Chapter 3
Determinants of physicians’ communication behavior in disability assessment.

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Abstract

**Purpose:** Knowledge about the determinants of communication behaviour of physicians during face-to-face consultations with patients might increase our understanding of communication behaviour, and provide insight into how training might be able to change their communication behaviour. For physicians who conduct work disability assessment interviews, referred to as ‘social insurance physicians’, communication with patients is their most important instrument. Therefore, the aim of this study was to understand the determinants of communication behaviour of social insurance physicians, by modelling the following constructs of the Theory of Planned Behaviour: attitudes, social influence, self-efficacy, skills, barriers, and intentions concerning their communication with claimants in medical disability assessments.

**Method:** Cross-sectional data were collected by means of questionnaires. Analyses were performed with the LISREL maximum likelihood estimation procedure.

**Results:** The results showed a well-fitting model in which attitudes had a significant and substantial direct effect on two intentions. Self-efficacy had a significant, but smaller direct effect on one intention.

**Conclusions:** Empirical support was found for a model that describes intentions of social insurance physicians, especially intentions to give information and to consider personal aspects. Attitudes were the main determinants of physicians’ intentions and therefore these may be a promising focus of communication skills training.
**Introduction**

Communication behaviour and the underlying determinants are difficult to understand because of the complexity of communication, the presence of two or more people with their personal stakes and the rapid and transient nature of the communication process. Systematic observations of communication behaviour might provide insight into communication and how people respond to each other, but they provide less insight into why people communicate the way they do. Identifying the factors that contribute to this ‘why’ (e.g. motives, preferences, tendencies) may not only increase our understanding of face-to-face communication, it might also indicate how communication behaviour can be changed by means of training. Therefore, this article focuses on determinants of communication behaviour. Communication behaviour has been defined as reciprocal contact between two people during a face-to-face encounter, aimed at (verbal and non-verbal) exchange of information, including the exchange and transmission of facts, opinions, feelings, thoughts, attitudes etc., consciously as well as unconsciously.

In this article, we focus specifically on physician-patient communication. It is well known that adequate communication skills during consulting hours are important for medical professionals [1-3]. In physician-patient consultations, three aims of communication behaviour have been described: ‘(a) creating a good interpersonal relationship; (b) exchanging information and (c) making treatment-related decisions’ [4]. Underlying these three aims, there are three types of intentions with regard to communication behaviour: (1) intentions regarding the interpersonal relationship; (2) intentions regarding the exchange of information and (3) intentions regarding decision-making.

Although communication with patients is always an important source of information for physicians, communication is more essential with some patients than with others. For example, patients with a broken leg will probably demand less from a physician, in terms of communication, than patients with unexplained symptoms. Moreover, in some cases communication might be the physician’s most important instrument, for instance instead of a physical examination or a magnetic resonance imaging scan. It is known in the literature that medical students are already aware of how they communicate and are able to reflect on their communication behaviour [5-7]. Also, awareness of communication behaviour, attitudes with regard to communication, and the ability to reflect on behaviour are considered to be important competencies needed for physicians in general [8]. For physicians, who hold medical disability assessment interviews to evaluate the work capacity of patients, communication with patients is their most important instrument. Therefore, this study focused on social insurance physicians who evaluate the work capacity of sick employees or people claiming social security benefits (e.g. [9-11]). Worldwide, physicians are involved in such assessments, even though in practice these may vary
considerably according to the national social insurance or disability legislation (for information about Dutch practices, see for example [12-14]).

The objective of this study was to determine which of the following constructs: attitudes, social influence, self-efficacy, skills and barriers for insurance physicians (the constructs of the Theory of Planned Behaviour (TPB) and the Attitude/Social influence/self-Efficacy model (ASE model)) contribute the most in determining intentions with regard to the communication of physicians with claimants in medical disability assessments. The TPB and the ASE model are motivational theories that explicitly apply to determinants of behaviour [15-17]. The TPB and the ASE model are identical, except that the ASE model is extended to include the concepts of skills and barriers. These theories can provide a conceptual model with which to study the communication of social insurance physicians with claimants during medical disability assessment interviews [18]. For example, the belief that it is important to help claimants cope with their work disabilities (physician’s attitude), the influence of the opinion of colleagues about this matter (social influence) and the confidence the physician has in being able to discuss problems regarding work participation (self-efficacy), together determine the degree to which the physician intends to actually talk about coping with work disabilities during the interview with the claimant (physician’s intention). Moreover, whether or not the work disabilities are discussed will also depend on the physician’s knowledge on how to bring up the matter and which questions to ask (skills), and how much benefit a claimant has by staying on sick leave or by returning to work quickly (barriers or support for the physician).

The relationships addressed in the TPB have often been studied with regard to physician-patient communication behaviour (see, for example, [19-21]). In line with the results of one of these reviews [20], we hypothesised that the most important constructs which explain the intentions of physicians are beliefs about their own capabilities (i.e. self-efficacy), social influence and role and identity (i.e. attitudes). Also, based on the results of several other studies [20,22], we hypothesised that the relationships between the constructs of attitudes, social influences, self-efficacy, skills, and lack of barriers on the one hand, and the constructs of intentions on the other hand, would all be positive relationships. That is, stronger attitudes, more social influence, more self-efficacy, more skills and less barriers or more support will all be related to stronger intentions.

Method

Participants and data collection

Data were collected between September 2007 and March 2008. All social insurance physicians in the Netherlands who performed work disability assessments according to the Disability Benefits Acts (i.e. approximately 400) received a postal questionnaire. Exclusion criteria were as follows: not performing assessment interviews at all (e.g.
supervisory functions, managerial functions), only performing other types of disability assessments (e.g. sickness absence certification), only performing second opinion assessments after claimants’ objections and not being employed by the Dutch Institute of Employee Benefit Schemes. Data were cross-sectional and self-reported, and written informed consent was obtained. The study protocol was approved by the Scientific Committee of the EMGO Institute for Health and Care Research of the VU University Medical Center and the Institute of Employee Benefit Schemes.

A total of 146 social insurance physicians from 25 Dutch offices (36.5% of the 400 social insurance physicians performing medical disability assessments of employees) participated. Most of them were registered as a social insurance physician (87.0%, n=127). The participants had an average working experience of 21.0 years (SD=7.2; range 7-36) as physician and 15.0 years (SD=7.4; range 1-32) as a social insurance physician.

**Measures**

The TPB provided the theoretical framework for the questionnaire, which included questions concerning attitudes, social influence, self-efficacy, skills, barriers and intentions with regard to communication with claimants and disability assessment interviews. Attitudes refer to beliefs or consistent, external evaluations (for example, how important it is for physicians to share their opinions with regard to the work capacity of the claimant, or to make sure that the claimant notices that they are willing to listen). Social influences refer to the influences of social norms and beliefs of relevant others with regard to a person’s actions (e.g. the influence of social norms at the office, other social insurance physicians or public opinion with regard to the procedure of assessment interviews). Self-efficacy refers to confidence and ability to be able to act adequately (e.g. the confidence to solve communication problems during the interview or to deal with any unexpected situations that might arise). Skills concern the ability to adopt certain behaviour (e.g. to determine the course of the interview instead of leaving this to the claimant). Barriers are potential obstructions that could prevent the occurrence of certain behaviour (e.g. incomplete files and claimants’ language problems, expectations, or former experiences). Intentions are the willingness to adopt a certain behaviour as was explained in the introduction. In line with the results of the above-mentioned Ong et al.’s review [4], and based on a Dutch study of assessment interviews performed by social insurance physicians [23], the following three constructs of intentions were conceptualised: (1) intentions with regard to the interpersonal relationship, referred to as the intention to inform carefully; (2) intentions concerning exchange of information with regard to work aspects, referred to as the intention to take aspects of the working situation into consideration and (3) intentions concerning exchange of information with regard to claimant aspects, referred to as the intention to take the personal aspects of claimants into consideration. These three constructs of intentions are successively defined as: (1) an
intention that reflects the general importance that social insurance physicians attribute to informing claimants during assessment interviews about the aims, consequences and reporting of the assessment, the laws and the role of the social insurance physician; (2) an intention that reflects the general importance in the medical assessment of characteristics of the (former) work of claimants, such as exposition to physical and mental loads, type of occupation and shift-work versus day-duties and (3) an intention that reflects the general importance in the medical assessment of certain characteristics of the claimants, such as age, level of education and cultural background. In their study concerning the aspects that physicians take into account in determining work ability, Slebus et al. [23] defined the second construct as functions and participation, and the third construct as environmental and personal factors, according to the ICF model. An overview of all measured constructs is presented in Table 3.1 and more details are provided in Appendix 3.1.

**Table 3.1**: Theoretical constructs (latent variables) and their measured aspects (observed variables), derived from the TPB, included in the questionnaire for social insurance physicians, with the number of items (#), reliability of the scales (Cronbach’s α), median of the scores (Md), mean scores, standard deviations (SD) and ranges.

<table>
<thead>
<tr>
<th>Theoretical construct [latent variables]</th>
<th>Aspects of the constructs [observed variables]</th>
<th>#</th>
<th>α</th>
<th>Md</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to inform claimants carefully</td>
<td>y1 Intention to inform claimants carefully a</td>
<td>9</td>
<td>0.77</td>
<td>3.89</td>
<td>4.01</td>
<td>0.40</td>
<td>3.11-5.00</td>
</tr>
<tr>
<td>Intention to take aspects of the working situation into consideration</td>
<td>y2 Intention to take aspects of the working situation of claimants into consideration in the assessment a</td>
<td>6</td>
<td>0.80</td>
<td>3.33</td>
<td>3.25</td>
<td>0.60</td>
<td>1.50-4.83</td>
</tr>
<tr>
<td>Intention to take the personal aspects into consideration</td>
<td>y3 Intention to take the personal aspects of the claimant into consideration in the assessment a</td>
<td>8</td>
<td>0.82</td>
<td>3.00</td>
<td>2.99</td>
<td>0.52</td>
<td>1.13-4.25</td>
</tr>
<tr>
<td>Attitudes</td>
<td>x1 Attitude with regard to assisting claimants and finding solutions with regard to work disabilities (result-directed attitude) a</td>
<td>8</td>
<td>0.67</td>
<td>4.13</td>
<td>4.18</td>
<td>0.37</td>
<td>2.88-5.00</td>
</tr>
<tr>
<td></td>
<td>x2 Attitude with regard to the own profession of social insurance physician; work engagement b</td>
<td>9</td>
<td>0.92</td>
<td>4.44</td>
<td>4.49</td>
<td>1.21</td>
<td>1.56-7.00</td>
</tr>
</tbody>
</table>
Participants answered the questions on a (4- to 7-point) Likert scale, with different anchor points depending on the questions (e.g. ‘not at all important’ to ‘very important’, ‘totally disagree’ to ‘totally agree’). Most of the questions were derived from pre-existing questionnaires. Scales were only included if Cronbach’s Alpha was equal to or larger than 0.6. For all variables a higher score indicated a stronger construct, and a lower score indicated a weaker construct. One or more of the scales together formed the underlying theoretical constructs of the TPB (i.e. the latent variables). Because we had to adjust items to fit into the context of social insurance medicine, we pilot-tested the entire questionnaire, including adjusted items, for length, comprehensibility and relevance. On average, the participants were able to complete the final questionnaire in approximately 30 min (SD=9.1, range 15-60), according to self-reports in an open-ended question at the end of the questionnaire.

Table 3.1 (continued)

<table>
<thead>
<tr>
<th>Theoretical construct [latent variables]</th>
<th>Aspects of the constructs [observed variables]</th>
<th>#</th>
<th>α</th>
<th>Md</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social influence</td>
<td>Influence on communication of one’s social environment⁷</td>
<td>4</td>
<td>0.72</td>
<td>2.25</td>
<td>2.40</td>
<td>0.61</td>
<td>1.00-4.25</td>
</tr>
<tr>
<td></td>
<td>Influence on work satisfaction of one’s social environment⁷</td>
<td>4</td>
<td>0.69</td>
<td>3.00</td>
<td>2.90</td>
<td>0.74</td>
<td>1.00-4.50</td>
</tr>
<tr>
<td></td>
<td>Social influence of direct colleagues⁶</td>
<td>4</td>
<td>0.86</td>
<td>2.75</td>
<td>2.79</td>
<td>0.74</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Self-efficacy about communication with claimants²</td>
<td>10</td>
<td>0.87</td>
<td>3.40</td>
<td>3.38</td>
<td>0.39</td>
<td>2.50-4.00</td>
</tr>
<tr>
<td>Skills</td>
<td>Skills concerning communication with claimants²</td>
<td>7</td>
<td>0.69</td>
<td>4.00</td>
<td>4.06</td>
<td>0.48</td>
<td>2.86-5.00</td>
</tr>
<tr>
<td>Barriers and support</td>
<td>Barriers as a result of claimants’ background¹</td>
<td>7</td>
<td>0.76</td>
<td>2.71</td>
<td>2.70</td>
<td>0.61</td>
<td>1.43-4.43</td>
</tr>
<tr>
<td></td>
<td>Barriers as a result of expectations and the people present at an assessment interview¹</td>
<td>5</td>
<td>0.73</td>
<td>1.60</td>
<td>1.63</td>
<td>0.53</td>
<td>1.00-4.00</td>
</tr>
<tr>
<td></td>
<td>Barriers as a result of claimants’ (direct or indirect) former experiences with the assessment institute¹</td>
<td>3</td>
<td>0.89</td>
<td>2.00</td>
<td>2.41</td>
<td>0.92</td>
<td>1.00-4.67</td>
</tr>
<tr>
<td></td>
<td>Social support the social insurance physician experiences¹</td>
<td>4</td>
<td>0.63</td>
<td>1.75</td>
<td>1.75</td>
<td>0.54</td>
<td>1.00-3.50</td>
</tr>
</tbody>
</table>

⁷ Croon and Langius [24]; ² UWES: Utrecht Work Engagement Scale [25,26]; ³ Scale ‘Relative position’ [27]; ⁴ General Self-Efficacy Scale [28,29]; ⁵ Pearlin Mastery Scale [30]; ¹ Questions formulated by ourselves based on a report of the Dutch Association of Social Insurance Medicine [31].
Analysis

Attitudes, social influence, self-efficacy, skills and barriers (the independent variables) were related to the three aspects of intentions (the dependent variables), by means of structural equation modelling with the statistical package for analysing linear structural relationships (LISREL 8.72) [32]. Because some observed variables were somewhat skewed, the analysis was performed with normal scores. For fitting the model, the maximum likelihood estimation procedure was used to analyse the covariance matrices of the normalised data of the scales. Several alternative models were tested. The fitting process was based on inspection of the measurement models and accompanying values, the ‘modification indices’ provided by LISREL, and other LISREL output. We defined the best fitting model as the most parsimonious model. The pathways of main interest (indicated by arrows in Figure 3.1) were directed from the latent independent variables of attitudes, social influence, self-efficacy, skills and barriers, to the latent dependent variables of intention to inform carefully, intention to take aspects of the working situation of claimants into consideration, and the intention to take the personal aspects of claimants into consideration (for observed x variables and y variables see Table 3.1).
Determinants of physician behaviour

take aspects of the working situation into consideration and intention to take personal
aspects into consideration. Figure 3.1 shows the conceptual model of these
hypothesised pathways.

The analyses were performed in two steps. Firstly, the best fitting model was
determined with all direct relationships between the dependent and the independent
latent variables free. Secondly, the at least as well fitting model was determined, but
with the minimum number of direct effects of the independent variables on the
dependent variables. We investigated whether or not the data fitted the model, by
inspecting the fit indices. The following measures for goodness-of-fit were used (based
on recommendations made by Hooper et al. [33]): Chi-square, Root Mean Square
Error of Approximation (RMSEA) with 90% confidence interval (CI), Comparative Fit
Index (CFI), and Standardised Root Mean Square Residuals (SRMR). CFI is less sensitive
to sample size than other fit indices. The model fit was considered to be good if CFI
was equal to or greater than 0.95, the RMSEA and RMSR were less than 0.05, and the
90% CI of RMSEA was between 0 and 0.08. Chi-square should be less than twice the
number of degrees of freedom for a properly fitting model.

Results
Participants
Because there were no data to perform a complete non-response analysis, we studied
whether the group of participants (n=146) was a representative sample of the total
population of social insurance physicians working for the Dutch Institute of Employee
Benefit Schemes (N=approximately 900) with regard to age, gender and working
hours per week. The mean age of the participants was 49.3 years (95% CI=[48.5; 50.5]), 60 (41.1%) were female, and they worked for 33.7 hours per week (95% CI=[32.5; 34.9]). The mean age of the total population of social insurance physicians
was 49 years (distribution measures could not be calculated), 41.7% was female, and
they worked for 32 hours per week (95% CI could not be calculated).

The study participants and the total population of social insurance physicians
did not differ significantly with regard to mean age or gender. Although the average
number of hours the total population worked per week was not within the 95% CI of
the number of hours the participants worked, the difference was so small that the CI of
the total population would presumably overlap that of the participants (it was not
possible to calculate the CI of the total population from the available data). Moreover,
the mean difference between the number of hours that the participants and the total
population worked was small, and did not seem to be relevant (i.e. 1.7 hours).

Starting model and adaptations
The model with which we started our analysis is presented in Figure 3.1. Because the
model did not converge, the estimates of the goodness-of-fit indices and the direct
effects were unreliable. Moreover, there were various reasons for the inadequacy of the model (e.g. a positive definite psi matrix, high standardised error variances), and for these reasons, modifications had to be made to the initial model. The most important indications from the LISREL outputs that seemed to be reasonable were: (1) to combine the two variables that independently indicated the constructs of self-efficacy and skills, as measured in our study, to indicate one theoretical construct; (2) to change the status of the correlation between the errors of intentions $y_2$ and $y_3$ to free instead of fixed at zero; (3) to successively remove the variables ‘social influence of direct colleagues’ ($x_5$) and ‘social support’ ($x_{11}$) from the model and (4) to specify several relationships of the error the observed $x$ variables as free instead of fixed at zero. The standard LISREL output also recommended specifying relationships between the error variances of the observed independent $x$ variables and the dependent $y$ variables as free. However, these recommendations were ignored, because such a modification was not supported by the theoretical framework and – more importantly – we were interested in the direct (not indirect) effects of the independent on the dependent latent variables. The subsequent adaptations of the model (according to indications 1-4) resulted in the ‘in-between model’ in which all direct relationships between the independent and the dependent latent variables were still free (fit indices are presented in Table 3.4).

Figure 3.2: Conceptual diagram of the final model with accompanying pathways, with the latent variables attitudes, social influences, self-efficacy, barriers, the intention to inform claimants carefully, the intention to take aspects of the working situation of claimants into consideration in the assessment, and the intention to take the personal aspects of claimants into consideration in the assessment (for observed $x$ variables and $y$ variables see Table 3.1).
The final model

The resulting ‘in-between model’ was used as a basis for further investigation of the direct effect of the independent variables on the dependent latent variables (i.e. the effect of attitudes, social influence, self-efficacy, skills and barriers on the three intentions). Based on the strengths of the direct effects (standardised solutions), and the corresponding t-values that indicate the significance of the effects, the number of direct relationships between the independent and dependent latent variables specified as free was reduced by fixing several of them at zero. This continued until the final, most parsimonious model was found (i.e. the model that fitted minimally as good as the ‘in-between model’, but had a minimum number of direct effects of the independent variables on the dependent variables). The conceptual diagram of this final model is presented in Figure 3.2. The corresponding parameter estimates are

Table 3.2: Standardised estimates of the final model presented in Figure 3.2.

<table>
<thead>
<tr>
<th>Latent variable</th>
<th>Intention to inform claimants carefully</th>
<th>Intention to take aspects of the working situation into consideration</th>
<th>Intention to take personal aspects into consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes</td>
<td>0.48**</td>
<td></td>
<td>0.53**</td>
</tr>
<tr>
<td>Social influences</td>
<td>0.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.20**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barriers</td>
<td>0.46*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Empty boxes indicate the parameter was fixed at zero; ** p<0.05; * p<0.10.

Table 3.3: The final model’s standardised coefficients and errors for the effects of the latent variables on the observed indicator variables.

<table>
<thead>
<tr>
<th>Latent variable</th>
<th>Indicator variable</th>
<th>Standardised coefficient</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes</td>
<td>x1, x2</td>
<td>0.42</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.55</td>
<td>0.70</td>
</tr>
<tr>
<td>Social influence</td>
<td>x3, x4, x5</td>
<td>0.40</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.92</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(removed)</td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>x6, x7</td>
<td>0.87</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.66</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>x8, x9, x10, x11</td>
<td>0.48</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.76</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.49</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(removed)</td>
<td></td>
</tr>
<tr>
<td>Intention to inform carefully</td>
<td>y1</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Intention to take aspects of the working situation into consideration</td>
<td>y2</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Intention to take the personal aspects into consideration</td>
<td>y3</td>
<td>1.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Chapter 3

presented in Tables 3.2 and 3.3. Table 3.4 shows the goodness-of-fit indices of the starting model, the ‘in-between model’ (with all direct effects between the independent and dependent latent variables specified as free), and the final model. The goodness-of-fit indices of the final model indicated that the model was properly fitted: the value of RMSEA was less than 0.05 (RMSEA=0.025), with the CI within the appropriate range (90% CI=[0.0; 0.064]), the CFI exceeded 0.95 (CFI=0.99), and the SRMR was just above the upper limit of 0.05 (SRMR=0.050).

All but two of the remaining relationships of the independent variables with the dependent latent variables in the final model contributed significantly (p<0.05) to the final model. These relationships concerned the effects of: attitudes and social influences on the intention to inform claimants carefully, self-efficacy on the intention to take aspects of the working situation into consideration in the communication with claimants and attitudes on the intention to take the personal aspects of claimants into consideration in the communication during the assessment interview. All these were positive relationships, two of which showed a more substantial effect than the others: the effect of attitudes on the intention to inform carefully (0.48; p<0.05) and the effect of attitudes on the intention to take the personal aspects of claimants into consideration (0.53; p<0.05). The third relationship, i.e. the effect of self-efficacy on the intention to take aspects of the working situation into consideration, had a value of 0.20 (p<0.05).

Discussion

Main findings

The objective of this study was to determine which constructs of the following: intentions, attitudes, social influence, self-efficacy, skills and barriers for social insurance physicians, contributed the most in determining intentions with regard to communication with claimants in disability assessment interviews. The results showed that the TPB could be applied to describe the influences on the intentions of social insurance physicians in their communication with claimant. We found significant direct effects, of meaningful size, of attitudes on the intention to inform claimants carefully, and on the intention to take the personal aspects of claimants into consideration.

Table 3.4: Test statistics and goodness-of-fit indices for the theoretical starting model (which could not be fitted; the model did not converge), the ‘in-between model’ with all direct relationships between the independent and dependent latent variables still free, and the final model (n=146).

<table>
<thead>
<tr>
<th></th>
<th>Chi-square</th>
<th>df</th>
<th>p-value</th>
<th>RMSEA [90% CI]</th>
<th>CFI</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-between model</td>
<td>40.02</td>
<td>33</td>
<td>0.19</td>
<td>0.039 [0.0; 0.076]</td>
<td>0.98</td>
<td>0.049</td>
</tr>
<tr>
<td>Final model</td>
<td>43.47</td>
<td>40</td>
<td>0.33</td>
<td>0.025 [0.0; 0.064]</td>
<td>0.99</td>
<td>0.050</td>
</tr>
</tbody>
</table>

* The model did not converge.
Findings in relation to other studies

Our results are in line with those reported by Hagger and Chatzisarantis, who tested two models comparable to ours, in which the observed variables were global variables that consisted of multiple items. Analogous to our results, the correlations of intentions with attitudes were the highest. Correlations with self-efficacy and social influence were lower, except for the direct effect of self-efficacy on intention in one of the two models [34]. In our study, self-efficacy had a significant, but rather small, direct effect on intentions.

The results showed that attitudes and barriers were strongly related to intentions (although the relationship of barriers, in itself, was not significant; 0.05<p<0.10), whereas the relationships of self-efficacy and social influences with intentions were less strong, or even not significant. In terms of the assessment interview, these results indicate that the way in which physicians intend to communicate with claimants is mostly determined by their beliefs and by barriers, but less by confidence about their own communicative capabilities, and hardly at all by the opinions of other people. The results of other studies also showed the importance of attitudes. For example, it was found that physicians with a more respectful attitude gave patients more information, and showed more positive affect with some types of patients [35]. Other researchers have argued that the most important communication barriers for physicians, with regard to fertility preservation among cancer patients, were their knowledge, attitudes and skills [36]. The small influence of self-efficacy on intentions (compared to its influence on attitudes and barriers) could be the result of the emphasis we laid on unexpected situations and difficulties with regard to self-efficacy in our questionnaire, whereas purposefulness and what is discussed were emphasised less. If the latter aspect of self-efficacy had been taken into account more prominently, self-efficacy might have had a greater direct influence on intentions. The fact that most participants had many years of experience as a social insurance physician might explain the minimal contribution of social influence in the model: these physicians do not need confirmation from others.

The only significant direct effect on the intention to take aspects of the working situation into consideration was small, whereas effects on the other two intentions (to inform claimants carefully and to take personal aspects of the claimants into consideration) were greater. Determinants of communication behaviour thus seem to determine physicians’ intentions to create a good interpersonal relationship and intentions to exchange information with regard to claimant characteristics more strongly, than their intentions to exchange information with regard to work.

Strengths and limitations of the study

We recruited 146 social insurance physicians, which was a lower response rate than we had expected (i.e. 36.5% of the social insurance physicians we approached participated). Because comparison of data from the participants with data from the
total population showed no meaningful differences with regard to the available variables, and explanations for non-participation were logical, we believe that the biases that resulted were minimal, and that the results can therefore be generalised to all social insurance physicians who perform medical disability assessment interviews. However, some bias probably did occur in the selection of physicians who were interested in research in general, and in communication processes. Therefore, care is required in the interpretation of the results for future research.

The relationships between the dependent variables and the independent variables were studied with LISREL structural equation modelling [32]. Structural equation modelling, or path analysis, is especially useful in non-experimental research designs, because with this method it is possible to specify causal relationships derived from cross-sectional data when no longitudinal data are available. However, in order to be able to draw definite conclusions about the direction of causal relationships between variables, longitudinal data are needed. The fact that in this study only cross-sectional data were available could therefore be considered as a weakness, despite the fact that structural equation modelling is suitable for analysing such data in this way. Therefore, the results are tentative to a certain degree. Moreover, it is recommended that longitudinal data are used to study the effects of intentions on actual behaviour.

Although LISREL provides the researcher with suggestions on how to adapt the model to make a proper fit, in order to test a theoretical model, and not just explore the paths that could be fitted with the data, it is necessary to make only theoretically sound adjustments. Therefore, we decided not to act upon the LISREL suggestions indicating that relationships between errors of observed x variables and observed y variables should be specified as free. If we had followed this suggestion, this would have led to a marginally better fitting model, as indicated by the goodness-of-fit indices, but it would not have resulted in a completely different final model. This implies that the fitted final model was, indeed, a stable model.

During the fitting process, we decided to combine skills and self-efficacy into one construct of self-efficacy. Initially, this might not seem to be an obvious choice, and it could be argued that this choice contradicts the theoretical model. However, based on the LISREL suggestion to make this adaptation, inspection of the questions that indicated the construct of skills made clear that perhaps the questions had not really measured skills, and that what we had named skills was more of a conceptualisation of self-efficacy. It can, therefore, be concluded that we were unable to measure skills that concern communication by means of a self-report questionnaire. This should be considered as a weakness of the questionnaire method and the questions we used (although others, for example [24], were able to reliably measure physicians’ communication skills with a self-report questionnaire).
Implications for practice

This study was performed in order to find empirical support for a previously described framework based on theoretical findings, and findings in other medical disciplines [18]. Because the cross-sectional data of social insurance physicians did, indeed, confirm the utility of the relationships the TPB proposes, it can be used as input in our planned development of a communication skills training course for social insurance physicians. The results showed that attitudes were related to two of the intentions, whereas (to a lesser degree) self-efficacy was only related to one of the intentions. Based on these results, we recommend that a communication skills training course should focus on professional attitudes with regard to communication, as well as on the self-efficacy of social insurance physicians, in order to influence instrumental intentions in the communication with claimants (in this study: intentions to take the personal and working aspects of the claimants into account). To influence affectively-oriented intentions (in this study: intentions to inform claimants carefully), attitudes would seem to be the most promising focus. With regard to opportunities to change communication behaviour by means of a training course, this implies that in order to change intentions about work characteristics, constructs other than the measured determinants should also be addressed, such as available information and claimant characteristics. Moreover, to achieve change in communication behaviour during assessment interviews, intentions to inform claimants carefully and to take their personal aspects into consideration seem to be a more promising target, because we have more insight into the determinants.

Although attitudes can be rather firm, it has been shown that attitudes may be changed by communication skills training. For example, the randomised controlled trial of Fallowfield and co-workers [37-40] measured attitudes of 160 oncologists using questionnaires with Likert scales. The results – from both objective recordings and self-reports – showed significant improvements 3 months after the training in attitudes and beliefs towards the importance of psychosocial issues compared to controls. They concluded: ‘Our results show that a communication skills training intervention using behavioural, cognitive, and affective components not only increases potentially beneficial and more effective interviewing styles but can also alter attitudes and beliefs, thus increasing the likelihood that such skills will be used in the clinical setting’ (p. 765, [40]). Altiner et al. [41] provided another example. They studied an intervention aiming at motivation of physicians to change their attitudes with regard to communication related to prescribing antibiotics, and they concluded that, although complex, it is realistic to do this.

To increase insight into the way in which social insurance physicians communicate with claimants, this study focused on determinants of communication behaviour of physicians, and not directly on their communication behaviour. Behaviour was not measured, and therefore not included in the model. However, in the development of communication skills training it is also important to take behaviour
into account, preferably measured subsequently (and not at the same moment as intentions). This effect of intentions with regard to communication behaviour on actual communication behaviour should be addressed in future studies. Because, for example, the results of the Eccles et al.’s review [42] showed that the intentions of health care professionals correspond to their subsequent self-reported behaviour, and not to observed behaviour, and the Armitage and Connor review [19] yielded similar results (with better predictions of self-reported behaviour than observed behaviour), it is important to choose an appropriate training focus. Physicians’ perceptions of communication behaviour could presumably be changed more easily by addressing the determinants included in this study, than their actual (observed) behaviour could be changed.

Conclusions
In conclusion, empirical support was found to confirm that a model analogous to the TPB could describe intentions with regard to communication procedures in social insurance medicine. The intention to inform claimants carefully and the intention to take the personal aspects of claimants into consideration during medical disability assessment interviews contributed meaningfully to the total model. These intentions were mainly determined by the physicians’ attitude to their own profession and (to a slightly lesser degree) their attitude with regard to assisting claimants in finding solutions for work disabilities. Therefore, attitudes may be a promising focus of communication skills training for physicians when the aim is to change determinants of communication behaviour.

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References


### Appendix 3.1: List of the questions on the questionnaires sent to the social insurance physicians (translated from Dutch).

<table>
<thead>
<tr>
<th>Aspects of the constructs</th>
<th>Questions</th>
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| **y1** Intention to inform claimants carefully | In your opinion, how important is informing claimants during the medical disability assessment interview about …  
1. Why claimants are assessed.  
2. Your assignment as a social insurance physician.  
3. Your role as a social insurance physician in assessing the claimant.  
4. The contents of your final report about your conclusions.  
5. The laws.  
6. Your goals during the disability assessment interview.  
7. The possible consequences of inferences/conclusions for a disability benefit.  
8. Whom the information you have is from.  
9. The inferences/conclusions of your own examination. |
| **y2** Intention to take aspects of the working situation of claimants into consideration in the assessment | In the medical assessment of claimants and the preparation of the medical disability assessment interview, how important do you think these aspects are…  
1. Exposition of claimants to a certain physical load in (former) work.  
2. Exposition of claimants to a certain mental load in (former) work.  
3. The (former) occupation of claimants.  
4. Shift work versus day duties of claimants in (former) work.  
5. Claimants’ type of contract of employment in (former) work.  
6. The way of living of claimants. |
| **y3** Intention to take the personal aspects of the claimant into consideration in the assessment | In medical disability assessments, how important are …  
1. The current length of work disability.  
2. The working history.  
3. The claimant’s age.  
4. The claimant’s level of education.  
5. The claimant’s housing conditions.  
6. The claimant’s cultural background.  
7. The claimant’s gender.  
8. The magnitude of the claimant’s (last) wages. |
| **x1** Attitude with regard to assisting claimants and finding solutions with regard to work disabilities (result-directed attitude) |  
1. A social insurance physician should express his/her opinion about the disabilities related to work.  
2. The social insurance physician should tell the claimant his/her opinion regarding the functional abilities.  
3. The claimant should notice you are willing to listen. |
### Aspects of the constructs

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<th>Construct</th>
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| **(x1)** | 4. During an assessment, the social insurance physician should reactivate claimants or encourage return to work.  
5. It is important to aim at complete understanding in the problems regarding the claim the claimant brings up.  
6. Discussing return to work (to that degree a person is capable to) is important in assessment interviews.  
7. When a claimant asks for support to return to work, a social insurance physician should answer to this.  
8. A social insurance physicians should contribute to recovery/ recovery behaviour of claimants. |
| **x2** | At my work, I feel bursting with energy.  
2. At my job, I feel strong and vigorous.  
3. I am enthusiastic about my job.  
4. My job inspires me.  
5. When I get up in the morning, I feel like going to work.  
6. I feel happy when I am working intensely.  
7. I am proud of the work that I do.  
8. I am immersed in my work.  
9. I get carried away when I’m working. |
| **x3** | To what extend are these institutions of influence on your interaction with claimants…  
1. The Institute of Employee Benefit Schemes.  
2. Social norms at your office.  
3. Other social insurance physicians.  
4. Public opinion. |
| **x4** | To what extend does the opinion of these institutions regarding working as a social insurance physician, influence the extend to which you enjoy your job…  
1. The Institute of Employee Benefit Schemes.  
2. Social norms at your office.  
3. Other social insurance physicians.  
4. Public opinion. |
| **x5** | To what extend do you care about colleagues’ opinion regarding the course of medical disability assessment interviews, of colleagues who have …  
1. More knowledge about a certain domain than yourself.  
2. More skills in a certain domain than yourself.  
3. More experience than yourself.  
4. A higher rank within the organisation than yourself. |
| **x6** | 1. I can always manage to solve difficult problems in interacting with claimants, if I try hard enough.  
2. If claimants oppose me, I can find the means and ways to get what I want of them.  
3. It is easy for me to stick to my aims of the disability |
### Aspects of the constructs | Questions
--- | ---
(x6) | assessment interview and accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events during assessment interviews.
5. Thanks to my resourcefulness, I know how to handle unforeseen situations during assessment interviews.
6. I can solve most problems during assessment interviews if I invest the necessary effort.
7. I can remain calm when facing difficulties during assessment interviews.
8. When I am confronted with a problem during assessment interviews, I can usually find several solutions.
9. If I get in trouble during assessment interviews, I can usually think of a solution.
10. I can usually handle whatever comes my way during assessment interviews.

x7 | Skills concerning communication with claimants
--- | ---
1. I have little control over the things that happen to me in the interaction during assessment interviews.
2. There is really no way I can solve some of the problems I have during assessment interviews.
3. There is little I can do to change many of the important things during assessment interviews.
4. I often feel helpless in dealing with problems during assessment interviews.
5. Sometimes I feel I am being pushed around by claimants, regarding what is discussed during assessment interviews.
6. I can find out just about anything I really need to know for a medical disability assessment.
7. What happens to me in the interaction with claimants mostly depends on me.

x8 | Barriers as a result of claimants’ background
--- | ---
During assessment interviews, to what extend do you feel hindered by…
1. Claimants with a minimal competence of the Dutch language.
2. Claimants with language problems.
3. Partners or family members of claimants who act as interpreter/translator.
4. Being forced to bring in a professional interpreter/translator.
5. A non-Dutch cultural background of claimants.
6. Missing or incomplete files.
7. A low level of education or no education of claimants.

x9 | Barriers as a result of expectations and the people present at an assessment interview
--- | ---
During assessment interviews, to what extend do you feel hindered by…
1. The presence of a third person brought along by the claimant, such as a union member.
2. The presence of a third person with whom the
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| (x9) | claimant has a personal relationship, such as a partner or family member.  
3. The presence of a third person by your own invitation, such as a trainee of colleague.  
4. Expectations of claimants about your judgement regarding work capacity.  
5. Your own expectations about the claimant. |
| x10 | Barriers as a result of claimants’ (direct or indirect) former experiences with the assessment institute | During assessment interviews, to what extend do you feel hindered by…  
1. (Negative) experiences of claimants in former contact with the benefit providing institute.  
2. (Negative) experiences of claimants in former disability assessments.  
3. (Negative) notions of claimants regarding the benefit providing institute, for example originating from newspapers or television. |
| x11 | Social support the social insurance physician experiences | During assessment interviews, to what extend do you feel supported by…  
1. The presence of a third person brought along by the claimant, such as a union member.  
2. The presence of a third person with whom the claimant has a personal relationship, such as a partner or family member.  
3. The presence of a third person by your own invitation, such as a trainee of colleague.  
4. A high level of education of claimants. |