een te groot deel van mijn leven overhoop halen | 10,24 | 4,819 | ,358 | ,355 |
| CCC - Het zou me niet teveel pijn doen wanneer ik deze organizatie binnenkort zou moeten verlaten | 9,41 | 4,796 | ,439 | ,283 |
| CCD - Als ik niet al zoveel in deze organizatie had geïnvesteerd, zou ik erover gaan denken ergens anders te gaan werken | 8,79 | 7,365 | -,057 | ,678 |

*When deleting item CCD:*

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,678 | ,677 | 3 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| CCA - Zelfs als ik er zelf voor zou kiezen deze organizatie te verlaten, zou dat erg moeilijk voor mij zijn | 5,91 | 3,439 | ,570 | ,327 | ,475 |
| CCB - Wanneer ik deze organizatie nu zou verlaten, zou ik een te groot deel van mijn leven overhoop halen | 6,25 | 3,724 | ,484 | ,260 | ,595 |
| CCC - Het zou me niet teveel pijn doen wanneer ik deze organizatie binnenkort zou moeten verlaten | 5,42 | 4,237 | ,426 | ,194 | ,664 |

NORMATIVE COMMITMENT

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,743 | ,747 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| CNA - Ik voel geen enkele verplichting om bij mijn huidige werkgever te blijven werken | 10,52 | 10,822 | ,363 | ,142 | ,755 |
| CNB - Zelfs als het in mijn voordeel zou zijn, heb ik niet het gevoel dat het juist zou zijn om deze organizatie nu te verlaten | 11,11 | 10,123 | ,523 | ,321 | ,692 |
| CNC - Ik zou me schuldig voelen als ik deze organizatie nu zou verlaten | 11,44 | 9,671 | ,637 | ,441 | ,649 |
| CND - Deze organizatie verdient mijn loyaliteit | 10,31 | 10,996 | ,443 | ,201 | ,721 |
| CNE - Ik zou mijn organizatie niet gauw verlaten omdat ik een verplichting voel naar de mensen hier | 10,96 | 9,939 | ,593 | ,377 | ,667 |

*When deleting item CNA:*

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,755 | ,754 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| CNB - Zelfs als het in mijn voordeel zou zijn, heb ik niet het gevoel dat het juist zou zijn om deze organizatie nu te verlaten | 8,05 | 6,413 | ,551 | ,321 | ,699 |
| CNC - Ik zou me schuldig voelen als ik deze organizatie nu zou verlaten | 8,38 | 6,184 | ,642 | ,432 | ,647 |
| CND - Deze organizatie verdient mijn loyaliteit | 7,25 | 7,265 | ,440 | ,194 | ,755 |
| CNE - Ik zou mijn organizatie niet gauw verlaten omdat ik een verplichting voel naar de mensen hier | 7,89 | 6,474 | ,579 | ,360 | ,683 |

*ORGANIZATIONAL COMMITMENT: TOTAL SCALE*

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,819 | ,821 | 11 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| CNB - Zelfs als het in mijn voordeel zou zijn, heb ik niet het gevoel dat het juist zou zijn om deze organizatie nu te verlaten | 29,81 | 42,332 | ,479 | ,354 | ,805 |
| CNC - Ik zou me schuldig voelen als ik deze organizatie nu zou verlaten | 30,13 | 42,199 | ,514 | ,441 | ,801 |
| CND - Deze organizatie verdient mijn loyaliteit | 29,01 | 42,732 | ,499 | ,328 | ,803 |
| CAA - Ik vind het leuk om buiten mijn werk over deze organizatie te praten | 29,02 | 43,946 | ,386 | ,274 | ,813 |
| CAB - Ik heb het idee dat de problemen van de organizatie ook mijn problemen zijn | 29,23 | 43,547 | ,434 | ,263 | ,809 |
| CAD - Ik voel me emotioneel verbonden met deze organizatie | 29,18 | 41,577 | ,594 | ,476 | ,794 |
| CAE - Ik ben trots dat ik deel uitmaak van deze organizatie | 28,73 | 42,166 | ,615 | ,522 | ,794 |
| CCA - Zelfs als ik er zelf voor zou kiezen deze organizatie te verlaten, zou dat erg moeilijk voor mij zijn | 29,40 | 40,474 | ,577 | ,444 | ,794 |
| CCB - Wanneer ik deze organizatie nu zou verlaten, zou ik een te groot deel van mijn leven overhoop halen | 29,74 | 42,980 | ,398 | ,275 | ,813 |
| CCC - Het zou me niet teveel pijn doen wanneer ik deze organizatie binnenkort zou moeten verlaten | 28,91 | 43,913 | ,378 | ,231 | ,814 |

| | | | | | |
|---|---|---|---|---|---|
| CNE - Ik zou mijn organizatie niet gauw verlaten omdat ik een verplichting voel naar de mensen hier | 29,65 | 42,591 | ,487 | ,386 | ,804 |

## JOB SATISFACTION

COLLEAGUES

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| ,824 | 3 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| JCA - Ik ben tevreden over de samenwerking met collega's uit mijn team | 8,29 | 1,819 | ,708 | ,728 |
| JCB - Ik voel me veilig om problemen met collega's te bespreken | 8,38 | 1,934 | ,624 | ,816 |
| JCC - De onderlinge sfeer met collega's is goed | 8,12 | 2,068 | ,718 | ,728 |

JOB

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| ,747 | 6 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| JWA - Mijn werk is zinvol | 19,69 | 10,499 | ,523 | ,705 |
| JWB - Ik ben tevreden met mijn werk | 19,88 | 9,395 | ,699 | ,656 |
| JOA - Alles overwegend heb ik het prima naar mijn zin bij deze organizatie | 19,73 | 9,468 | ,675 | ,662 |
| JWC - Ik ben een te groot deel van mijn tijd kwijt aan werkzaamheden die ik vervelend vind | 20,06 | 10,293 | ,400 | ,735 |
| CAF - Ik heb niet het gevoel dat ik bij deze organizatie hoor | 19,68 | 9,422 | ,447 | ,727 |
| CCD - Als ik niet al zoveel in deze organizatie had geïnvesteerd, zou ik erover gaan denken ergens anders te gaan werken | 19,77 | 10,686 | ,283 | ,771 |

*When deleting CCD:*

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| ,771 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| JWA - Mijn werk is zinvol | 15,70 | 7,725 | ,564 | ,727 |
| JWB - Ik ben tevreden met mijn werk | 15,89 | 6,854 | ,721 | ,672 |
| JOA - Alles overwegend heb ik het prima naar mijn zin bij deze organizatie | 15,74 | 6,970 | ,681 | ,685 |
| JWC - Ik ben een te groot deel van mijn tijd kwijt aan werkzaamheden die ik vervelend vind | 16,07 | 7,676 | ,397 | ,781 |
| CAF - Ik heb niet het gevoel dat ik bij deze organizatie hoor | 15,69 | 6,925 | ,441 | ,778 |

*When deleting JWC:*

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| ,781 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| JWA - Mijn werk is zinvol | 12,00 | 5,085 | ,588 | ,732 |
| JWB - Ik ben tevreden met mijn werk | 12,19 | 4,524 | ,695 | ,675 |
| JOA - Alles overwegend heb ik het prima naar mijn zin bij deze organizatie | 12,04 | 4,495 | ,698 | ,673 |
| CAF - Ik heb niet het gevoel dat ik bij deze organizatie hoor | 11,99 | 4,430 | ,440 | ,833 |

*When deleting CAF:*

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| ,833 | 3 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| JWA - Mijn werk is zinvol | 7,92 | 2,341 | ,651 | ,809 |
| JWB - Ik ben tevreden met mijn werk | 8,11 | 1,954 | ,767 | ,691 |
| JOA - Alles overwegend heb ik het prima naar mijn zin bij deze organizatie | 7,96 | 2,106 | ,667 | ,795 |

INFORMATION AND COMMUNICATION

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| ,603 | 2 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| JIA - De communicatie in deze organizatie verloopt goed | 3,32 | ,775 | ,432 | .(a) |
| JIB - Ik krijg voldoende informatie over de resultaten van mijn werk | 2,77 | ,743 | ,432 | .(a) |

a The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

JOB SATISFACTION: TOTAL SCALE

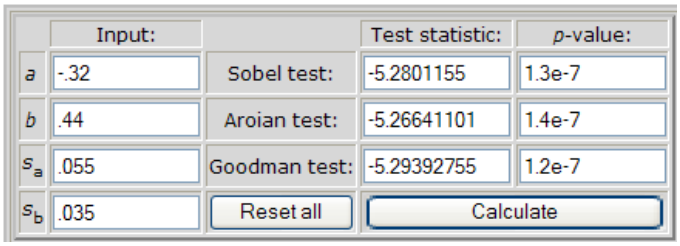
**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| ,788 | 8 |

**Item-Total Statistics**

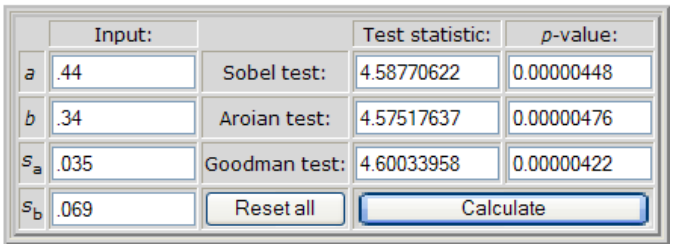
| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| JIA - De communicatie in deze organizatie verloopt goed | 27,71 | 14,088 | ,348 | ,789 |
| JIB - Ik krijg voldoende informatie over de resultaten van mijn werk | 27,16 | 13,896 | ,367 | ,787 |
| JCA - Ik ben tevreden over de samenwerking met collega's uit mijn team | 26,37 | 13,323 | ,527 | ,760 |
| JCB - Ik voel me veilig om problemen met collega's te bespreken | 26,46 | 13,666 | ,457 | ,771 |
| JCC - De onderlinge sfeer met collega's is goed | 26,20 | 13,904 | ,512 | ,764 |
| JWA - Mijn werk is zinvol | 26,40 | 13,439 | ,550 | ,757 |
| JWB - Ik ben tevreden met mijn werk | 26,59 | 12,774 | ,608 | ,746 |
| JOA - Alles overwegend heb ik het prima naar mijn zin bij deze organizatie | 26,44 | 12,693 | ,617 | ,744 |

*Appendix 5: Print-screen of the Preacher & Leonardelli 'interactive calculation tool for mediation tests'*



| | Input: | | Test statistic: | *p*-value: |
|---|---|---|---|---|
| *a* | -.32 | Sobel test: | -5.2801155 | 1.3e-7 |
| *b* | .44 | Aroian test: | -5.26641101 | 1.4e-7 |
| $s_a$ | .055 | Goodman test: | -5.29392755 | 1.2e-7 |
| $s_b$ | .035 | Reset all | Calculate | |

Figure 8: Testing model Physical distance (independent variable), LMX (mediator), Job satisfaction (dependent variable)



| | Input: | | Test statistic: | *p*-value: |
|---|---|---|---|---|
| *a* | .44 | Sobel test: | 4.58770622 | 0.00000448 |
| *b* | .34 | Aroian test: | 4.57517637 | 0.00000476 |
| $s_a$ | .035 | Goodman test: | 4.60033958 | 0.00000422 |
| $s_b$ | .069 | Reset all | Calculate | |

Figure 9: Testing model LMX (independent variable), job satisfaction (mediator), organizational commitment (dependent variable)