



**UNIVERSITY OF TWENTE.**

**Faculty of Behavioral Management and  
Social Sciences**

**Investigating goals to change  
communication styles: an  
empirical study**

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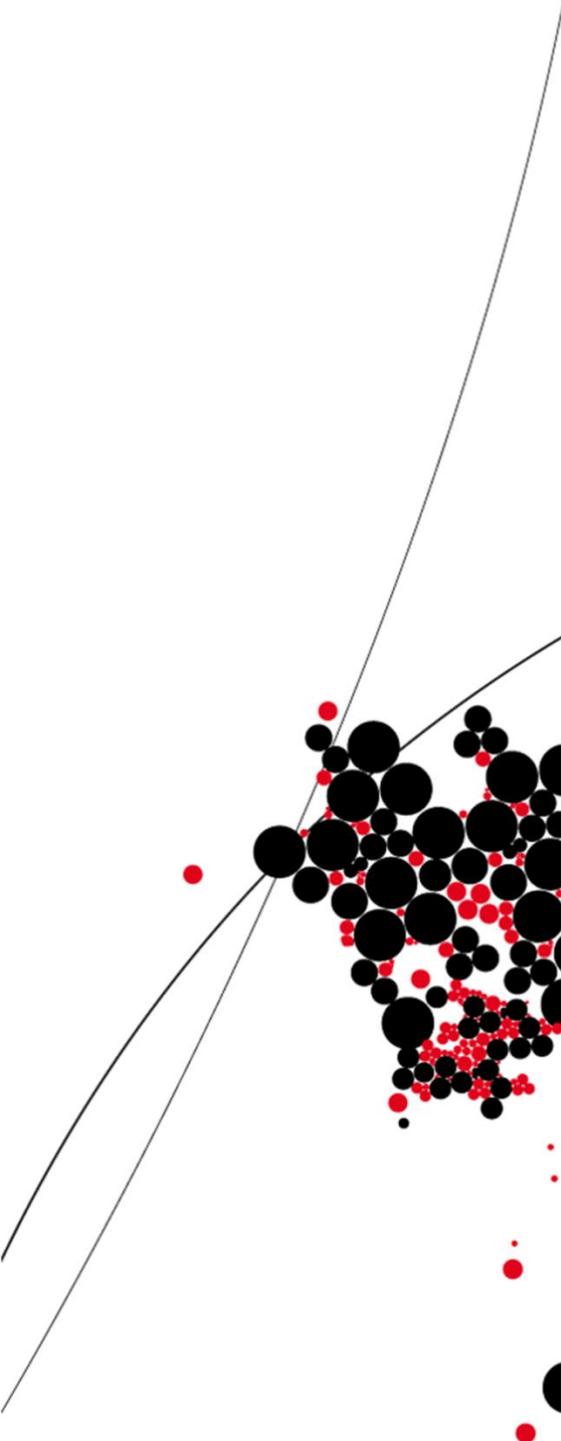
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Moyo

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**Title:** Investigating Goals to Change Communication Styles: An Empirical Study

### **Summary**

*Purpose* – The goal of the present study was to investigate the relations between people's communication styles, communication satisfaction, communication effectiveness, functional maturity and their change goals.

*Methodology* – A pilot study with 11 participants was used to explore the level of social desirability of the six communication style domains namely Expressiveness, Preciseness, Verbal Aggressiveness, Questioningness, Emotionality and Impression Manipulativeness. In the main study, the communication styles and change goals of 132 participants were measured using two questionnaires – the Communication Styles Inventory (CSI) and the Change Goals CSI (C-CSI). Furthermore, participants' level of communication satisfaction, communication effectiveness and functional maturity were measured using questionnaires adapted from previous studies. Regression analysis were performed to test three main hypothesis proposed in the study.

*Findings* – From the pilot study, Preciseness, Questioningness, Expressiveness and Impression Manipulativeness were identified as a socially desirable (positive) communication style while Verbal Aggressiveness and Emotionality were negative relative to the theoretical scale mean. The results showed that most people wanted to increase with respect to Preciseness and wanted to decrease with respect to Verbal Aggressiveness. CSI-X, CSI-P and CSI-Q showed positive correlations with communication satisfaction, communication effectiveness and functional maturity (except the correlation between CSI-X and communication satisfaction). The other CSI domain scales, namely CSI-VA, CSI-E and CSI-IM had negative correlations with communication satisfaction, communication effectiveness and functional maturity. Multiple regression analysis showed that communication satisfaction mediated the relations between Verbal Aggressiveness

and change goals. Contrary to our expectation however, communication effectiveness and functional maturity did not fully mediate the relation between the other communication styles and the change goals. The findings in this research offer a new glimpse into the relation between people's communication styles and their change goals and can have implications in personal and leadership training and future communication research.

**Keywords:** communication styles, change goals, Communication Style Inventory, functional maturity, communication satisfaction, communication effectiveness

## 1.0 Introduction

Communication – the art of exchanging information, ideas or thoughts – as a generic skill is important in the functioning of students, workers and leaders within the academic environment and also within organizations. This is because, among others, effective communication has been shown to help improve efficiency, foster a good working relationship, boost morale and ensure that set goals are achieved (Albrecht, Johnson, & Walther, 1993; Chao & Ishii, 2003; Hales, 2000; Maier, Eckert, & Clarkson, 2006). Communication is also an essential part of life, learning and leadership (Awamleh & Gardner, 1999; Towler, 2003; Spangler & House, 1991). From doctor to patient communication (Henbest & Stewart, 1990; Buller & Burgoon, 1996), parent-child communication (Ritchie & Fitzpatrick, 1990) partner communication (Noller & White, 1990), leader communication (Johnson & Belcher, 1998), there is a unanimous agreement in literature as to the importance of effective communication between individuals and groups.

Among students for example, communication takes place in different forms and serves to achieve different objectives. Communication may serve to clarifying statements, deliberate and discuss with peers, develop relationships (McKenna, et al., 2014), elicit viewpoints from other students, offer feedback, mediate conflicts or even to keep a discussion from drifting away. Communication therefore is seen as an important part of being a student, since being a student would entail the sharing or transmission of information, knowledge, opinions and feelings (McKenna, et al., 2014; De Vries, Bakker-Pieper, Konings, & Schouten, 2013). Besides academic achievement, employers are increasingly placing importance on generic skills needed to compete in the global market (Iksan, et al., 2012). Along with personality, communication is a generic skill that prospective employees may need to succeed in job interviews and in their daily life after

graduation. However, communication is a complex process and different individuals have different ways of communicating. (Yilmaz et al, 2011).

Findings from communication between doctors and patients suggest that a supportive (i.e., friendly and caring) communication style is associated with higher satisfaction among patients (Buller & Buller, 1987; Schmid Mast et al, 2007; De Vries et al, 2010), while a dominant style is linked with less satisfaction among patients and less favourable outcomes, such as malpractice claims (Buller & Burgoon, 1996; Burgoon, et al., 1987). Similarly, in the classroom, results suggest that a supportive communication style is linked to greater satisfaction among students (Prisbell, 1994), while a controlling or dominant style is linked to a less intrinsic motivation (Noels, et al, 1999). In contrast, in family settings, children were found to be more attentive and task-oriented when parents used an ambiguous and dominant communication style (De Vries et al, 2010; Bugental et al, 1999; Rasku Puttonen, 1988).

In order to further understand communication among people, recent studies have increasingly focused on the development of a framework to classify or capture individuals' communication style. Along this line, the idea of different communication styles has been developed. The proposition behind this is that anything that can be said on the way a person communicates can be encoded or categorized into specific styles. Furthermore, recent studies have shown relationships between communication style and individual personality traits. It has been argued that the main communication style dimensions are sub-components of the two major personality models – the Big Five model (Goldberg, 1990) and the HEXACO model (Ashton & Lee, 2008). Strong correlations have been found between the scales of the different communication style scales and the personality traits (Leung & Bond, 2001; Weaver, 2005; Eysenck et al, 1985; De Vries et al, 2013).

In human resource development, a strong relation between communication styles, communication effectiveness and measures of leadership behavior in literature (Neufeld et al, 2010; Klaus & Bass, 1982). Effective communication skills enable leaders to create and disseminate a compelling vision for followers (Bennis & Nanus, 1985; Conger & Kanungo, 1987). However, leaders are often confronted with different options and communication techniques that are not directly associated with strategic goals (Mayfield & Mayfield, 2002).

In addition, from personality studies, research has shown that for each personality trait, there is a preferred 'scale position' in the population and that people tend to express desire to change their personality traits (Hudson & Roberts, 2014; Baumeister, 1994; Kiecolt, 1994). The change goal is generally motivated by discontent with aspect of one's lives and the feeling that achieving a different personality trait might placate the discontent (Dunlop, Telford, & Morrison, 2012). Furthermore, research on change goals in personality studies show that people generally desire to increase with respect to each of the Big Five personality traits (Hudson & Roberts, 2014). Emotional stability ranked highest in the desirability order followed by conscientiousness, extraversion, agreeableness and openness. These findings are consistent with other research that show that the Big Five personality dimensions are socially desirable in themselves and can be captured with self-report questionnaires (Dunlop, Telford, & Morrison, 2012).

Even though there is a body of knowledge on the goals to change personality traits, and the links between personality traits and communication style, not much is known about the goals to change communication styles. Furthermore, beside a related study exploring goals to change personality traits (Hudson & Roberts, 2014), to our knowledge no validated method of measuring communication change goals exists. Furthermore, the associated relations between change goals

and communication satisfaction, communication effectiveness and functional maturity is not fully understood.

This research sets out to investigate these open issues. First, using a small-scale pilot study to gain background information, we attempted to understand the social desirability of communication styles within the context of the Communication Styles Inventory (De Vries et al., 2009; De Vries et al., 2013). Building on this, in the main study people's current communication styles were measured and compared with their change goals. Next, the relations between the communication styles and possible mediators namely communication satisfaction, communication effectiveness, and functional maturity level were investigated. Finally, using a mediation regression model, we investigated whether communication satisfaction, communication effectiveness and/or functional maturity mediate the relation between the identified communication styles and change goals. As a note, it has to be pointed out that the general goal of this research was *not* to investigate whether people can *actually* change their communication style but to measure their change goals and the associated relations of change goals to communication satisfaction, communication effectiveness and functional maturity level.

### **1.1 Theoretical Conceptual framework**

In general, *communication* is the process of exchanging information, from one source (the person giving the information to the receiver (the person to whom information is given) (Iksan, et al., 2012). According to Norton, (Norton R. , 1983), *communication style* can be defined as “the way one verbally, nonverbally, and paraverbally interacts to signal how literal meaning should be taken, interpreted, filtered, or understood”. Owing to the fact that this definition does not include the interactional aspect of communicative behavior, De Vries et al. (2009) provided a broader definition of communication style as “the characteristic way a person sends verbal, paraverbal, and

nonverbal signals in social interactions denoting (a) who he or she is or wants to (appear to) be, (b) how he or she tends to relate to people with whom he or she interacts, and (c) in what way his or her messages should usually be interpreted.” (De Vries, Bakker-Pieper, Konings, & Schouten, 2013).

Communication scholars have also considered the measurement of the main communication styles as important due to its relevance in different settings in which the transfer of personal and non-personal information, knowledge, feelings, ideas and opinions are important (De Vries et al, 2013). For this purpose, several communication measurement instruments have been developed. Examples of these instruments include the Relational Communication Style (RCS) (Burgoon & Hale, Validation and measurement of the fundamental themes of relational communication, 1987), Communication Style Scale (CSS) (Gundykunst, et al., 1996), and the Communication Style Measure (CSM) (Norton R. , 1978; Norton R. , 1983). These measurement instruments, especially the more recent Communications Style Scale (CSS) have been criticized for the inclusion of scales that focus on interpersonal cognitions and feelings about communication rather than the way communication signals are sent (De Vries et al., 2013). Another issue is with the older instruments (CSM & RCS) is their lack of conformity to psychometric standards, owing to the low reliabilities of the items on the scale. Furthermore, the lack of integration between the models and the absence of an underlying model to define the number and content of the communication styles has also been an issue. To address these drawbacks, a number of researchers have used a lexical approach, as used in personality studies, to uncover the communication styles (Goldberg, 1990; Burgoon, Johnson, & Koch, 1998; Ashton & Lee , 2001). De Vries et al. (2009) performed an empirical study to identify communication style dimensions from adjectives that can be used to describe how a person communicates.

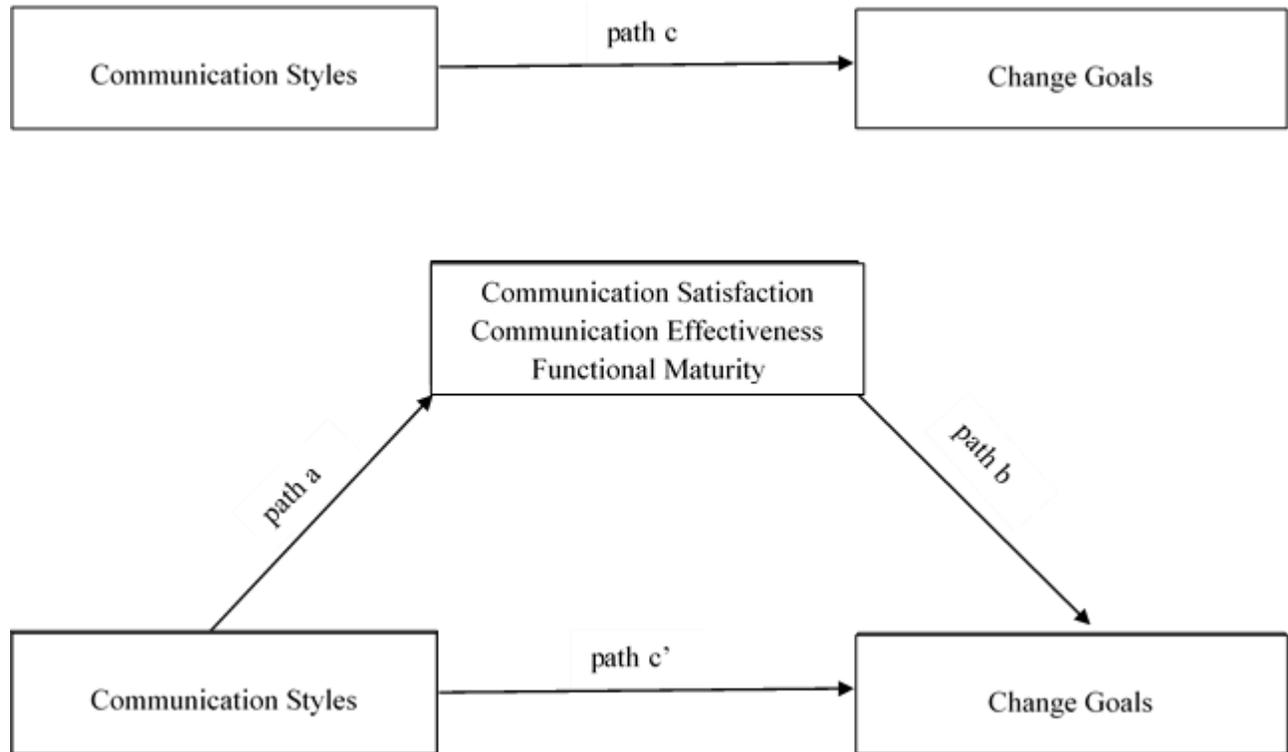
The underlying theory behind the *communication style dimensions* is that all that is said during the course of a discourse can be encoded in a dictionary. Based on this premise, De Vries et al. (2009) identified seven lexical communication style dimensions, namely Expressiveness, Preciseness, Niceness, Supportiveness, Threateningness, Emotionality and Reflectiveness. Building on this lexical study, De Vries et al. (2013) reported a new communication styles questionnaire, called the *Communication Styles Inventory (CSI)*. Even though the CSI is similar to the lexical communication styles dimensions in that it captures all the main dimensions of communication identified in the lexical study, a new factor called Verbal Aggressiveness was introduced to account for the three lexical factors Threatening, Niceness and Supportiveness. It was found that it was impossible to construct independent factors that aligned with these lexical factors. Due to this, the CSI represents six behavioral communication style dimensions namely Expressiveness (extroverted versus withdrawn), Preciseness (expert versus to waffle), Verbal Aggressiveness, Questioningness (named Reflectiveness in the lexical study), Emotionality (stressed, piqued) and Impression Manipulativeness (a measure of deceptive communication style). These six style dimensions form the basis of the present study.

Another factor related to the way people communicate is the *functional maturity* level. Functional maturity “refers to the state of human development wherein a person knows who he/she is, knows what he/she wants, and has the courage to pursue it without forgetting to consider others or the bigger picture” (McCuddy & Reeb-Gruber, 2008). The skills associated with maturity in the intellectual, psychological, interpersonal, emotional and moral domains are captured under functional maturity. Overall, eleven skill sets possessed by functionally mature people are identified (McCuddy, Reeb-Gruber, & Thijssen, 2012), namely that functionally mature people (i) are self-aware; (ii) proactively reflect on situations, attitudes, and behaviors, and use those

reflections to guide decisions and actions; (iii) are actively aware of the synergistic relationship between emotion and intellect; (iv) consider alternate perspectives; (v) are aware of the moral implications of their decisions and actions; (vi) balance self-interests with the interests of other individuals, communities, and society at large; (vii) are genuinely willing to risk making mistakes and to learn from them; (viii) know when to let go of disappointment, anger, and/or grudges that get in the way of achieving their goal, that cause them to lose focus, and/or that might significantly change the desired solution or outcome; (ix) can deal effectively with uncertainty; (x) are flexible in switching between behaviors and knowing when a specific behavior is appropriate or inappropriate; and (xi) know how to act in any type of situation, either personally or professionally.

From the foregoing, a functional mature person can be said to possess the ability to communicate as a skilled and effective adult – with the word *adult* connoting not chronological maturity but functional maturity (Franz, 1998). In this sense, a person's functional maturity level might be connected to his/her present communication style. Furthermore, functional maturity might also serve as a mediator between the communication styles and the change goals as depicted in the research model (see Figure 1). It may also mean that functional maturity may independently lead to people's current communication style and change goals, rendering any relationship between communication styles and change goals spurious. If this is true, then communication styles may or may not be related to change goals. For example, an expressive person may be especially likely to desire to increase in expressiveness if expressiveness is a socially desirable communication style. This exact relation between these will be further investigated in this research.

Figure 1: Research model – mediation paths



Besides functional maturity, other mediators that will be explored in this research concern *communication satisfaction* and *communication effectiveness*. Investigating people’s satisfaction with the way they presently communicate and people’s opinion of the effectiveness their communication with other people within the context of this research is important because like functional maturity, people’s level of communication satisfaction or effectiveness might help to explain discrepancies between their communication style and their change goals. In other words, like functional maturity, communication satisfaction and communication may serve as mediators between people’s communication style and their change goals.

## 1.2 Research Questions

Based on the foregoing, we first investigated via a simple pilot study the level of social desirability of the communication style scales. Thereafter three fundamental research questions will be answered.

Although the existence of preferable communication styles has not been systematically studied, the existence of preferred or desirable communication styles have been shown within different contexts, namely in assessing counsellor effectiveness (Dauphinais, Dauphinais, & Rowe, 1981), spousal communication (Hawkins, Weisberg, & Ray, 1980) and culture (Patrick Rau, Li, & Li, 2009). The typical procedure in these studies is to allow participants listen to pre-recorded conversations structured according to different communication styles and rate their level of desirableness. A clear outcome from these studies is the differences in the preference level of participants for different communication styles – from directive versus non-directive/facilitative communication style (Dauphinais, Dauphinais, & Rowe, 1981) and implicit versus explicit communication styles (Patrick Rau, Li, & Li, 2009). Particularly, the non-directive approach was rated as least effective (or least preferred) of the communication styles (Dauphinais, Dauphinais, & Rowe, 1981).

One limitation of using the pre-recorded conversation is the sensitivity to cultural bias (in the form of accent of the actors employed) as reported in the study (Dauphinais, Dauphinais, & Rowe, 1981). Due to this, the pilot study is aimed at investigating whether some communication styles are more preferred or more socially desirable than others. This is achieved by using a few selected participants. The idea is to allow participants make a simple rating of their desirability (or preference) level for the items on the communication styles instrument (the CSI) as to whether they find them preferable, non-preferable to neutral. From the responses, the deviations of the

responses from the theoretical mean of the social desirability scale will be investigated. Furthermore, this will allow us to find out the exact levels of social desirability for each communication styles scale. Due to the small sample size of the pilot study, the inter-rater agreements of the level of social desirability will be investigated. Thereafter, the means from the pilot study will be compared with responses in the main study.

From the main study, three research questions will be answered:

*Research question 1:*

*“What are the relations between people’s existing communication style and their change goals?”*

The goal of the first research question is to investigate the connection between people’s identified communication styles and their change goals. Even though one may reasonably expect that some people will not be satisfied with their communication style, whether they want to change it and the reasons and motivations are another question. From personality studies, differences between people’s actual and ideal characteristics have been reported (Higgins, 1987; Markus & Nurius, 1986). Consequently, the aspiration to reach ideal characteristics could be the trigger to change their communication style. Furthermore, other theorists have argued that the underlying needs of people (e.g. recognition and achievement) (Elliot & Harackiewicz, 1996), life goals (Roberts & Robins, 2000), and personal strivings (Emmons, 1986) motivate the need to change their personality. Since personality has been shown to have strong associations with communication styles (De Vries, et al., 2013), personal aspirations and individual needs may also motivate the need for people to change their communication styles. In investigating people’s change goals, Hudson and Roberts (2014) reported that almost everyone indicated a desire to increase in emotional stability and conscientiousness followed by others who wanted to increase in extraversion, agreeableness and openness, in that order.

Research on change goals in personality traits have shown that people who are low in a certain trait wanted to increase with respect to those traits (Hudson & Roberts, 2014). However, this was attributed to other research that found that the big five personality dimensions are socially desirable in and of themselves (Dunlop, Telford, & Morrison, 2012). In order to answer the question, an attempt will first be made to systematically measure people's existing communication style within the context of the Communication Style Inventory. Furthermore, an adapted version of the standard Communication Style Inventory, which for the purpose of this research is termed the Change Goals Communication Style Inventory (C-CSI) will be used to evaluate people's change goals. The results from both instruments will be correlated to investigate the relation between communication styles and change goals.

**Hypothesis 1 (H1):** People who score low on a socially desirable communication style will express desire to increase with respect to that communication style (implying a negative relation between communication style and change goal).

As an example, if in comparison to the theoretical scale mean of the pilot study, Expressiveness is identified as a socially desirable communication style, people who score low in Expressiveness in the main study will desire to increase with respect to Expressiveness.

The second research question is as follows:

*Research Question 2:*

*“What are the relations between people's level of communication satisfaction, communication effectiveness, functional maturity and their communication styles?”*

Research in personality traits, especially based on the HEXACO model is closely aligned with the Communication Styles Inventory (De Vries et al, 2013). Using the HEXACO model as base, Ashton and Kibeom (2016) investigated age trends in the different personality traits. Honesty

– Humility showed an upward trend of about 1 SD between ages 18 and 60. Emotionality showed a downward trend while Extraversion was upwards as age increased (Ashton & Kibeom, 2016). On the other hand, Conscientiousness, Openness and Agreeableness showed a upward trend during the teen years while they showed significant differences thereafter by facets (Ashton & Kibeom, 2016).

Furthermore, a look at the relation between personality and communication style as studied by De Vries et al (2013) showed strong negative correlations between Verbal Aggressiveness and Agreeableness while Preciseness showed moderate correlations with Conscientiousness. Expressiveness showed strong correlation with Extraversion, Questioningness with Openness to experience while Emotionality was found to show strong correlations with HEXACO Emotionality and FFM Neuroticism. On the other hand, Impression Manipulativeness showed strong (negative) correlations with HEXACO Honesty-Humility and FFM Agreeableness.

In related leadership communication studies, relations have been found between leader expressiveness and leader preciseness and various leader criteria (Bakker-Pieper, 2012). These leader criteria were broadly grouped into attitude- and behavior-related on one hand and effectiveness and cognition-related criteria on the other hand. CSI-expressiveness and CSI-preciseness were found to be positively related to communication satisfaction and effectiveness while CSI-verbal aggressiveness was found to show a negative correlation. Expressiveness helps to fulfil the fundamental need to belong while preciseness helps to fulfil the need to reduce uncertainty (Bakker-Pieper, 2012). Satisfaction of these needs has been related to positive individual and social outcomes (DeWall & Bushman, 2011; Hogg & Grieve, 1999). In view of this, we will expect the same relation as in previous studies. Therefore, we hypothesize as follows:

**Hypothesis 2 (H2):** CSI-expressiveness, CSI-preciseness and CSI-questioningness are positively related to communication satisfaction, communication effectiveness and functional maturity. CSI-verbal aggressiveness, CSI-emotionality and CSI-impression manipulativeness will be negatively related to communication satisfaction, communication effectiveness and functional maturity.

*Research question 3:*

*“Do communication satisfaction, communication effectiveness and functional maturity mediate the relation between people’s communication style and their change goals?”*

To show that communication satisfaction, communication effectiveness and functional maturity mediate the relations between communication styles and change goals, we will check whether the relation between communication styles and change goals after controlling for communication satisfaction, communication effectiveness and functional maturity changes from significant to insignificant. This will be done by fulfilling the following conditions (Baron & Kenny, 1986; Judd & Kenny , 1981):

- (i) The causal variable (communication styles) must be correlated with the outcome (change goals) – path  $c$  in the model (Figure 1)
- (ii) The causal variable (communication styles) should correlate with the mediator (communication satisfaction, communication effectiveness and functional maturity) – path  $a$  in the model
- (iii) The mediator should affect the outcome variable – path  $b$  in the model. In this case, the communication styles and change goals will be used as dependent variables while the change goals will be the outcome
- (iv) For complete mediation, the effect of communication styles on change goals while controlling for the mediators should be zero (path  $c'$  in the model).

If the four conditions are satisfied, then the results will be consistent with the hypothesis that communication satisfaction, communication effectiveness, and/or functional maturity *completely* mediates the relationship between communication styles and change goals. On the other hand, if the some of the steps are met but not all, then *partial* mediation is indicated. In other words, if the relationship between communication style and change goal was still significant, but less strong, partial mediation has occurred.

**Hypothesis 3 (H3):** Communication satisfaction, communication effectiveness and functional maturity mediate the relations between the communication styles and the outcomes of this study, i.e. the change goals.

The model used in this research (see Figure 1) links communication styles to the change goals through the three mediators. This allows us to measure people's communication style in general, their level of communication satisfaction, communication effectiveness and functional maturity and explore their links to the outcome, their change goals.

### 1.3 Research Design

Research questions 1-2 were designed as a correlational study to investigate the relations between communication styles and change goals and the relations between communication satisfaction, communication effectiveness and functional maturity and change goals. The third question is expected to broaden the first two research questions by using statistical mediation analysis to investigate whether explanations can be found for people's change goals by looking at their level of communication satisfaction, communication effectiveness and functional maturity level.

## **1.4 Scientific and Practical Relevance**

In summary, this study is relevant for several reasons. First, it provides a common index for participants to rate their goals to change their communication style. This will unravel the motivations underlying people's change goals and their concurrent communication styles (De Vries et al, 2013).

Secondly, the study will help to understand the prevalence of the goals to change each communication styles. Based on this, it may become clear whether some communication styles are more socially desirable than others. Finally, on the practical side, being able to identify and measure people's existing communication style may provide help to people with "undesirable" styles towards achieving their set goals.

## **2.0 Study 1 – Pilot study**

Study 1 was designed with two goals in mind. First, it served as an initial exploration into the level of social desirability of the different communication style domain and facet level scales. This involved a modification of the scales of the standard CSI to enable the respondents to rate the level of social desirability of the items of the CSI. Second, it was intended to serve as a backdrop for the main study. In other words, once the level of social desirability of the scales are known, this can be used to interpret the results of the main study.

## **2.1 Methods**

### *2.1.1 Participants*

The respondents for the pilot study consisted of 18 invited participants. The criteria for participation in the pilot study was that all respondents should have a minimum of a University

degree and be at least 18 years of age. Participants who did not fully complete the questionnaire and those who did not meet the minimum age and education requirements were excluded. At the end of the exercise, a total number of 11 participants (72% male) were accepted and used in the analysis. Participants age in the accepted sample ranged from 18 to 47 ( $M = 35.91$ ,  $SD = 8.64$ ). Note that even though the small sample size raises questions about the strength of the statistical power for the analysis and the associated risks of strong correlations in the results, the pilot study should be seen as not the main aim of the present investigation but an initial check to prove or disprove the existence of socially desirable communication styles. A detailed study would require the use of larger sample sizes which is beyond the goal of the present research.

### *2.1.2 Instrument*

The measurement instrument for the pilot study was an adapted version of the Communication Style Inventory (CSI) (De Vries et al, 2013). The CSI consists of 96 communication behavior items that are reported in Appendix 1 while the adapted version is reported in Appendix 2. The items are divided equally among the following six domain-level scales (16 items per scale): Expressiveness, Preciseness, Verbal Aggressiveness, Questioningness, Emotionality, and Impression Manipulativeness. Each of the domain-level scales consists of four facets each with four items.

The questionnaires were prepared and administered online with the use of the Qualtrics® platform provided by the University of Twente. The use of digital questionnaire ensures a wide coverage and that data collection and analysis can be simplified. It also provides a clear layout and gives participants the opportunity to complete the questionnaire at their convenience. The questionnaire contained a few demographic questions (age, gender and level of education) followed by instructions asking participants to provide ratings of the each of the 96 item statements

on the CSI as to whether, in their judgment, they consider them desirable or not. Due to the fact that the items in the CSI as reported in De Vries et al (2013) were written in the first person, it was necessary to re-word all the items to the third person in order to prevent the non-personalization of the responses provided. For example, the statement “*I always have a lot to say*” was written as “*He/she always has a lot to say*” (see Appendix 2). The six domain level scales – Expressiveness, Preciseness, Verbal Aggressiveness, Questioningness, Emotionality and Impression Manipulativeness – consist of four facets, each with four items – Expressiveness (talkativeness, conversational dominance, humor, informality), Preciseness (structuredness, thoughtfulness, substantiveness, conciseness), Verbal Aggressiveness (angriness, authoritarianism, derogatoriness, nonsupportiveness), Questioningness (unconventionality, philosophicalness, inquisitiveness, argumentativeness), Emotionality (sentimentality, worrisomeness, tension, defensiveness) and Impression Manipulativeness (ingratiation, charm, inscrutableness, concealingness). Respondents provided ratings on these statements based on a five point Likert-like scale, from 1 (*very socially undesirable*) to 5 (*very socially desirable*). Furthermore, it was necessary to split the items into different pages (10 items per page) with the instructions repeated at the top of every page. This was done to prevent unambiguity and ensure that participants had access to the instructions during the course of providing the responses.

### 2.1.3 Procedure

The first study was a pilot study to determine whether there are desirable (preferred) or undesirable (non-preferred) communication styles. In this study, eleven participants are selected to evaluate the items on the CSI. As minimum selection criteria, participants in this study were required to be at least undergraduates to enable the acquisition of informed and educated responses. As indicated earlier, the objective of was to use a simple study with high inter-rater reliability to

understand what people think would constitute the ideal/desirable communication profile. The participants were asked to weight each item on CSI as to whether they are desirable or not. Based on the responses provided, an insight into socially desirable (or on the contrary undesirable) communication style was obtained. The questionnaire was administered online using the Qualtrics survey portal, with access granted by the University of Twente. The portal allowed the sharing of the link to the questionnaire via email thereby ensuring efficient data processing. The total time to complete the questionnaire was estimated at 10 minutes.

#### *2.1.4 Results and discussion*

As starting point, we investigate the agreement between the responses provided by the 11 raters. This was done by using performing an inter-rater agreement evaluation. The intraclass correlation coefficient (ICC) of all the items of the questionnaire using a two-way mixed model was 0.820 therefore the reliability was considered adequate.

In Table 1, the descriptives (mean and standard deviations) of the social desirability of the CSI domain and facet-level scales obtained in the pilot study are presented. We investigated whether some communication styles are more socially desirable relative to the theoretical mean of the scale used. To do this, a one sample t-test analysis was performed at both the domain and facet level using the theoretical mean scale of 3 as reference. Thus, a combination of the mean difference  $\bar{D}$  of the domain and facet level scales and their corresponding statistical significance level  $p$  would show communication styles that are judged as socially desirable or otherwise.

Table 1: Descriptives (Means and Standard deviations) of the social desirability of communication styles – pilot study

	Descriptives		One sample test (Mean = 3)			
	M	SD	t	p	$\bar{D}$	95% CI
<i>Domains</i>						
Expressiveness (X)	3.27	.30	2.928	<b>.015</b>	.267	.06, .47
Preciseness (P)	3.78	.46	5.576	<b>.000</b>	.778	.47, 1.09
Verbal Aggressiveness (VA)	2.18	.69	-4.122	<b>.002</b>	-.856	-1.32, -.39
Questioningness (Q)	3.31	.38	2.703	<b>.022</b>	.307	.05, .56
Emotionality (E)	2.53	.67	-2.315	<b>.043</b>	-.466	-.91, -.02
Impression Manipulativeness (IM)	3.08	.44	.602	.561	.080	-.22, .37
<i>Facets</i>						
Talkativeness	3.02	.57	.134	.896	.023	-.36, .40
Conversation dominance	3.34	.74	1.537	.155	.341	-.15, .84
Humor	3.70	.78	3.022	<b>.013</b>	.705	.19, 1.22
Informality	3.00	.49	.000	1.000	.000	-.33, .33
Structuredness	3.66	.68	3.203	<b>.009</b>	.659	.20, 1.12
Thoughtfulness	3.82	.61	4.425	<b>.001</b>	.818	.41, 1.23
Substantiveness	3.68	.36	6.367	<b>.000</b>	.682	.44, .92
Conciseness	3.95	.64	4.943	<b>.001</b>	.955	.52, 1.38
Angriness	2.41	.86	-2.277	<b>.046</b>	-.591	-1.17, -.01
Authoritarianism	2.51	1.16	-1.403	.191	-.492	-1.27, .29
Derogatoriness	2.00	.98	-3.403	<b>.007</b>	-1.000	-1.65, -.35
Nonsupportiveness	1.66	.64	-7.113	<b>.000</b>	-1.341	-1.76, -.92
Unconventionality	2.80	.89	-.766	.462	-.205	-.80, .39
Philosophicalness	3.43	.32	4.503	<b>.001</b>	.432	.22, .65
Inquisitiveness	3.77	.48	5.336	<b>.000</b>	.773	.45, 1.10
Argumentativeness	3.23	.86	.874	.402	.227	-.35, .81
Sentimentality	2.70	.65	-1.507	.163	-.295	-.73, .14
Worrisomeness	2.48	.68	-2.534	<b>.030</b>	-.523	-.98, -.06
Tension	2.27	.93	-2.608	<b>.026</b>	-.727	-1.35, -.11
Defensiveness	2.68	.83	-1.272	.232	-.318	-.88, .24
Ingratiation	3.00	.51	.000	1.000	.000	-.34, .34
Charm	3.16	.875	.603	.560	.159	-.43, .75
Inscrutableness	3.36	.409	2.951	<b>.015</b>	.364	.09, .64
Concealingness	2.80	.640	-1.059	.314	-.205	-.63, .23

**Bold:** Significant at  $p \leq 0.05$  level,  $\bar{D}$ : mean difference

At the domain level, Preciseness ( $\bar{D} = .778$ ;  $p = .000$ ), Questioningness ( $\bar{D} = .307$ ;  $p = .022$ ) and Expressiveness ( $\bar{D} = .267$ ;  $p = .015$ ) had statistically significant positive mean differences relative to the theoretical scale mean of '3'. On the other hand, Verbal Aggressiveness ( $\bar{D} = -.856$ ;  $p = .002$ ) and Emotionality ( $\bar{D} = -.466$ ;  $p = .043$ ) showed significant negative mean differences. Only Impression Manipulativeness ( $\bar{D} = .080$ ;  $p = .561$ ) showed a statistically insignificant mean difference. From this, it appears that majority of respondents viewed Preciseness as a socially desirable style while Verbal Aggressiveness was rated as socially undesirable.

At the facet level, all facet level subsets of Expressiveness (Talkativeness, Conversational Dominance, Humor and Informality) had means higher than the scale midpoint. However, only Humor ( $\bar{D} = .705$ ;  $p = .013$ ) was significantly different from the scale mid midpoint. Similarly, all facet level scales under Preciseness (Structuredness, Thoughtfulness, Substantiveness and Conciseness) showed statistically significant positive mean difference relative to the scale midpoint. On the contrary, all facets under Verbal Aggressiveness (Angriness, Authoritarianism, Derogatoriness, Nonsupportiveness) were negative relative to the scale midpoint. Two facet level scales for Questioningness – Philosophicalness ( $\bar{D} = .432$ ;  $p = .001$ ) and Inquisitiveness ( $\bar{D} = .773$ ;  $p = .000$ ) were significantly different (positive) from the scale midpoint. However, the other two facet level scales – Unconventionality ( $\bar{D} = -.205$ ;  $p = .462$ ) and Argumentativeness ( $\bar{D} = .227$ ;  $p = .402$ ) – were not significantly different from the scale midpoint. Also, all facets under Emotionality namely Sentimentality, Worrysomeness, Tension and Defensiveness – showed negative mean differences from the scale midpoint. However, while Worrysomeness ( $\bar{D} = -.523$ ;  $p = .030$ ) and Tension ( $\bar{D} = -.727$ ;  $p = .026$ ) were significantly different from the scale midpoint, Sentimentality ( $\bar{D} = -.295$ ;  $p = .163$ ) and Defensiveness ( $\bar{D} = -.318$ ;  $p = .232$ ) were not. For the

facet level scales under Impression Manipulativeness, only Inscrutableness ( $\bar{D} = .364$ ;  $p = .015$ ) was significantly different from the scale midpoint.

In summary, Expressiveness, Preciseness, Questioningness and Impression Manipulativeness were identified as positive (or socially desirable) communication styles while Verbal Aggressiveness and Emotionality were identified as negative (or socially undesirable) styles. Consequently, for our first hypothesis, we expect to see a negative correlation between the communication style domains Expressiveness, Preciseness, Questioningness and Impression Manipulativeness and their change goals. In other words, people who score low in these four communication style domains would express desire to increase with respect to them.

### **3.0 Study 2 – Main Study**

#### **3.1 Methods**

##### *3.1.1 Participants*

The sample size for the main study was determined a priori using the statistical software G\*power for a correlation study (t-tests). A sample size of 132 was obtained for an effect size of 0.2 and a statistical power of 0.75. From the invitations sent a total of 175 respondents filled out the questionnaire. Participants who were younger than 18 years old and those who did not complete up to 60 percent of the questions were excluded. This resulted in a total of 132 (37.1% female) valid responses used in further analysis. Mean age of the respondents was ( $M = 33.05$ ,  $SD = 7.77$ ). A significant percentage (85%) of the respondents indicated that they were students. Of this, 66.7% reported themselves as both students and working.

### *3.1.2 Instrument*

The measurement instrument for the mains study was divided into four main sections, besides the section for the demographics of the participants. The first section was intended to rate the communication styles of participants according to the Communication Style Inventory (CSI) (De Vries et al, 2013), as shown in Appendix 1. In contrast to the pilot study, participants rated their present communication style by answering each item on the CSI item on a five-point Likert scale from “strongly disagree” to “strongly agree”. This allowed participants to indicate to which level the statement fits/aligns with their perception of their current communication style.

In the second section, participants rated their goals to change their communication style used the modified version of the communication style inventory, which is called the Change Goals Communication Style Inventory (C-CSI). The C-CSI, contains the standard 96 items on the CSI. However, the instructions and the response scales were changed to allow participants to rate how much they would like to change each communication style. For the C-CSI, a seven-point Likert scale from “preferably much less” to “preferably much more”. A seven-point Likert scale was used in order to optimize reliability of the measurements. (Colman, Norris, & Preston, 1997). In this way, participants could indicate whether they wanted to increase, decrease or retain their communication style, with respect to the item in question. Positive and negative scores on these scales represent goals to increase and decrease with respect to the specific item, respectively. The only exceptions to this rule are the 27 negatively worded items in the CSI that had to be re-coded in the post analysis.

A questionnaire based on the development centered paradigm for developing human potential (McCuddy, Reeb-Gruber, & Thijssen, 2012; McCuddy & Reeb-Gruber, 2008) was used to measure people’s functional maturity level. Participants were asked to provide a self-rating of

the ten defining characteristics of a functionally mature person based on a 1-10-point Likert scale. Thus, the choice of 1 indicates that the item least describes the respondent's functional maturity level while 10 indicates that the item most describes the respondent's perception of his/her functional maturity level. In order to personalize the descriptor items on the scale, the original wordings of the defining characteristics were modified, as shown in Appendix 4. For example, the characteristic "functionally mature individuals are self-aware" was written as "I am always aware of myself".

Another questionnaire was used to measure respondent's communication satisfaction and communication effectiveness level. The instrument was loosely adapted from previous communication research (Hooijberg, 1996; De Vries, Bakker-Pieper, & Oostenveld, 2010). The instrument contained a combination of nine personalized statements that describes different aspects of communication satisfaction and communication effectiveness, as listed in Appendix 3. Five of the statements related to the communication satisfaction scale while the other four related to measuring the communication effectiveness scale. Participants provided self-rating of the statements based on a five-point Likert scale from 1 "*completely disagree*" to 5 "*completely agree*". The total completion time for the main study questionnaire was estimated at 25 minutes.

### *3.1.3 Procedure*

A chain-referral (snowball) sampling procedure was used to recruit participants for this research in order to have a broad coverage and representation. Invitations via e-mail were sent out to participants to volunteer to take part in the survey. These participants completed the questionnaire and forwarded the link to the questionnaire to others. The link to the questionnaire was appended to the e-mail invitation. The minimum requirement was that respondents should be at least 18 years old. During the planning phase of the research, some constraints that might impact

on the quality and reliability of the data were identified and mitigating measures were consciously put in place to prevent them. First, it was determined that the success of the study would depend on high response rate and getting a broad representation across different age group, gender, location and work experience. To ensure this, an online questionnaire was chosen as this gave the opportunity to distribute the link by electronic mail to ensure wide coverage. Respondents were also asked to forward the questionnaires to others. Secondly, the timeliness of obtaining the data was another potential constraint identified. To ensure this, reminders were sent to participants on a weekly basis to complete the questionnaire. However, it still took a long time to get all responses in. Thirdly, given the number of questions in the questionnaires, it was anticipated that some participants might find it challenging to complete it in one sitting which might lead to incomplete questionnaires (some completing only the CSI and not the C-CSI or part of both) that might invalidate the purpose of the research. As a mitigation, the possibility of saving the part of the questionnaire completed and coming back at a convenient time to complete the rest was activated. The responses were collected over a period of seven months before the online portal was deactivated.

To guide against ethical issues with data collection, privacy and data storage, no personal information was collected and participants were invited to indicate if they would like to receive the final report at the end of the research. Furthermore, a clear description of the purpose of the data collection was included in a de-brief section included at the end of the questionnaires. Finally, to assure the quality of the research, the approval of the Ethics Committee of the University of Twente and supervisor was obtained before disseminating the questionnaire. The committee is responsible for ensuring that research by students of the University is performed following the laid-down norms and values of the University.

Table 2: Correlation matrix for background variables (gender, age), communication styles and change goals (CG) Domain level scales - Main study (N = 132)

	$\alpha$	$M$	$SD$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Gender		1.37	.485	-																
2. Age		33.05	7.77	.012	-															
3. X	.667	2.99	.407	-.159	-.058	-														
4. P	.811	3.57	.474	<b>-.251</b>	.204*	-.098	-													
5. VA	.795	2.36	.506	-.177*	<b>-.225</b>	<b>.282</b>	-.156	-												
6. Q	.737	3.10	.462	<b>-.311</b>	-.064	<b>.359</b>	.054	<b>.374</b>	-											
7. E	.879	3.12	.664	<b>.268</b>	.002	-.002	<b>-.313</b>	.001	.155	-										
8. IM	.777	2.90	.521	-.059	<b>-.322</b>	<b>.230</b>	-.204*	<b>.246</b>	<b>.313</b>	<b>.284</b>	-									
9. X-CG	.329	4.06	.480	-.545	.031	.231*	-.101	-.064	.150	.155	.100	-								
10. P-CG	.799	4.70	.805	-.035	<b>.291</b>	.015	.002	<b>-.322</b>	-.019	.232*	-.093	<b>.274</b>	-							
11. VA-CG	.816	3.16	.839	-.077	<b>-.239</b>	-.020	.019	<b>.349</b>	.154	<b>-.256</b>	.125	-.142	<b>-.599</b>	-						
12. Q-CG	.670	3.95	.671	-.172	-.070	.124	.065	.127	<b>.372</b>	.199*	<b>.246</b>	<b>.305</b>	.059	.097	-					
13. E-CG	.825	3.53	.856	.006	<b>-.263</b>	-.019	.056	<b>.343</b>	.160	-.085	.215*	-.181*	<b>-.454</b>	<b>.663</b>	.123	-				
14. IM-CG	.634	3.61	.684	-.078	<b>-.242</b>	.086	.046	.220*	<b>.291</b>	.019	<b>.397</b>	.054	<b>-.381</b>	<b>.450</b>	<b>.613</b>	<b>.487</b>	-			
15. CSat.	.702	2.50	.713	-.131	.048	-.039	.226	.185*	.048	<b>-.440</b>	-.053	-.210*	<b>-.466</b>	<b>.450</b>	.043	<b>.378</b>	<b>.283</b>	-		
16. CEff.	.590	3.48	.542	-.201*	<b>.311</b>	.171	<b>.550</b>	-.150	.152	<b>-.306</b>	-.153*	.031	.092	-.017	.189	-.120	.037	.24*	-	
17. FM	.881	7.43	1.61	-.144	<b>.344</b>	.062	<b>.348</b>	-.220	.058	-.108	-.066	.116*	<b>.278</b>	-.137	.083	-.217*	-.113	.006	.318	-

**Bold:** Correlation is significant at  $p \leq 0.01$  level (2-tailed); Star (\*): Correlation is significant at  $p \leq 0.05$  level (2-tailed); CSat: communication satisfaction; CEff: communication effectiveness; FM: functional maturity

### 3.1.4 Results and discussion

In Table 2, the descriptives for the background variables (gender and age) and the CSI and change goals domain level scales are presented. The mean age of the total number respondents ( $N = 132$ ) was  $M = 33.05$ . The reliabilities of the CSI domain level scales ranged from  $\alpha = 0.667$  (X) to  $\alpha = 0.879$  (E) while the reliabilities for the C-CSI domain level scales ranged from  $\alpha = 0.329$  (X) to  $\alpha = 0.825$  (E). The means of the domain scales of the CSI, which could theoretically be between 1 – 5, ranged from 2.36 (VA) to 3.57 (P). On the other hand, the means of the C-CSI which could fluctuate between 1 – 7, ranged from 3.16 (VA) to 4.70 (P).

*What are the relations between people's current communication style and their change goals?"*

In order to investigate the relations between people's current communication styles and their change goals, a bivariate (Pearson) correlation analysis was performed. In Table 2, the correlation matrix of the communication styles (CS) and change goals (CG) are presented. Note that the statistical significance level is set at  $p \leq 0.01$  in order to reduce the chance of obtaining a false positive (Type 1 error). It is only noted that at  $p \leq 0.05$ , only  $X \rightarrow X\text{-CG}$  ( $r = .231$ ;  $p = .010$ ) showed significant positive correlation while the other  $CS \rightarrow CG$  correlations were not significant.

From the communication styles and change goals displayed in Table 2, some striking relations are evident. Positive correlations were found between  $X \rightarrow X\text{-CG}$  ( $r = .231$ ;  $p = .010$ ),  $P \rightarrow P\text{-CG}$  ( $r = .002$ ;  $p = .986$ ),  $VA \rightarrow VA\text{-CG}$  ( $r = .349$ ;  $p = .000$ ),  $Q \rightarrow Q\text{-CG}$  ( $r = .372$ ;  $p = .000$ ) and  $IM \rightarrow IM\text{-CG}$  ( $r = .397$ ;  $p = .000$ ). The only exception is for  $E \rightarrow E\text{-CG}$ , which showed a negative correlation ( $r = -.085$ ;  $p = .352$ ). With respect to the strength of the correlations, two correlations ( $P \rightarrow P\text{-CG}$  and  $E \rightarrow E\text{-CG}$ ) were weak. In terms of the  $p$  – values of the correlations, X, VA, Q and IM showed statistically significant correlations with their respective change goals while the correlations for P and E were not statistically significant.

Table 3: One sample t-test results for the comparison to the theoretical mean of the CS and CG

	communication styles						change goals (CG)					
	Descriptives		Mean = 3				Descriptives		Mean = 4			
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	$\bar{D}$	95% CI	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	$\bar{D}$	95% CI
<i>Domains</i>												
X	2.99	.407	-.254	.800	-.009	-.08, .06	4.06	.480	1.480	.141	.064	-.02, .15
P	3.57	.474	13.759	<b>.000</b>	.568	.49, .65	4.70	.805	9.634	<b>.000</b>	.702	.56, .85
VA	2.36	.506	-14.61	<b>.000</b>	-.643	-.73, -.56	3.16	.839	-11.039	<b>.000</b>	-.838	-.99, -.69
Q	3.10	.462	2.533	<b>.012</b>	.102	.02, .18	3.95	.671	-.877	.382	-.053	-.17, .07
E	3.12	.664	2.024	<b>.045</b>	.117	.00, .23	3.53	.856	-6.092	<b>.000</b>	-.472	-.63, -.32
IM	2.90	.521	-2.183	.689	-.099	-.19, .01	3.61	.684	-6.237	<b>.000</b>	-.386	-.51, -.26
<i>Facets</i>												
Talkativeness	2.87	.715	-2.100	<b>.038</b>	-.131	-.25, -.01	3.65	.846	-4.542	<b>.000</b>	-.348	-.50, -.20
Conversational dominance	2.95	.668	-.815	.417	-.047	-.16, .07	4.23	1.030	2.417	.017	.225	-.04, .41
Humor	3.23	.637	4.202	<b>.000</b>	.233	.12, .34	4.15	.848	1.991	.049	.155	-.00, .31
Informality	2.91	.519	-2.013	.046	-.091	-.18, .00	4.22	.780	3.019	<b>.003</b>	.217	.07, .36
Structuredness	3.48	.632	8.773	<b>.000</b>	.483	.37, .59	4.74	1.161	7.080	<b>.000</b>	.745	.54, .95
Thoughtfulness	3.97	.601	18.459	<b>.000</b>	.966	.86, 1.07	5.17	1.047	12.374	<b>.000</b>	1.173	.99, 1.36
Substantiveness	3.39	.543	8.211	<b>.000</b>	.388	.29, .48	4.22	.734	3.248	<b>.002</b>	.218	.09, .35
Conciseness	3.44	.696	7.191	<b>.000</b>	.436	.32, .56	4.59	1.146	5.551	<b>.000</b>	.585	.38, .79
Angriness	2.56	.752	-6.680	<b>.000</b>	-.438	-.57, -.31	2.99	1.029	-10.822	<b>.000</b>	-1.008	-1.19, -.82
Authoritarianism	2.84	.685	-2.605	<b>.010</b>	-.155	-.27, -.04	3.68	.968	-3.638	<b>.000</b>	-.319	-.49, -.15
Derogatoriness	2.17	.788	-12.04	<b>.000</b>	-.826	-.96, -.69	3.12	1.194	-8.050	<b>.000</b>	-.881	-1.10, -.66
Nonsupportiveness	1.48	.545	-24.35	<b>.000</b>	-1.155	-1.25, -1.1	2.83	1.224	-10.354	<b>.000</b>	-1.167	-1.39, -.94
Unconventionality	2.65	.759	-5.303	<b>.000</b>	-.350	-.48, -.22	3.28	1.200	-6.603	<b>.000</b>	-.717	-.93, -.50
Philosophicalness	3.29	.719	4.663	<b>.000</b>	.292	.17, .42	4.34	.826	4.469	<b>.000</b>	.338	.19, .49
Inquisitiveness	3.44	.598	8.410	<b>.000</b>	.438	.33, .54	4.38	.879	4.693	<b>.000</b>	.378	.22, .54
Argumentativeness	3.03	.649	.503	.616	.028	-.08, .14	3.91	.959	-.968	.335	-.085	-.26, .09
Sentimentality	3.12	.728	1.943	<b>.054</b>	.123	.00, .25	3.73	.935	-3.147	<b>.002</b>	-.266	-.43, -.10
Worrisomeness	3.18	.858	2.408	<b>.017</b>	.180	.03, .33	3.41	1.174	-5.442	<b>.000</b>	-.585	-.80, -.37
Tension	2.99	.821	-.080	.937	-.006	-.15, .14	3.32	1.205	-6.113	<b>.000</b>	-.675	-.89, -.46
Defensiveness	3.17	.761	2.573	<b>.011</b>	.170	.04, .30	3.59	1.039	-4.303	<b>.000</b>	-.412	-.60, -.22
Ingratiation	2.75	.868	-3.308	<b>.001</b>	-.250	-.40, -.10	3.15	1.228	-7.628	<b>.000</b>	-.848	-1.07, -.63
Charm	2.65	.808	-4.927	.000	-.347	-.49, .21	3.49	1.059	-5.258	<b>.000</b>	-.511	-.70, -.32
Inscrutableness	3.36	.571	7.235	<b>.000</b>	.360	-.26, .46	4.30	.803	4.072	<b>.000</b>	.300	.15, .45
Concealingness	2.84	.639	-2.859	.005	-.159	-.27, .05	3.60	.860	-5.050	<b>.000</b>	-.400	-.56, -.24

Bold: Mean difference significant at  $p \leq 0.05$  level (2-tailed).

Furthermore, in Table 3, we compare the means of the domain and facet level scales of the communication styles and the change goals to the theoretical mean – as was done for the pilot study. P had the highest significant positive mean difference ( $\bar{D} = .568; p = .000$ ) in relation to the scale mean ( $M = 3$ ). Similarly, P-CG also has a significant mean difference ( $\bar{D} = .702; p = .000$ ) in relation to the change goals scale mean ( $M = 4$ ). This suggests the desirability of P and also a desire to increase in P. On the contrary, VA had a negative mean difference ( $\bar{D} = -.643; p = .000$ ) while on the change goal, the mean difference decreased further ( $\bar{D} = -.838; p = .000$ ) – suggesting overall a desire to further decrease with respect to VA. X had a negative mean difference ( $\bar{D} = -.009; p = .800$ ) while on the change goal side, X-CG had a positive mean difference ( $\bar{D} = .064; p = .141$ ). Other domain level scales namely, Q, E and IM showed negative mean differences in their change goals relative to the theoretical scale mean. For the facets level scales, the results were mixed with some facets showing significant positive differences relative to the CS and CG scale mean (e.g. structuredness, conciseness, philosophicalness and inquisitiveness among others) while others also showed significant negative mean difference relative to the CS and CG scale mean (e.g. angriness, authoritarianism, derogatoriness and ingratiating, among others).

*“What are the relations between people’s level of communication satisfaction, communication effectiveness, functional maturity and their communication styles?”*

In Table 2, correlations between communication satisfaction (CSat.), communication effectiveness (CEff.) and functional maturity (FM) and the communication styles domain level scales are shown.

With respect to the relation between communication satisfaction and the communication styles, X ( $r = -.039, p = .681$ ) showed a negative (and weak) correlation with communication

satisfaction while P ( $r = .226, p = .017$ ) had a positive correlation with communication satisfaction. While VA ( $r = .185, p = .051$ ) and Q ( $r = .048, p = .617$ ) showed positive correlation with communication satisfaction, the correlations for E ( $r = -.440, p = .000$ ) and IM ( $r = -.053, p = .578$ ) were negative. It was also observed that only the relation between E and communication satisfaction was significant.

For the relation between communication effectiveness and the communication style domain level scales, X ( $r = .171, p = .071$ ), P ( $r = .550, p = .000$ ) and Q ( $r = .152, p = .110$ ) had positive correlations with communication satisfaction while VA ( $r = -.150, p = .115$ ), E ( $r = -.306, p = .001$ ) and IM ( $r = -.153, p = .107$ ) had negative correlations with communication satisfaction. All correlations for the six domain scales showed moderate strength in relation to communication satisfaction.

Similar to communication effectiveness, functional maturity also showed positive correlations with X ( $r = .062, p = .482$ ), P ( $r = .348, p = .000$ ) and Q ( $r = .058, p = .513$ ) while VA ( $r = -.220, p = .012$ ), E ( $r = -.108, p = .221$ ) and IM ( $r = -.066, p = .458$ ) showed negative relation with functional maturity.

*“Do communication satisfaction, communication effectiveness and functional maturity mediate the relation between people’s communication style and their change goals?”*

According to the model, communication style is taken as the first predictor while change goal is taken as the outcome. The three predictors – communication satisfaction, communication effectiveness and functional maturity – will be used as mediators (or second predictors) in the model.

Table 4: Mediation regression analysis results when communication satisfaction is used as the mediator between communication styles and change goals

IV	Paths	ANOVA			Unstandardized Coefficients		Standardized coefficients		
		$R^2$	$F$	$p$	$B$	$SE(B)$	$\beta$	Sig	95% CI
X	$c$	.053	6.759	.010	.272	.105	.231	.010	.065, .480
	$a$	.002	.169	.681	-.068	.165	-.039	.681	-.395, .259
	$c' = X$	.095	5.747	.004	.242	.097	.226	.015	.049, .435
	$b = \text{CommSat}$				-.124	.056	-.201	.029	-.236, -.013
P	$c$	.000	.000	.986	.003	.152	.002	.986	-.297, .303
	$a$	.051	5.918	.017	.321	.132	.226	.017	.060, .583
	$c' = P$	.226	15.913	.000	.153	.135	.098	.260	-.115, .421
	$b = \text{CommSat}$				-.536	.095	-.488	.000	-.725, -.348
VA	$c$	.122	16.673	.000	.577	.141	.349	.000	.297, .857
	$a$	.034	3.900	.051	.259	.131	.185	.051	-.001, .519
	$c' = \text{VA}$	.297	23.007	.000	.503	.131	.313	.000	.243, .764
	$b = \text{CommSat}$				.449	.094	.392	.000	.264, .635
Q	$c$	.139	19.313	.000	.543	.124	.372	.000	.298, .787
	$a$	.002	.252	.617	.073	.146	.048	.617	.217, .364
	$c' = Q$	.154	9.913	.000	.501	.113	.390	.000	.277, .726
	$b = \text{CommSat}$				.020	.074	.024	.783	-.126, .166
E	$c$	.007	.874	.352	-.108	.115	-.085	.352	-.336, .121
	$a$	.193	26.344	.000	-.462	.090	-.440	.000	-.640, -.283
	$c' = E$	.152	9.744	.000	.130	.122	.105	.287	-.111, .372
	$b = \text{CommSat}$				.501	.116	.424	.000	.271, .730
IM	$c$	.158	22.480	.000	.507	.107	.397	.000	.295, .718
	$a$	.003	.311	.578	-.070	.126	-.053	.578	-.321, .180
	$c' = \text{IM}$	.258	18.927	.000	.482	.094	.422	.000	.295, .668
	$b = \text{CommSat}$				.262	.071	.305	.000	.122, .403

Path  $c$ : DV: change goals, IV: Communication styles; Path  $a$ : DV: communication satisfaction, IV: communication styles; Paths  $b$  and  $c'$ : DV: change goals, IV: communication styles and communication satisfaction

As shown in results of the bivariate regression analysis presented in Table 4 for the model path  $c$  – which is the same for the three potential mediators, the standardized coefficients were significant for X and X-CG ( $\beta = .231, p = .01$ ), VA and VA-CG ( $\beta = .349, p = .000$ ), Q and Q-CG ( $\beta = .372, p = .000$ ) and IM and IM-CG ( $\beta = .397, p = .000$ ) – which means they satisfy the first criteria. On the other hand, the coefficients for P and P-CG ( $\beta = .002, p = .986$ ) and E and E-CG ( $\beta = -.085, p = .352$ ) were not significant.

When communication satisfaction is used as the mediator (Table 4), the  $\beta$  –values of the paths  $a$ ,  $b$  and  $c'$  in the model and the corresponding significance for the different domain level scales were mixed. Most strikingly, only Verbal Aggressiveness had significant  $\beta$ 's for all paths with indicating that communication satisfaction completely mediates the relation between the Verbal Aggressiveness domain level scale and its change goal. For the five other domain level scales, at least one of the paths in the model showed insignificant correlation. For example, while the correlations reported for paths  $c$ ,  $a$  and  $b$  of the domain scales Expressiveness and Impression Manipulativeness were significant, the associated correlation for path  $a$  for both domains were not significant.

Table 5: Mediation regression analysis results when communication effectiveness is used as the mediator between communication styles and change goals

IV	Paths	ANOVA			Unstandardized Coefficients		Standardized coefficients		
		$R^2$	$F$	$p$	$B$	$SE(B)$	$\beta$	Sig	95% CI
X	$c$	.053	6.759	.010	.272	.105	.231	.010	.065, .480
	$a$	.029	3.330	.071	.225	.124	.171	.071	-.019, .470
	$c' = X$	.055	3.169	.046	.252	.101	.236	.014	.052, .452
	$b = \text{CommEff.}$				-.008	.077	-.009	.922	-.160, .145
P	$c$	.000	.000	.986	.003	.152	.002	.986	-.297, .303
	$a$	.302	47.623	.000	.594	.086	.550	.550	.424, .765
	$c' = P$	.014	.782	.460	-.141	.178	-.090	-.090	.494, .212
	$b = \text{CommEff.}$				.205	.165	.142	.142	-.121, .531
VA	$c$	.122	16.673	.000	.577	.141	.349	.000	.297, .857
	$a$	.022	2.521	.115	-.159	.100	-.150	-.150	.358, .040
	$c' = VA$	.150	9.644	.000	.630	.144	.392	.392	.345, .915
	$b = \text{CommEff.}$				.063	.135	.042	.042	-.204, .330
Q	$c$	.139	19.313	.000	.543	.124	.372	.000	.298, .787
	$a$	.023	2.599	.110	.178	.110	.152	.152	-.041, .396
	$c' = Q$	.170	11.201	.000	.477	.113	.371	.371	.252, .401
	$b = \text{CommEff.}$				.146	.097	.133	.133	-.049, .338
E	$c$	.007	.874	.352	-.108	.115	-.085	.352	-.336, .121
	$a$	.094	11.376	.001	-.244	.072	-.306	-.306	-.388, .101
	$c' = E$	.030	1.674	.192	-.161	.123	-.136	-.136	-.405, .082
	$b = \text{CommEff.}$				-.249	.154	-.160	-.160	.554, .057
IM	$c$	.158	22.480	.000	.507	.107	.397	.000	.295, .718
	$a$	.023	2.636	.107	-.154	.095	-.153	-.153	-.343, .034
	$c' = IM$	.175	11.556	.000	.481	.100	.422	.422	.282, .680
	$b = \text{CommEff.}$				.115	.100	.102	.102	-.082, .312

Path  $c$ : DV: change goals, IV: Communication styles; Path  $a$ : DV: communication effectiveness, IV: communication styles; Paths  $b$  and  $c'$ : DV: change goals, IV: communication styles and communication effectiveness

Table 6: Mediation regression analysis results when functional maturity is used as the mediator between communication styles and change goals

IV	Paths	ANOVA			Unstandardized Coefficients		Standardized coefficients		
		$R^2$	$F$	$p$	$B$	$SE(B)$	$\beta$	Sig	95% CI
X	$c$	.053	6.759	.010	.272	.105	.231	.010	.065, .480
	$a$	.004	.497	.482	.245	.347	.062	.482	-.442, .936
	$c' = X$	.067	4.179	.078	.272	.105	.231	.011	.063, .480
	$b = FM$				.029	.026	.100	.266	-.023, .081
P	$c$	.000	.000	.986	.003	.152	.002	.986	-.297, .303
	$a$	.121	17.584	.000	1.170	.279	.348	.000	.618, .723
	$c' = P$	.087	5.591	.005	-.175	.153	-.107	.256	-.479, .129
	$b = FM$				.152	.045	.314	.001	.062, .242
VA	$c$	.122	16.673	.000	.577	.141	.349	.000	.297, .857
	$a$	.049	6.532	.012	-.704	.275	-.220	.012	-1.249, -.159
	$c' = VA$	.121	8.034	.001	.545	.148	.328	.000	.252, .839
	$b = FM$				-.031	.045	-.062	.489	-.121, .058
Q	$c$	.139	19.313	.000	.543	.124	.372	.000	.298, .787
	$a$	.003	.429	.513	.202	.309	.058	.513	-.409, .813
	$c' = Q$	.152	10.511	.000	.551	.123	.382	.000	.307, .794
	$b = FM.$				.026	.034	.064	.455	-.042, .093
E	$c$	.007	.874	.352	-.108	.115	-.085	.352	-.336, .121
	$a$	.012	1.511	.221	-.261	.212	-.108	.221	-.680, .159
	$c' = E$	.061	3.829	.025	-.152	.113	-.121	.182	-.376, .072
	$b = FM$				-.118	.046	-.229	.012	-.210, -.026
IM	$c$	.158	22.480	.000	.507	.107	.397	.000	.271, .730
	$a$	.004	.553	.458	-.202	.272	-.066	.458	.740, .336
	$c' = IM$	.163	11.361	.000	.491	.107	.388	.000	.278, .704
	$b = FM$				.034	.035	-.084	.326	-.104, .035

Path  $c$ : DV: change goals, IV: communication styles; Path  $a$ : DV: functional maturity, IV: communication styles; Paths  $b$  and  $c'$ : DV: change goals, IV: communication styles and functional maturity

In Table 5 and Table 6, the results of the bivariate regression analysis for the different model paths when communication effectiveness and functional maturity are used as mediators are presented. The results for the different model paths for all domain level scales did *not* confirm communication effectiveness and functional maturity as a *complete* mediator for the relations between the respective communication style domain scales and their change goals.

#### **4.0 General conclusion and discussion**

Earlier researchers have shown that people would like to change certain aspects of themselves (Higgins, 1987; Markus & Nurius, 1986; Hudson & Fraley, 2015; Hudson & Roberts, 2014). However, there have been only few studies that have investigated relations between people's current traits and the change goals (Hudson & Roberts, 2014; Hudson & Fraley, 2015). The present study has focused on (i) using a simple pilot study to investigate the level of social desirability – at domain and facet level – of the different communication styles with the aid of an adapted version of the Communication Styles Inventory, (ii) investigating the relations between people's present communication style and their change goals at the domain level (iii.) investigating the relations between the reported communication styles and people's communication satisfaction, communication effectiveness and functional maturity, and finally (iv) evaluating whether communication satisfaction, communication effectiveness or functional maturity level mediates the relations between the different communication style domains and their associated change goals.

From Study 1 (pilot study) results, an evaluation of the social desirability of the different communication styles domains and facets relative to the theoretical scale mean of '3' showed positive mean differences for Preciseness, Questioningness and Expressiveness. Preciseness, which is related to the way a person structures his or her communication had the highest positive mean difference. This is consistent with other studies that have highlighted Preciseness as an important predictor of communication outcomes (De Vries et al., 2010; De Vries et al, 2013). On the other end of the domain spectrum, Verbal Aggressiveness and Emotionality had negative mean differences relative to the scale midpoint. The negative mean difference of Verbal Aggressiveness is aligned with the Infante and Rancer's theory that Verbal Aggressiveness as a destructive expression of an assertive communication style (Infante & Rancer, 1996). Interestingly,

Impression Manipulativeness, relating to deceptive communication was ranked slightly positive mainly due to the facet Inscrutableness. According to De Vries et al (2013), Impression Manipulativeness might be especially desirable “in settings in which communicative behaviors such as ingratiation, use of charm, and concealing information are likely to be used in order to obtain status or other rewards.”

From Study 2 (main study), participants reported their current communication styles and their change goals including a rating of their level of communication satisfaction, communication effectiveness and functional maturity. In our first hypothesis (H1), we predicted a negative correlation between communication styles and change goals for socially desirable communication styles. Contrary to our hypothesis, the findings from the correlation analysis showed positive relations between the socially desirable communication styles X, P, Q and their change goals. On the other hand, VA and E had positive and negative correlations with change goals, respectively. Our hypothesis was based on results from previous personality studies that showed that people low in socially desirable personality traits were likely to want to increase in those traits (Hudson & Roberts, 2014; Hudson & Fraley, 2015). For example, introverts are most likely to express goals to increase in extraversion, implying a negative correlation (Hudson & Roberts, 2014; Hudson & Fraley, 2015). If, however, people who score high on a socially desirable communication style want to change (or increase) more than those who score low, one might expect to see a positive correlation, as in our opinion, it might be unreasonable to expect such people to express goals to decrease with respect to a socially desirable communication style. To further support this claim, recent research on volitional personality trait change have also supported the idea of the possibility of a positive correlation between change goals and traits for socially desirable communication styles over time (Hudson & Fraley, 2015). It is also important to note the two paradoxes of change

goals. On one hand, it is possible that people are able to inherently engender change goals on their own – unrelated to their current style nor triggered by any sort of external intervention (Hudson & Fraley, 2015). On the other hand, we also learn from personality studies that to a limited extent traits are malleable and could change in response to a variety of external factors (Lenhart, Neyer, & Eccles, 2010; Lodi-Smith & Roberts, 2007; Hudson, Roberts, & Lodi-Smith, 2012). Furthermore, at the facet level, results of the mean differences relative to the theoretical scale mean show that a single facet might influence the results seen at the facet level (e.g. the facet Inscrutableness in IM). Since the correlation analysis reported were performed at the domain level, it might be interesting to further investigate the trends at the facet level and how that compares with the results presented in this work.

With respect to the strength of the correlations, medium correlations between the communication styles X, VA, Q, IM and their change goals were obtained. However, P and E showed rather weak correlation with their respective change goals. The medium correlations suggest that people's goals to change their communication style to a certain extent can predict their communication style and vice versa. It could also mean that people's change goals are, to a large extent dependent on precedents. In other words, how a person communicates now may determine how he or she would like to communicate in the future. This underscores the need to investigate the existence of other mediating or 'bridging' factors such as communication satisfaction. From personality studies, theory predicts that the decision of a person to change is driven by dissatisfaction with aspects of one's life, among other factors (Baumeister, 1994; Kiecolt, 1994). Thus, it may be that if people express dissatisfaction with their communication style, they might want to change.

For the second research question, our second hypothesis (H2) was that CSI-X, CSI-P and CSI-Q will have a positive correlation with communication satisfaction, communication effectiveness and functional maturity. We also expected that CSI-VA, CSI-E and CSI-IM will be negatively related to communication satisfaction, communication effectiveness and functional maturity.

Contrary to our expectation, we found that CSI-X had a weak negative relation with communication satisfaction. In contrast, we found a positive relation between CSI-X and communication effectiveness and functional maturity – agreeing with our hypothesis. In addition, we also found that CSI-P had strongly positive correlations with communication satisfaction, communication expressiveness and functional maturity in line with our expectation. These findings mostly agree with previous leadership communication studies that have reported strong positive relation between preciseness and communication satisfaction (Bakker-Pieper, 2012; De Vries et al, 2010). Preciseness relates to the tendency to communicate in a well-structured and thoughtful way. By communicating in highly precise way, a leader is able to provide clarity to his subordinates as to what to do and expect, leading to less ambiguity, better results and thus a personal feeling of satisfaction in the leader as to the way he communicates (Bakker-Pieper, 2012; De Vries et al, 2010). Furthermore, well-planned and structured explanations result in greater understanding and better retention of the verbal content, thus results in more successful interpersonal transactions and personal satisfaction (Hargie & Dickson, 2004). We also found a positive relation between CSI-Q and communication satisfaction, communication effectiveness and functional maturity, as proposed in H2. People high on CSI-Q, especially on the facet argumentativeness have been shown to be able to “advocate positions on controversial issues and to attack verbally the positions which other people hold on these issues” (Infante & Rancer, 1982). The feeling of winning an argument is accompanied by feelings of pride and satisfaction with

oneself (Tracey & Robins, 2007). In agreement with our hypothesis and consistent with previous studies, we found negative correlations between CSI-VA, CSI-E and CSI-IM and communication satisfaction, communication effectiveness and functional maturity. CSI-VA has been described as a destructive expression of an assertive communication style (De Vries et al, 2013).

For the third research question, we hypothesized in H3 that communication satisfaction, communication effectiveness and functional maturity fully mediate the relations between the different communication styles and their respective change goals. However, except for Verbal Aggressiveness  $\rightarrow$  communication satisfaction  $\rightarrow$  change goal, the communication satisfaction, communication effectiveness and functional maturity did not completely mediate the relation between the communication styles domains and their related change goals. This finding might suggest that the relations between communication styles and change goals is more complex and might involve other variables not considered in this work. For example, it may be that more complex time-based processes not studied in this research provide the link between communication styles and change goals (Hudson & Fraley, 2015). In addition, communication satisfaction, communication effectiveness and functional maturity are the only aspects that we have investigated that may influence the way people communicates. Other theoretically relevant possible predictors of change goals might also exist and need to be explored. For example, variables such as life satisfaction – not communication satisfaction (Baumeister, 1994; Kiecolt, 1994), need for achievement (Elliot & Harackiewicz, 1996), current personal strivings (Emmons, 1986), among others could be explored.

## **5.0 Limitations and Future perspectives**

Whilst this research has shed further insights into the goals to change communication styles, some limitations to the procedure, instruments and results are highlighted in the following. First,

in this study, we relied on participants providing a self-rating of their communication styles based on the premise that individuals have greater insights into their own traits (Paulhus & Vazire, 2007). However, participants' rating of their current communication style may also be biased towards their change goals. Thus, participants may have been motivated to report communication styles higher or lower than their current level. Second, even though precautions were taken to separate the communication styles and the change goals questionnaires in the main study, it cannot be completely ruled out that some respondents misinterpreted (perhaps inconsistently) the change goals (C-CSI) questionnaire which might have explained the somewhat lower reliabilities recorded in some of the domain level scales of the change goals measurement instrument. Third, from the verbal informal feedback obtained from some respondents, the matching of the negatively formulated items of the change questionnaires to the Likert scale was reported to be (in a few cases) confusing to interpret which might have contributed to the low reliability issues. For example, when an item is negatively formulated, it might be confusing for a respondent to say he/she would like to 'decrease' with respect to that item. Fourth, the length of the questionnaire was also reported as an issue that led to significant dropouts during the completion of the questionnaire. Fifth, change is a process and, in this research, it was measured only at an instance. It is therefore possible that the conclusions might change for the same participants if it is tested at another time.

It is also important to highlight the implications of the current research in training and instruction on communication styles. The identification of socially desirable communication styles and/or people's change goals could help to develop tailor made trainings or courses to achieve those goals. For example, if a person expresses goals to increase in Preciseness, training tailored to focus on the facets, i.e. helping the person to increase in Structuredness, Thoughtfulness,

Substantiveness and Conciseness. In addition, in leadership training, research into communication styles can offer trainers and trainees more insights and clear guidelines to understand behaviors and practices that might lead to the achieving of set objectives. By highlighting the relations between people's communication style, their change goals in combination with communication satisfaction, effectiveness and functional maturity, it is our belief that this research provides a foundation that can be built upon in leadership training and development. From a more practical point of view in relation to human resource development, the main instruments used in this work, the CSI and the C-CSI can be applied in employee or leader communication assessment and as a tool for selecting or training appropriate leaders. In a broader sense, the identification of communication styles, change goals and the associated mediators could give human resource practitioners a broader perspective on which types of communication styles will be suitable for diverse organizational settings. Human resource persons can also use the outcomes of this work to design tactical and strategic interventions to achieve set communication targets.

Furthermore, as the investigation of change goals is a rather new area of research, a number of interesting questions remain unexplored. As suggestions for future work, besides improving on the limitations highlighted above, the extension of the inter-relation between communication styles, change goals and other communication indices should be explored. Second, investigating whether these change goals are actually achieved or achievable should be investigated. Finally, instead of using responses based on participants' self-reporting of their communication styles and change goals, future studies could concentrate on observer reports of participants' communication styles and participants' self-reported change goals over time.

In conclusion, the present study should be seen as a first step to unravelling the complex interplay between people's communication style and change goals. In general, our findings reveal

that unlike in personality studies, not all the communication style domains are socially desirable. Also, people have goals to change their communication styles and the relations between people's identified communication styles and change goals are non-trivial. It is our anticipation that future researchers will build on the findings presented in this work to investigate for example time effects in the relation between communication style and change goals and the possibility of having other mediators between communication styles and change goals.

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## APPENDICES

## Appendix 1

Items of the Communication Styles Inventory and Change Goals Communication Styles  
Inventory – Main Study

CSI Domain	Facet	Item
Expressiveness	Talkativeness	I always have a lot to say.
		I have a hard time keeping myself silent when around other people.
		I am never the one who breaks a silence by starting to talk. (R)
		I like to talk a lot.
Expressiveness	Conversational Dominance	I often take the lead in a conversation.
		Most of the time, other people determine what the discussion is about, not me. (R)
		I often determine which topics are talked about during a conversation.
		I often determine the direction of a conversation.
Expressiveness	Humor	Because of my humor, I'm often the center of attention among a group of people.
		I have a hard time being humorous in a group. (R)
		My jokes always draw a lot of attention.
		I often manage to make others burst out laughing.
Expressiveness	Informality	I communicate with others in a distant manner. (R)
		I behave somewhat formally when I meet someone. (R)
		I address others in a very casual way.
		I come across as somewhat stiff when dealing with people. (R)
Preciseness	Structuredness	When I tell a story, the different parts are always clearly related to each other.
		I sometimes find it hard to tell a story in an organized way. (R)
		I always express a clear chain of thoughts when I argue a point.
		My stories always contain a logical structure.
Preciseness	Thoughtfulness	I think carefully before I say something.
		I weigh my answers carefully.

		<p>The statements I make are not always well thought out. (R)</p> <p>I choose my words with care.</p>
	Substantiveness	<p>Conversations with me always involve some important topic.</p> <p>You won't hear me jabbering about superficial or shallow matters.</p> <p>I am someone who can often talk about trivial things. (R)</p> <p>I rarely if ever just chatter away about something.</p>
	Conciseness	<p>I don't need a lot of words to get my message across.</p> <p>Most of the time, I only need a few words to explain something.</p> <p>I am somewhat long-winded when I need to explain something. (R)</p> <p>With a few words I can usually clarify my point to everybody.</p>
	Angriness	<p>If something displeases me, I sometimes explode with anger.</p> <p>Even when I'm angry, I won't take it out on someone else. (R)</p> <p>I tend to snap at people when I get annoyed.</p> <p>I can sometimes react somewhat irritably to people.</p>
Verbal aggressiveness	Authoritarianism	<p>I am not very likely to tell someone what they should do. (R)</p> <p>I sometimes insist that others do what I say.</p> <p>I expect people to obey when I ask them to do something.</p> <p>When I feel others should do something for me, I ask for it in a demanding tone of voice.</p>
	Derogatoriness	<p>I never make fun of anyone in a way that might hurt their feelings. (R)</p> <p>I have at times made people look like fools.</p> <p>I have been known to be able to laugh at people in their face.</p> <p>I have humiliated someone in front of a crowd.</p>
	Nonsupportiveness	<p>I can listen well. (R)</p> <p>I always show a lot of understanding for other people's problems. (R)</p> <p>I always take time for someone if they want to talk to me. (R)</p> <p>I always treat people with a lot of respect. (R)</p>

Questioningness	Unconventionality	<p>I sometimes toss bizarre ideas into a group discussion.</p> <p>I often say unexpected things.</p> <p>In discussions, I often put forward unusual points of view.</p> <p>In conversations, I often toy with some very wild ideas.</p>
	Philosophicalness	<p>I never enter into discussions about the future of the human race. (R)</p> <p>I like to talk with others about the deeper aspects of our existence.</p> <p>I never engage in so-called philosophical conversations. (R)</p> <p>I regularly have discussions with people about the meaning of life.</p>
	Inquisitiveness	<p>During a conversation, I always try to find out about the background of somebody's opinion.</p> <p>I don't bother asking a lot of questions just to find out why people feel the way they do about something. (R)</p> <p>I ask a lot of questions to uncover someone's motives.</p> <p>I always ask how people arrive at their conclusions.</p>
Emotionality	Argumentativeness	<p>To stimulate discussion, I sometimes express a view different from that of my conversation partner.</p> <p>I like to provoke others by making bold statements.</p> <p>I try to find out what people think about a topic by getting them to debate with me about it.</p> <p>By making controversial statements, I often force people to express a clear opinion.</p>
	Sentimentality	<p>When I see others cry, I have difficulty holding back my tears.</p> <p>During a conversation, I am not easily overcome by emotions. (R)</p> <p>When describing my memories, I sometimes get visibly emotional.</p> <p>People can tell that I am emotionally touched by some topics of conversation.</p>
	Worrisomeness	<p>When I'm worried about something, I find it hard to talk about anything else.</p> <p>I tend to talk about my concerns a lot.</p>

		<p>People can tell when I feel anxious.</p> <p>When I worry, everybody notices.</p>
	Tension	<p>Because of stress, I am sometimes unable to express myself properly.</p> <p>I can be visibly tense during a conversation.</p> <p>I am able to address a large group of people very calmly. (R)</p> <p>I find it hard to talk in a relaxed manner when what I have to say is valued highly.</p>
	Defensiveness	<p>The comments of others have a noticeable effect on me.</p> <p>Nasty remarks from other people do not bother me too much. (R)</p> <p>When people criticize me, I am visibly hurt.</p> <p>I am not always able to cope easily with critical remarks.</p>
	Ingratiation	<p>I sometimes praise somebody at great length, without being really genuine, in order to make them like me.</p> <p>In discussions I sometimes express an opinion I do not support in order to make a good impression.</p> <p>Sometimes I use flattery to get someone in a favorable mood.</p> <p>To be considered likeable, I sometimes say things my conversation partner likes to hear.</p>
Impression Manipulativeness	Charm	<p>I sometimes use my charm to get something done.</p> <p>I sometimes flirt a little bit to win somebody over.</p> <p>I would not use my appearance to make people do things for me. (R)</p> <p>I sometimes put on a very seductive voice when I want something.</p>
	Inscrutableness	<p>I make sure that people cannot read it from my face when I don't appreciate them.</p> <p>Even when people ask for my thoughts on something, I seldom speak my mind if those thoughts are unacceptable for others.</p> <p>I am able to hide negative feelings about other people well.</p> <p>Other people can easily tell when I think badly about them. (R)</p>
	Concealingness	<p>I sometimes conceal information to make me look better.</p> <p>I sometimes "forget" to tell something when this is more convenient for me.</p>

I tell people the whole story, even when this is probably not good for me. (R)  
 Even if I would benefit from withholding information from someone, I would find it hard to do so. (R)

(R) – Recoded Items (CSI): 1=5, 2=4, 4=2,5=1; For the CSI, a five-point scale was used from “strongly disagree” to “strongly agree”. For the C-CSI, a seven-point scale from “preferably much less” to “preferably much more” was used. (Recoding C-CSI: 1=7, 2=6, 3=5,4=4, 5=3, 6=2; 7=1).

**Appendix 2**

Modified CSI to measure social desirability of the communication styles in Study 1: Pilot Study

CSI Domain	Facet	Item
Expressiveness	Talkativeness	He/she always has a lot to say. He/she has a hard time keeping myself silent when around other people. He/she is never the one who breaks a silence by starting to talk. (R) He/she likes to talk a lot.
		He/she often takes the lead in a conversation.
	Conversational Dominance	Most of the time, other people determine what the discussion is about, not him/her. (R) He/she often determines which topics are talked about during a conversation. He/she often determines the direction of a conversation.
		Because of his/her humor, he/she is often the center of attention among a group of people. He/she has a hard time being humorous in a group. (R) His/her jokes always draw a lot of attention. He/she often manages to make others burst out laughing.
Informality	He/she communicates with others in a distant manner. (R) He/she behaves somewhat formally when I meet someone. (R) He/she addresses others in a very casual way.	
	He/she comes across as somewhat stiff when dealing with people. (R)	
Preciseness	Structuredness	When he/she tells a story, the different parts are always clearly related to each other.

		<p>He/she sometimes find it hard to tell a story in an organized way. (R)</p> <p>He/she always expresses a clear chain of thoughts when he/she argues a point.</p> <p>His/her stories always contain a logical structure.</p>
	Thoughtfulness	<p>He/she thinks carefully before I say something.</p> <p>He/she weighs his/her answers carefully.</p> <p>The statements he/she makes are not always well thought out. (R)</p> <p>He/she chooses his/her words with care.</p>
	Substantiveness	<p>Conversations with him/her always involves some important topic.</p> <p>You won't hear him/her jabbering about superficial or shallow matters.</p> <p>He/she is someone who can often talk about trivial things. (R)</p> <p>He/she rarely if ever just chatters away about something.</p>
	Conciseness	<p>He/she doesn't need a lot of words to get his/her message across.</p> <p>Most of the time, he/she only needs a few words to explain something.</p> <p>He/she is somewhat long-winded when he/she needs to explain something. (R)</p> <p>With a few words he/she can usually clarify his/her point to everybody.</p>
Verbal aggressiveness	Angriness	<p>If something displeases me, he/she sometimes explode with anger.</p> <p>Even when he/she is angry, he/she won't take it out on someone else. (R)</p> <p>He/she tends to snap at people when he/she gets annoyed.</p> <p>He/she can sometimes react somewhat irritably to people.</p>
	Authoritarianism	<p>He/she is not very likely to tell someone what they should do. (R)</p> <p>He/she sometimes insist that others do what he/she says.</p> <p>He/she expects people to obey when he/she asks them to do something.</p> <p>When he/she feels others should do something for me, he/she asks for it in a demanding tone of voice.</p>
	Derogatoriness	<p>He/she never makes fun of anyone in a way that might hurt their feelings. (R)</p>

		<p>He/she has at times made people look like fools.                  He/she has been known to be able to laugh at people in their face.                  He/she has humiliated someone in front of a crowd.</p>
		<p>He/she can listen well. (R)</p>
	Nonsupportiveness	<p>He/she always shows a lot of understanding for other people's problems. (R)                  He/she always takes time for someone if they want to talk to me. (R)                  He/she always treats people with a lot of respect. (R)</p>
Questioningness	Unconventionality	<p>He/she sometimes toss bizarre ideas into a group discussion.                  He/she often says unexpected things.                  In discussions, he/she often puts forward unusual points of view.                  In conversations, he/she often toys with some very wild ideas.</p>
	Philosophicalness	<p>He/she never enters into discussions about the future of the human race. (R)</p>
		<p>He/she likes to talk with others about the deeper aspects of our existence.                  He/she never engages in so-called philosophical conversations. (R)                  He/she regularly has discussions with people about the meaning of life.</p>
	Inquisitiveness	<p>During a conversation, He/she always tries to find out about the background of somebody's opinion.                  He/she doesn't bother asking a lot of questions just to find out why people feel the way they do about something. (R)                  He/she asks a lot of questions to uncover someone's motives.                  He/she always asks how people arrive at their conclusions.</p>
	Argumentativeness	<p>To stimulate discussion, he/she sometimes expresses a view different from that of my conversation partner.                  He/she likes to provoke others by making bold statements.                  He/she tries to find out what people think about a topic by getting them to debate with me about it.</p>

		By making controversial statements, he/she often forces people to express a clear opinion.
Emotionality	Sentimentality	When he/she sees others cry, he/she has difficulty holding back his/her tears. During a conversation, he/she is not easily overcome by emotions. (R) When describing my memories, he/she sometimes get visibly emotional. People can tell that he/she is emotionally touched by some topics of conversation.
	Worrisomeness	When he/she is worried about something, he/she finds it hard to talk about anything else. He/she tends to talk about my concerns a lot. People can tell when he/she feels anxious. When he/she worries, everybody notices.
	Tension	Because of stress, he/she is sometimes unable to express myself properly. He/she can be visibly tense during a conversation. He/she is able to address a large group of people very calmly. (R) He/she finds it hard to talk in a relaxed manner when what he/she has to say is valued highly.
	Defensiveness	The comments of others have a noticeable effect on him/her. Nasty remarks from other people do not bother him/her too much. (R) When people criticize him/her, he/she is visibly hurt. He/she is not always able to cope easily with critical remarks.
Impression Manipulativeness	Ingratiation	He/she sometimes praises somebody at great length, without being really genuine, in order to make them like him/her. In discussions He/she sometimes expresses an opinion he/she do not support in order to make a good impression. Sometimes he/she uses flattery to get someone in a favorable mood. To be considered likeable, he/she sometimes say things my conversation partner likes to hear.
	Charm	He/she sometimes uses his/her charm to get something done. He/she sometimes flirt a little bit to win somebody over.

	<p>He/she would not use my appearance to make people do things for me. (R)                  He/she sometimes put on a very seductive voice when he/she wants something.</p>
Inscrutableness	<p>He/she makes sure that people cannot read it from his/her face when he/she doesn't appreciate them. Even when people ask for his/her thoughts on something, he/she seldom speaks my mind if those thoughts are unacceptable for others. He/she is able to hide negative feelings about other people well. Other people can easily tell when he/she thinks badly about them. (R)</p>
Concealingness	<p>He/she sometimes conceal information to make himself/herself look better. He/she sometimes "forget" to tell something when this is more convenient for him/her. He/she tells people the whole story, even when this is probably not good for him/her. (R) Even if he/she would benefit from withholding information from someone, he/she would find it hard to do so. (R)</p>

(R) – Recoded Items (CSI): 1=5, 2=4, 4=2,5=1; In the pilot study, a five-point Likert-like scale, from 1 (*very socially undesirable*) to 5 (*very socially desirable*) was used.

**Appendix 3**

Items of the communication satisfaction and communication effectiveness questionnaire

Items	
Communication Satisfaction	<ol style="list-style-type: none"> <li>1. I would not like to change my communication style</li> <li>2. There are a number of things to improve about the way I communicate (R)</li> <li>3. I am satisfied with the way I communicate</li> <li>4. I sometimes think to myself “I wish I could communicate in a different way” (R)</li> </ol>
Communication Effectiveness	<ol style="list-style-type: none"> <li>1. I have achieved success in life through the way I communicate</li> <li>2. In comparison to others, I do not really communicate efficiently (R)</li> <li>3. Others take an example from the way I communicate</li> <li>4. I often fail to achieve things due to the way I communicate (R)</li> <li>5. My way of communicating has a lot of impact</li> </ol>

(R) – Recoded Items: 1=5, 2=4, 4=2,5=1; A five-point scale was used from 1 “*strongly disagree*” to 5 “*strongly agree*”.

**Appendix 4**

## Items of the functional maturity Scale

	Items
Functional Maturity	<ol style="list-style-type: none"> <li>1. I am always aware of myself</li> <li>2. I reflect on situations proactively</li> <li>3. I am aware of the relationship between emotion and intellect</li> <li>4. I consider alternate perspectives</li> <li>5. I am aware of the moral implications of people's decision and their actions</li> <li>6. I balance self-interests with the interest of other individuals, communities and society at large</li> <li>7. I am willing to make mistakes and to learn from them</li> <li>8. I know when to let go of disappointment that get in the way of achieving my goal</li> <li>9. I can deal effectively with uncertainty</li> <li>10. I am flexible in switching between behavior</li> </ol>

A ten-point Likert-like scale beginning from 1 (least describes me) to 10 (most describes me) was used.