Differential learning gains in professional conversation training: A latent profile analysis of competence acquisition in teacher-parent and physician-patient communication

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ABSTRACT

This article presents an analysis of differential learning gains in an experimental study on professional conversation competence. Pre-service teachers and medical students ($N = 165$) received parallel-designed training on teacher–parent and physician–patient conversations. Outcomes were assessed using high inference ratings of videotaped conversations with simulated patients/parents. Latent profile analysis identified four classes of participants demonstrating differential achievement in three aspects of conversation competence: (a) structuring the conversation, (b) advancing a problem solution, and (c) establishing a positive interpersonal relationship. As expected, training conditions and student domain predicted class membership. Finally, relating class membership to additional low inference ratings of the videos revealed visible differences in the quality of the participants' conversations and provided evidence for the construct validity of the latent profile solution. The study shows how mixture analyses, such as latent profile analysis, are a useful tool for investigating differential learning gain to enrich the understanding of training effectiveness.

1. Introduction

Conducting professional conversations is a major task in all professional domains (Hargie, 2011). Typical tasks in such conversations include counseling clients, delivering bad news, or resolving conflicts. For example, teachers must frequently communicate with parents when providing advice about educational career choices, handling parents' queries, or relaying achievement or social behavior-related problems (Aich, 2011; Hertel, Bruder, Jude, & Steinert, 2013). Structurally similar types of conversations can easily be found in other professions, such as in health care (Christianson, 2012), despite the great differences in their work profiles. One reason for this similarity is that various types of professional conversations are special cases of expert–layperson communication (Bromme, Nueckles, & Rambow, 1999). For leading such conversations competently, research points at a core set of generic communication skills, such as structuring the conversation in proactive and solution-oriented ways, creating common ground, and establishing a rapport with the partner (Aich, 2011; Gartmeier et al., 2015; Hargie, 2011; Hertel, 2009).

Questions concerning how to improve professionals' communication skills are the subject of ongoing research in both medicine and teaching (Berkhof, van Rijssen, Schellart, Anema, & van der Beek, 2011; Hargie, 2011). In Germany, where the present study took place, physicians spend a major part of their daily work conducting conversations with patients, as access to health care occurs primarily through visits to a general practitioner or specialist (cf. Christianson, 2012). Research has clearly demonstrated the positive effects of proficient physician–patient communication, for example, on patients' treatment adherence (Haskard Zolnierek & Dimatteo, 2009). Therefore, many current study programs in medicine include conversation skills training (Kiessling et al., 2010). This is typically not the case, however, in teacher education (Wiesbeck, 2015). This gap exists despite common agreement on the importance of teacher–parent communication (e.g., Denessen, Bakker, Kloppenburg, & Kerkhof, 2009) and evidence of its influence on students' development (Castro et al., 2015), and family–school relations (Epstein, 2013). German teachers engage in parent–teacher conversations on a regular basis, and 96% of parents attend, either on parent–teacher conference days or at individually scheduled meetings

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(Hertel et al., 2013; Killus & Tillmann, 2012). Due to the lack of learning opportunities in teacher education, however, many teachers feel inadequately prepared for this task (Hertel, 2009).

Therefore, a growing number of studies have focused on teachers' parent-communication skills, as well as respective training programs (Aich, 2011; Dotger, Dotger, & Tillotson, 2010; Hertel, 2009; Symeou, Roussounidou, & Michaelides, 2012). Advances have been made in transferring innovative methods of training and assessment, such as simulated conversation partners, from medicine to the teaching context (Dotger et al., 2010; Walker & Dotger, 2012; Wiesbeck, 2015). Moreover, the effectiveness of multimedia-based learning (e.g., e-Learning in combination with authentic video cases) has been probed as an extension of classical training methods, such as roleplay (Gartmeier et al., 2015).

For creating externally valid trainings, a specific challenge is analyzing participants' differential gains beyond addressing questions of average training effectiveness (Aich, 2011; Hertel, 2009; cf. Snow, 1989). Analysis of who profits from training and how they benefit is crucial for designing effective training interventions for different and heterogeneous target groups. Moreover, such analyses can help in assessing the conclusiveness of average training effects.

This paper addresses the challenge of analyzing differential learning gains by combining substantive and methodological purposes. Substantively, we aimed to elaborate on earlier findings from a randomized experimental study that investigated the effects of roleplay and video-based e-Learning in a parallel-designed training program for preservice teachers and medical students (Gartmeier et al., 2015). This study found that e-Learning—especially when combined with roleplay—is an effective training method for fostering general conversation competence; in contrast, roleplay alone seemed to have little effect. In a secondary analysis of these data, we wanted to attain a deeper understanding of the training effects by addressing the question of how participants profited differentially regarding the three following aspects of conversational competence: structuring the conversation proactively, advancing a joint problem solution, and establishing a positive interpersonal relationship. This analysis extends the existing knowledge about the effects of conversation training by pointing at conditions that may cause specific types of students to successfully learn and show specific outcomes. Such knowledge is of general interest when designing communication training for diverse target groups. Methodologically, we wanted to demonstrate that latent variable mixture modeling provides a powerful tool for analyzing differential learning gains in training studies with multidimensional outcomes, as frequently encountered in training research. Mixture models are a broad class of models—including, e.g., latent class analysis, latent profile analysis, and growth mixture modeling—that aim at generating probability-based classifications of individuals (Hancock & Samuelsen, 2008; Masyn, 2013). This person-centered perspective naturally aligns with the purpose of analyzing individual differences in learning (Bergman & Magnusson, 1997; Collins & Lanza, 2010). Moreover, it is complementary to traditional variable-centered analyses that investigate training effects in terms of treatment–outcome relationships. Specifically, in this paper, we applied latent profile analysis with covariates and distal outcomes (Asparouhov & Muthén, 2014a; Bakk & Vermunt, 2016) for this purpose. Addressing this combination of goals is in line with Marsh and Hau's (2007) idea of methodological–substantive synergies that arise from research demonstrating the usefulness of advances in analytic techniques in substantively meaningful studies. Moreover, to our knowledge, the application of mixture models is new to the analysis of individual learning differences in teacher or medical training research.

In the following sections, we briefly introduce the model of conversation competence underlying the study, sketch roleplay and video-based e-Learning as training methods, and summarize the findings from the earlier study (Gartmeier et al., 2015). Next, we elaborate on the potential of mixture models for analyzing differential learning gain.

1.1. Professional conversation competence

Professional conversation competence comprises the personal dispositions (i.e., knowledge, skills, and attitudes) that allow professionals to attain communicative goals in a professional conversation (Gartmeier et al., 2015). Our focus here is on three generic aspects of conversation competence that seem to be important across different types of conversations and professional domains (cf. Bromme et al., 1999; Hargie, 2011). First, structuring the conversation implies organizing it in a stepwise manner conducive to reaching a goal. This can be achieved by following a conversational script—an approach frequently applied in medical conversation trainings (Baile, 2000; Charles, Gafni, & Whelan, 1999). Second, advancing a problem solution broadly refers to a variety of communicative techniques that help in addressing the underlying issue of the conversation. Typical tasks include clarifying the problem and establishing a common ground (Clark & Brennan, 1991), discussing symptoms and putative causes of the problem, identifying possible solutions and weighing them jointly, and making agreements. Third, building up a positive interpersonal relationship implies the establishment of a climate of mutual respect and trust as a basis of the conversation (Rogers, 1951). These first-order components can be subsumed under the higher order construct of general conversation competence (Gartmeier et al., 2015; Wiesbeck, 2015).

1.2. Two current training methods

Professional conversation training typically involves a significant amount of practical training, which is frequently implemented through roleplay. Roleplay is an effective means of professional communication training (Berkhof et al., 2011), especially when combined with video-based feedback (Fukkink, Trienekens, & Kramer, 2011). However, there is also evidence hinting that deductive training conditions that involve at least some form of conceptual instruction yield better outcomes (Rose & Ng, 2001). Hence, for training—and especially for complex, scripted conversation formats, such as shared decision-making (Charles et al., 1999)—it seems promising to complement roleplay with high-quality instruction to build systematic knowledge.

e-Learning, including the analysis of video cases of the targeted behavior, may provide a good means for that purpose (cf. Dotger & Smith, 2009; Henninger & Hörmann, 2007). Growing evidence from teacher education research suggests that analyzing videos can be a powerful method of professional learning (Seidel, Blomberg, & Renkl, 2013). Observing and analyzing video cases allows examining a situation from an observer's perspective without the pressure of being in the action (Kleinknecht & Schneider, 2013). To be effective, video cases must be embedded in an appropriate instructional context that engages learners in deep analyses of the presented material (Seidel et al., 2013). This can be achieved by including video cases in multimedia e-Learning environments. Such environments can combine systematic conceptual instruction with videos that exemplify and model certain communicative behaviors, and with video-based analytic tasks that help to integrate theory and practice (Kleinknecht & Schneider, 2013).

1.3. A recent study on e-Learning with video cases and roleplay

To evaluate the differential effects of video-based e-Learning and roleplay, Gartmeier et al. (2015) conducted an experimental training study on teacher education and medical students' professional skills in leading shared decision-making conversations (Charles et al., 1999). The decision to use a cross-domain approached followed the advice by Berkhof et al. (2011) that such studies foster the generalization of results and design principles. The training programs for both domains were designed to be as equivalent as possible. However, all examples, cases, and so on referred to the respective domains. Participants completed one of four randomly assigned conditions: (a) e-Learning with video cases combined with roleplay, (b) only e-Learning with video