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Informal interpreting in general practice: Are interpreters' roles related to perceived control, trust, and satisfaction?

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ABSTRACT

Objective: The aim of this observational study was twofold. First, we examined how often and which roles informal interpreters performed during consultations between Turkish-Dutch migrant patients and general practitioners (GPs). Second, relations between these roles and patients' and GPs' perceived control, trust in informal interpreters and satisfaction with the consultation were assessed.
Methods: A coding instrument was developed to quantitatively code informal interpreters' roles from transcripts of 84 audio-recorded interpreter-mediated consultations in general practice. Patients' and GPs' perceived control, trust and satisfaction were assessed in a post consultation questionnaire.
Results: Informal interpreters most often performed the conduit role (almost 25% of all coded utterances), and also frequently acted as replacers and excluders of patients and GPs by asking and answering questions on their own behalf, and by ignoring and omitting patients' and GPs' utterances. The role of information source was negatively related to patients' trust and the role of GP excluder was negatively related to patients' perceived control.
Conclusion: Patients and GPs are possibly insufficiently aware of the performed roles of informal interpreters, as these were barely related to patients' and GPs' perceived trust, control and satisfaction.
Practice implications: Patients and GPs should be educated about the possible negative consequences of informal interpreting.

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1. Introduction

Informal interpreters are frequently used in medical settings to bridge the language gap between health providers and migrant patients [1]. In Dutch general practice (GP), informal interpreters, who are usually family and friends of the patients, are present in circa 60% of consultations with first generation migrant patients [2]. In contrast to their professional counterparts, who are expected to perform the conduit role (but often deviate from this role, see, for instance [3]), that is, literally translating information from one language into another [4], informal interpreters also perform other roles within the medical interaction.

Previous qualitative studies have shown that informal interpreters often are reported to act as patients' advocates [5], counselors [6], and cultural brokers [7] (see Table 2 for definitions of the roles). They also provide emotional support to the patients [8], and act as extra information source for health providers [9]. In contrast to these facilitating roles, informal interpreters are also reported to act as replacers and excluders of patients [10,11], and health providers [12]. The mentioned roles are usually investigated via qualitative interviews with the three interlocutors (health provider, patient and informal interpreter), discussing expected and perceived roles of informal interpreters (e.g. [13–16]).

A few previous observational studies have also investigated the communicative behavior of informal interpreters, for instance by coding omissions, additions and ignoring of patients' and health providers' utterances [17,18]. However, to our knowledge no studies exist which have observationally investigated the specific roles mentioned in self-report literature, that is, advocate, information source, counselor, emotional supporter, cultural broker, conduit, system agent and patients' and GPs' excluder and replacer. To enlarge our understanding about to what extent informal interpreters actually perform these roles and how these might be related to communication outcomes, we conducted a quantitative observational study to measure performed roles of informal interpreters.

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As previous research on performed interpreter roles is mainly qualitative [19], there are no studies which have related the different performed interpreters' roles to three potential communication outcomes, that is, perceived control of the consultation, trust in the interpreter and satisfaction of patients and GPs with the consultation. These outcomes are known to be important factors of interpreted medical communication [19], because they are related to patients' improved health outcomes [20]. Linking the different roles to these communication outcomes will provide us with valuable insights about the possible effects of the different roles of informal interpreters on communication outcomes and could be used in designing evidence-based interventions to improve interpreter-mediated interactions.

In sum, we have conducted a mixed-methods study in which we coded different interpreters' roles based on audio-recordings of GP consultations with Turkish migrant patients and informal interpreters. Because of the observational design of this study and use of audiotapes, we have only coded verbal communicative aspects of interpreters' roles. Other elements within the concept of role (e.g. gestures, symbols, pre-consultation preparations), as originally being conceptualized by Goffman [21], were beyond the scope of this study. The roles were subsequently related to GPs' and patients' perceived control of the consultation, trust in the interpreter and satisfaction with the consultation, which were assessed in a post-consultation survey. Hence, the following RQs will be answered in this paper:

RQ1: Which roles do informal interpreters perform during the GP consultation?

RQ2: Are the roles of informal interpreters related to patients' and GPs' perceived control of the consultation, trust in the informal interpreter and satisfaction with the consultation?

2. Method

2.1. Participants and procedure

This study is part of a larger research project on informal interpreting in general practice. Results of previous studies have been reported elsewhere [16,22,23]. In the present study we describe the observational findings and their relation with outcomes.

Twelve Turkish-Dutch research assistants have collected data in six GP practices from November 2015 to May 2016. The research assistants have approached all patients of Turkish origin who visited the GP in the company of another person in the waiting room of the GP practice. Inclusion criteria were that the patient is of Turkish origin, above 18 years and visits the GP with an informal interpreter who is a family member or acquaintance of the patient. Of the 237 approached patient-interpreter pairs, 126 pairs agreed to participate, thus a response rate of 53% was obtained, which is in line with previous findings [24,25]. Reasons for declining to participate were privacy issues ($n = 55$), too little time ($n = 26$), no interest in the study ($n = 21$) or unknown reason ($n = 9$). We had to exclude 42 pairs from analysis due to different reasons, such as failed audio recordings or incomplete surveys (see Fig. 1 for the flow chart of the sampling procedure). The final sample consisted

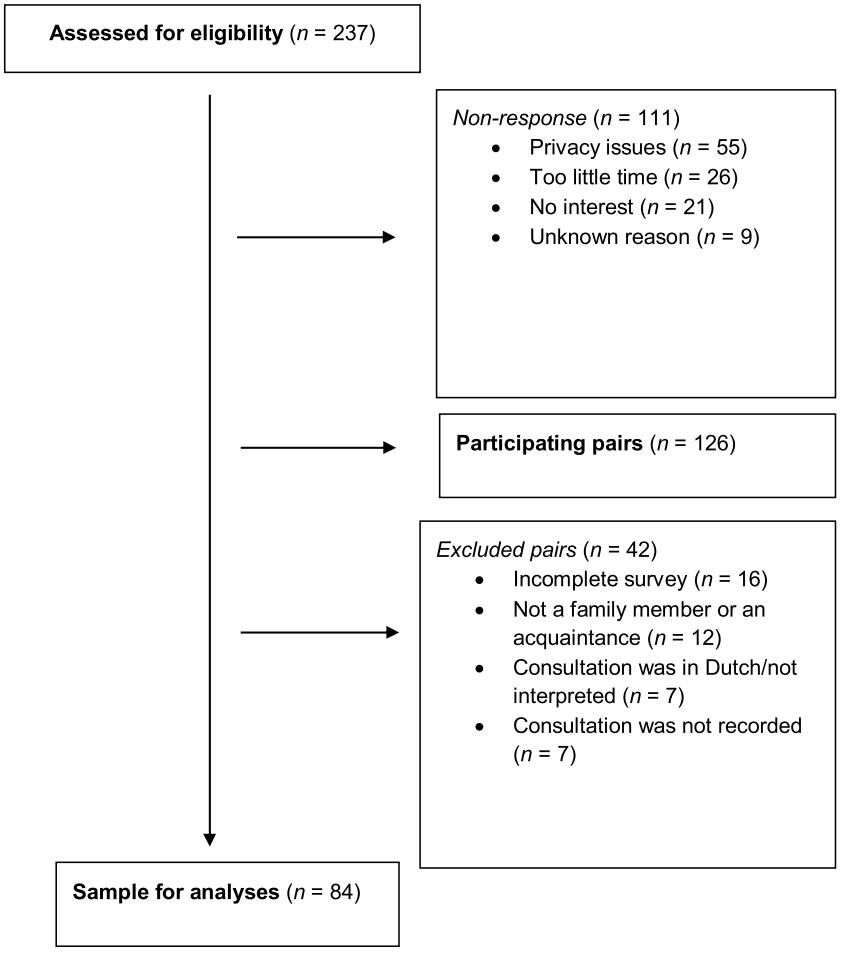

Fig. 1. Flow Chart of the Sampling Procedure.

Table 1
Sample Characteristics.

Sample Characteristics	Patients ($N = 84$)	Interpreters ($N = 84$)	GPs ($N = 26$)
Gender			
Men	19 (21%)	37 (44%)	7 (27%)
Women	65 (79%)	47 (56%)	19 (73%)
Age M (SD)	59.53 (*13.49*)	39.57 (*12.53*)	47.54 (*11.27*)
Educational level			
No education	25 (30%)	0 (0%)	0 (0%)
Primary school	46 (55%)	13 (16%)	0 (0%)
High school	12 (14%)	12 (14%)	0 (0%)
Intermediate vocational education	1 (1%)	44 (52%)	0 (0%)
Higher professional education	0 (0%)	14 (17%)	0 (0%)
Academic education	0 (0%)	1 (1%)	26 (100%)
Dutch language proficiency			
Poor	48 (57%)	0 (0%)	
Moderate	31 (37%)	9 (11%)	
Reasonable	3 (4%)	23 (27%)	
Good	2 (2%)	32 (38%)	
Very good	0 (0%)	20 (24%)	
Residence time in the Netherlands			
Born in the Netherlands	0%	29 (35%)	
Mean residence time in years (*SD*)	31.96 (*11.67*)	31.65 (*8.55*)	
Interpreter's relation to the patient			
Daughter	32 (38%)		
Son	15 (18%)		
Spouse	24 (29%)		
Grandchild	4 (5%)		
Other family member	4 (5%)		
Friend of the patient	5 (6%)		

of 84 patient-informal interpreter pairs who visited 26 different GPs (see Table 1 for the sample characteristics). All participants (patients, informal interpreters, and GPs) have given their written informed consent to the study. The study has been approved by the Ethical Commission of our University (number 2015-CW-71).

Demographic characteristics of all participants (i.e., patients, GPs and informal interpreters) were assessed before the start of the consultation. The consultation itself was recorded on audio. The research assistants handed over the recorder to the GP just before the start of the consultation and were not present in the consultation room. The GPs answered the post-consultation survey in their office after the patient left. The patients and informal interpreters answered the post-consultation survey in the waiting room of the GP practice. The informal interpreters filled in the paper and pencil questionnaires themselves in either Turkish or Dutch, while the patients' questionnaire was delivered orally in Turkish by the research assistants, as most patients were illiterate.

2.2. Survey measurements

Separate post-consultation surveys were constructed for patients and GPs to measure their perceived control of the consultation, trust in the informal interpreter and satisfaction with the consultation. The patient survey was translated into Turkish by a professional translation service and double-checked by two Turkish-Dutch research assistants. All questionnaires have been pilot tested among patients and GPs during a pilot-testing week in a GP practice to ensure respondents understood all items. Based on this pilot test, we have reformulated a few questions of the patients' questionnaire to make them easier to understand. The pretest data were not included in the final dataset.

Patients' and GPs' perceived control was measured with three items on a five point scale: "To what extent did the person who came with you to interpret, facilitate or hinder 1) the communication, 2) reaching your goal, 3) relationship building with your doctor?" (patients' version of the questionnaire). Answers had to be given on a scale ranging from (1) *totally hindered* to (5) *totally facilitated*, which all loaded on one factor that proved to be reliable for both patients' perceived control ($EV = 2.02$; $R^2 = .67$; $\alpha = .75$) and GPs' perceived control ($EV = 1.99$; $R^2 = .66$; $\alpha = .73$). Thus, we have created scales of patients' ($M = 4.53$, $SD = .75$) and GPs' perceived control ($M = 3.89$, $SD = .63$) by calculating mean scores.

Patients' and GPs' trust in the interpreter was assessed with four items on a four point scale, ranging from (1) *totally disagree* to (4) *totally agree,* each measuring another dimension of trust: competence, fidelity, honesty and global trust (based on Hall et al., 2001 [26]). Competence was assessed with: "I trust that the interpreter has provided a correct translation and did not make translation mistakes". Fidelity was assessed with: "I trust that the interpreter acted in my best interests". Honesty with: "I trust that the interpreter was honest and did not disguise information" and global trust with: "I completely trust the interpreter". Based on factor analysis, the four dimensions were split into an affective and cognitive component. Fidelity, honesty and global trust all loaded on one factor and proved to be reliable for both patients' trust ($EV = 1.93$; $R^2 = .64$; $\alpha = .64$; $M = 3.92$, $SD = .22$) and GPs' trust ($EV = 2.14$; $R^2 = .71$; $\alpha = .75$; $M = 3.08$, $SD = .78$), forming the affective component of trust. The competence dimension did not form a scale with the items of the affective dimension and was analyzed as a separate item, forming the cognitive component of patients' ($M = 3.60$, $SD = .81$) and GPs' trust ($M = 3.02$, $SD = .98$).

Patients' ($M = 3.57$, $SD = .62$) and GPs' satisfaction ($M = 3.09$, $SD = .74$) was measured with a single item on a four point scale (1)

totally not satisfied to (4) *totally satisfied,* as follows: "To what extent are you satisfied with the consultation?".

2.3. Coding procedure of observational data

All audiotaped consultations were transcribed verbatim by the first author. Turkish-Dutch research assistants have translated the Turkish parts of the consultations in Dutch; translations were double-checked by other Turkish-Dutch research assistants and a few different visions on the translation were solved by discussion. All coding was done based on both transcripts and audiotapes to account for paralinguistic and contextual cues, such as tone of voice and minimal responses. A first version of the coding-manual was developed based on previous literature [19,27]. In order to probe the coding manual, the first author (RZ) and second author (BS) have individually coded several randomly selected consultations and discussed and adapted the manual until the final version. All interpreters' utterances were coded, which fitted in one of the following roles: conduit, advocate, information source, emotional supporter, cultural broker, counselor, system agent, patient replacer, GP replacer, patient excluder, GP excluder (see Table 2 for operationalizations of the roles).

We define an utterance as the smallest discernable segment of speech that conveys only one thought or relates to one item of

Table 2
Definitions and Operationalizations of Informal Interpreters' Roles.

Role	Definition	Operationalization (n) = total number of utterances per operationalization
1. Conduit	Interpreter translates without adding or omitting information	a Literally translates what is being said, does not add or omit anything ($n = 45$) b Provides a paraphrasing of what is being said, without adding or omitting information ($n = 786$) c Provides an incorrect translation of what is being said ($n = 108$)
2. Advocate	Interpreter does whatever is needed to reach the patient's goal	a Exaggerates the patients' complaints ($n = 102$) b Disagrees with the GP ($n = 30$) c Requests the GP to do certain things (e.g., write a prescription, examine the patient) ($n = 22$) d Adds affective information to the patient's utterance ($n = 20$)
3. Information Source	Interpreter provides additional information about the patient's health to the doctor	a Within translating the patient's utterance to the GP ($n = 102$) b Within a reaction to the GP ($n = 85$) c Incorporated in the answer to the GP's question ($n = 81$) d Within an initiation to the GP ($n = 39$)
4. Emotional Supporter	Interpreter provides emotional support to the patient	a By reacting to the patient with reassuring words ($n = 18$) b By initiating a turn to the patient with reassuring words ($n = 7$) c By adding reassuring words to the GP's utterance within a translation to the patient ($n = 5$)
5. Cultural Broker	Interpreters acts like a bridge between the patient's and the GP's world	a Provides information to the GP about the Turkish culture within an initiation or reaction ($n = 0$) b Provides information to the patient about the medical system within an initiation or reaction ($n = 9$) c Adapts GP's utterance to make it understandable for the patient within a translation ($n = 139$) d Adapts patient's utterance to make it understandable for the GP within a translation ($n = 180$)
6. Counselor	Interpreter provides medical advice to the patient	a Within a reaction to the patient ($n = 20$) b Within an initiation to the patient ($n = 14$)
7. System Agent	Interpreter acts on behalf of the system by aligning with the GP and excluding the patient's lifeworld from the interaction	a Rushing the patient within an initiation ($n = 5$) b Downplaying the patients' complaints within a translation of a patient's utterance ($n = 38$) c Omitting affective cues of the patient within a translation of a patient's utterance ($n = 11$) d Agreeing with the GP within a reaction ($n = 12$) e Disagreeing with the patient within a reaction ($n = 30$)
8. Patient Replacer	Interpreter acts like the main interlocutor by replacing the patient	a Answers the GP's questions within a reaction towards the GP ($n = 435$) b Asks questions to the GP within initiations and reactions ($n = 197$)
9. GP Replacer	Interpreter takes the place of the GP	a Requests the patients to do certain (medical) things within initiations and reactions ($n = 24$) b Asks the patient (medical) questions within initiations and reactions ($n = 210$) c Answers the patients' (medical) questions within reactions ($n = 113$) d Provides advice to the GP within initiations and reactions ($n = 8$) e Provides the patient with extra (medical) information within reactions and translations ($n = 120$)
10. Patient Excluder	Interpreter excludes the patient from the consultation	a Shutting up the patient within initiations and reactions ($n = 17$) b Omitting a patient's utterance within translations ($n = 119$) c Ignoring a patient's entire speech turn ($n = 315$)
11. GP Excluder	Interpreter excludes the GP from the consultation	a Shutting up the GP within initiations and reactions ($n = 0$) b Omitting GP's utterances within translations ($n = 235$) c Ignoring a GP's entire speech turn ($n = 191$)

interest (e.g., a question, an answer, a request). An utterance may vary in length from a single word (e.g., yes or no) to a complete sentence [28]. As we were interested in triadic communication, we excluded side-talk from coding, that is, when the interpreter exchanged more than two turns with either the patient or the provider and thus turned the triadic communication into a dyadic one [29]. We report frequencies and duration of the side-talk in the results section.

The operationalization of interpreters' roles was based on four mutually exclusive main categories, that is: translations, reactions, ignoring and initiations. Translations referred to all GPs' and patients' utterances, which were translated by informal interpreters, either literally, paraphrased or incorrect. Reactions were coded when the interpreters' utterance was a reaction towards the patient or the GP. Ignoring was coded when the patient's or GP's entire speech-turn was ignored. Initiations were coded in utterances where interpreters initiated a new topic towards the GP or patient. We did not code an initiation if it was immediately preceded by ignoring of the patient's or GP's speech-turn.

Each coded role consisted of a summation of utterances based on a main code (e.g., initiations) and a sub code (e.g., omitting, adding, exaggerating; see Table 2). For instance, the role of conduit was based on the main code 'translations' and contained utterances of the GP and the patient which were literally translated (sub code 'literal'), paraphrased without adding or omitting any information (sub code 'paraphrasing') or incorrectly translated (sub code 'incorrect') by the informal interpreter. The role of patient replacer was based on the main codes 'initiations' and 'reactions' and contained 1) questions of informal interpreters to the GP (sub code 'asking questions GP') that were either a reaction to the GP (i.e., main code 'reactions') or an initiation of a new topic (i.e., main code 'initiations'), 2) or answers to the GPs' question (sub code 'answer questions GP'; main code 'reactions'). Thus, the coded roles were based on a unique combination of a main code, (i.e., translation, initiation, reaction, or ignoring) and a sub code (e.g., literal, paraphrasing, omission, addition, request, or answer to the question) (see Table 2 for all sub codes).

RZ coded all 84 consultations based on the finalized manual. BS coded ten randomly selected consultations and inter-coder reliability was assessed for all categories >2% [30]. Intercoder-reliability was good (M_{ICC} = .89; SD = .10; range .61–.97)

2.4. Analyses

In order to answer RQ1, interpreters' roles were calculated based on the sum of the frequencies of the coded utterances per role (see Table 3). In order to answer RQ2, we conducted regression analyses with interpreters' roles (i.e., frequency utterances per role) as predictors of patients' and GPs' perceived control, trust and satisfaction. In order to reduce the number of predictors for regression analyses, we selected the roles that at least marginally correlated with the outcome measures ($p < 0.10$). We have controlled the models for all demographic variables that at least marginally correlated with the outcome measures, ($p < 0.10$) (see Tables 4A and 4B for all regression models).

3. Results

3.1. Sample and consultation characteristics

Interpreters were most often the adult children (56%) or spouse (29%) of the patients. The majority of interpreters (62%) indicated to have a (very) good Dutch language proficiency. The patients were all first generation Turkish-Dutch patients, with a mean age of 60 years (SD = 13.49). The majority of patients (57%) indicated to have a poor language proficiency in Dutch (see Table 1 for all sample characteristics).

Mean duration of all consultations was 14 min and 08 s. (SD = 5.53, range 3.2–31.75 min). We coded a total of 3892 utterances, excluding the side-talk between the interpreters with either the GP or the patient. The informal interpreters translated 48% of patients' and GPs' utterances. 28% Of the utterances was a direct reaction of the informal interpreter towards the GP or the patient. 13% Of the utterances of the GPs and patients was ignored by the informal interpreter and 11% of the utterances was an initiation by the informal interpreter. Side-talk occurred on average four times per consultation (M = 3.9; SD = 2.66) and lasted on average 3 min (M = 3.28; SD = 3.16).

3.2. Which roles do informal interpreters perform?

The conduit role was the most frequently performed role by the informal interpreters and covered 24% of all coded utterances. The role of patient replacer covered 16% of all coded utterances, followed by the role of GP replacer (12%), patient excluder (12%) and GP excluder (11%). The roles of emotional supporter and counselor were the least frequently performed roles and covered less than 1% of all coded utterances (see Table 3 for all frequencies).

3.3. Relation between performed roles and patients' and GPs' control, trust, and satisfaction

We found a few significant relationships between the interpreters' performed roles and patients' perceived control, trust and satisfaction. First, patients' perceived control was significantly predicted by the role of the GP excluder (F (2,81) = 6.26, p = .003, R^2 = .13, b^* = −.28, p = .008). The more often the informal interpreters performed the role of GP excluder, the less control the patients perceived to have. Overall, patients perceived more control with female interpreters (b^* = .27, p = .013).

Table 3
Frequencies and Proportions of Utterances Per Role.

	Frequency utterances per Role	Proportion utterances per Role	Frequency utterances per consultation M (SD)
Conduit	939	24.13	11.18 (9.31)
Patient Replacer	632	16.24	7.52 (4.72)
GP Replacer	475	12.20	5.72 (4.58)
Patient Excluder	451	11.59	5.37 (5.23)
GP Excluder	426	10.95	5.07 (5.42)
Cultural Broker	328	8.43	3.90 (4.38)
Information Source	307	7.89	3.65 (3.10)
Advocate	174	4.47	2.09 (1.96)
System Agent	96	2.47	1.14 (1.62)
Counselor	34	.87	.40 (.75)
Emotional Supporter	30	.77	.36 (.71)
Total	3892	100%	

Table 4A
Regression Models with Interpreters' Roles and Background Characteristics as Predictors of Patients' Perceived Control, Trust, and Satisfaction.

	Control Patient b^*	Trust Patient Cognitive b^*	Trust Patient Affective b^*	Satisfaction Patient b^*
Interpreters' roles				
Advocate				−.17
Information Source		−.24 *	−.22 *	
System agent				.02
Patient Excluder				−.08
GP Excluder	−.28*			−.14
Background characteristics				
Interpreter's Gender	.27 *	.21 †		.22 *
Patients' Gender				−.13
Education Patient				.22*
Education Interpreter			−.20 †	
Language proficiency patient			−.20 †	−.16
R^2	.13**	.09*	.13**	.15**

Note. Variables corresponding with empty cells have not been included in the regression model. Interpreters gender: 0 = male; 1 = female. † $p < 0.10$ *$p < 0.05$; ** $p < 0.01$.

Table 4B
Regression Models with Interpreters' Roles and Background Characteristics as Predictors of GPs' Perceived Control, Trust, and Satisfaction.

	Control GP b^*	Trust GP Cognitive b^*	Trust GP Affective b^*	Satisfaction GP b^*
Interpreters roles				
Emotional Supporter		.26 †		
Information Source	.18			
Cultural Broker	.22 †	.03		.10
Patient Replacer	.06			
GP Replacer	−.02	−.027		
Background characteristics				
Interpreter's Gender	.19 †	.25 *		
GP's Gender			.29**	
Education Interpreter		.14	.20 †	
Language proficiency patient		−.17		
Age patient	0.07	−.20		
Years living in the Netherlands Patient	.10	.18		.05
R^2	.20*	.28**	.11**	.01

Note. Variables corresponding with empty cells have not been included in the regression model. Interpreters' gender: 0 = male; 1 = female. † $p < 0.10$ *$p < 0.05$** $p < 0.01$.

Second, the role of information source was a significant negative predictor of patients' cognitive (F (2,81) = 3.85, R^2 = .09, p = .025, b^* = −.24, p = .031) and patients' affective trust (F (3,80) = 4.11, R^2 = .13, p = .009; b^* = −.22, p = .036). Thus, the more informal interpreters performed the information source role, the less trust in the interpreter the patients had. Patients were more satisfied with female interpreters (b^* = −.22, p = .037). Overall, higher educated patients were more satisfied with the consultation (b^* = .22, p = .043) (see Table 4A for all results).

We did not find any relationships between the performed roles of informal interpreters and GPs' perceived control, trust and satisfaction. Only marginally significant positive correlations were found between the emotional supporter role and GPs' cognitive trust (b^* = .26, p = .059) and between the cultural broker role and GPs' control (b^* = .22, p = .061). Overall, female GPs had more affective trust in the interpreter (b^* = .29, p = .008). Also, GPs had more cognitive trust in female interpreters, that is, they trusted the competence of female interpreters more (b^* = .25, p = .025) (see Table 4B for all results).

4. Discussion and conclusion

4.1. Discussion

From the eleven investigated roles (i.e., conduit, system agent, advocate, cultural broker, information source, emotional supporter, counselor, patient excluder, GP excluder, patient replacer, and GP replacer), informal interpreters most often performed the conduit role, which is unsurprising, as conduit is defined to be the primary role of interpreters [4,31]. However, our findings indicate that apart from the conduit role, which covered around a quarter of all coded utterances, informal interpreters twice as often, that is in 50% of all coded utterances, acted as replacers and excluders of both patients and GPs. The performance of these dominant and excluding roles could explain previous qualitative findings in which the GPs reported a loss of control because of the dominant behavior of informal interpreters [9,31]. In the present study, the role of GP excluder was negatively related to patients' perceived control, indicating that patients perceive a loss of control too when the GP is excluded from the conversation. Hence, when informal interpreters ignore GPs' speech turns and omit GPs' utterances, patients perceive these behaviors of the interpreter as a hindrance to the communication-process, to reaching their goals, and to building a relationship with their GPs. Thus, our study corroborates previous findings by showing that informal interpreters indeed perform dominant and excluding roles [18], with possible negative effects on patient outcomes.

In contrast to previous literature, where informal interpreters were often perceived as patients' advocates [5,16], counselors [6], cultural brokers [7], extra information source [9], and emotional supporter [8], these roles were not at all verbally prevalent in the present study. One explanation for this discrepancy between

perceived and performed roles of informal interpreters could be the language barrier between patients and health care providers, which inhibits them from understanding the actually performed roles of informal interpreters. For instance, when informal interpreters act as patients' replacers, they answer the GP's questions and ask questions on patients' behalf. When acting as patients' advocates, the informal interpreters exaggerate the patients' complaints and add affective information to what the patient is saying. It could be that the patients do not perceive the difference between these roles, because they do not sufficiently understand what the interpreter is saying and thus they perceive their family interpreters, with whom they have a close relationship, as advocates, even when they are actually performing the role of the patients' replacer.

Our explanation for the absence of relationships between interpreters' performed roles and patients' and GPs' perceived control, trust and satisfaction follows the same line of reasoning. As patients and GPs might not have sufficient insight in the actually performed roles of the informal interpreters, these outcomes are probably rather based on their perceived roles of the interpreter, than on interpreters' performed roles. The findings of a previous study in which we have found significant relationships between the expected roles of informal interpreters and patients' perceived control and trust [23] support this idea. The findings of our present study in which the role of information source was related to patients' lower trust in the interpreter support this assumption. Namely, because the patients do not understand what the informal interpreters are saying, their trust is declining. However, informal interpreters may actually act in patients' best interests by providing extra information to the GP. If patients would be aware of this role of the informal interpreters their trust would probably not decline.

Apart from acting as replacers and excluders, our findings indicate that less than half of all utterances is being translated by informal interpreters, which might lead to negative clinical consequences. Although a recent study has shown that professional interpreters also often omit information [33], a previous study comparing professional and informal interpreters has shown that omissions by informal interpreters more often led to negative clinical consequences [34]. Therefore, patients and health care providers should be educated about possible detrimental consequences of informal interpreting, such as omission of information and dominant and excluding behavior of informal interpreters. Health care providers should be trained in how to prevent these behaviors when working with informal interpreters.

4.1.1. Study limitations and suggestions for further research

Our study has some limitations. First, we coded only the interpreter's utterances; thus we lack insight into which behaviors of patients and GPs provoke certain roles. As communicative behaviors are interdependent [35], future research should study the interaction process of the three parties together in order to arrive at a more complete picture. An alternative manner to code these interactions could also be to apply sequence or conversation analyses that would enable to better account for context in deriving meaning from speech (e.g. [36]). Second, the codebook is developed in the Dutch context with Turkish migrant patients and is not validated among different populations. Thus, our conclusions should be interpreted cautiously and replicated in future studies. Third, we only coded verbal communication and have possibly missed important non-verbal communication factors in our scheme. For instance, posture, gaze, gesturing and touch are all well-known aspects of adequate doctor-patient communication in general (e.g. [37]), and of interpreters' roles specifically [38]. As there is a dearth of research on non-verbal aspects of interpreter-mediated communication, more research attention is urgently needed addressing this topic in the context of interpreters' roles. Thus, our codebook should be further developed based on video-recordings of real-life interpreted consultations.

Overall, it is necessary to continue investigating the relationships between the (non-verbal) communicative behavior of different types of interpreters and outcome measures, such as understanding, recall, satisfaction, perceived control and trust in order to uncover the possible positive and negative effects of interpreters' communicative behavior. In addition, patients' perceptions of the specific performed interpreter roles should be assessed, in a similar manner as has been done in a previous study that assessed physicians' perceptions of interpreters' roles [9]. Results of such studies might provide some explanation for the (lack of) effects on other outcome variables, such as their perceived control, Also, interpreters' personal characteristics, such as age, gender and relationship to the patients should be taken into account. For instance, the present study has shown that patients perceive more control and are more satisfied with female interpreters than with male interpreters and that female interpreters are also trusted more by GPs compared to male interpreters. Thus, future studies should continue to investigate the relationships between the different factors in order to move towards an explanatory model of informal interpreting and to be able to design evidence-based interventions for the improvement of interpreter-medicated communication (see for an example of an intervention to enhance interpreter-mediated communication in medical care [39]).

4.2. Conclusion

Besides the conduit role, which occurred in a quarter of all coded utterances, informal interpreters often performed the roles of patients' and GPs' replacers and excluders. However, interpreters' roles were barely related to patients' and GPs' perceived control, satisfaction and trust in the interpreter, which might indicate that patients and GPs are not aware of the actually performed roles of informal interpreters. Informal interpreters translated less than half of all utterances, which might lead to the loss of important medical information and have negative clinical consequences.

4.3. Practice implications

The findings of this study could be used for education and training purposes. For instance, GPs and patients should be informed about the excluding roles of informal interpreters, which might lead to loss of information and adverse health outcomes. GPs should be trained in how to prevent the excluding behavior of informal interpreters and how to facilitate appropriate interpreting, a training example is provided in a previous project [40]. Informal interpreters could be educated in how to interpret in an adequate way without omission of relevant information.

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