Task shifting, interprofessional collaboration and education in oral health care

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CHAPTER 7

Summary & general introduction

The purpose of this dissertation was to explore attitudes and considerations related to task shifting between dentists and dental hygienists and to investigate the effect of a psychological intervention in an educational setting on interprofessional communication and perceptions regarding interprofessional task distribution.

7.1 Main findings

Dentists and dental hygienists have different attitudes with regard to task shifting, especially concerning dental hygiene independent practice which is least desired by dentists. Dentists and dental hygienists consider different issues when favoring or opposing this policy. The nature of their interprofessional relationship is evident in the attribution of profession-specific social characteristics. Dental and dental hygiene students agree that dentists are more dominant than dental hygienists. Facilitated interprofessional group formation can reduce interprofessional hierarchy as well as dentist-centric task distribution.

The first study (Chapter 2) revealed a gap between dentists and dental hygienists with regard to the extended scope of dental hygiene practice. Half of all dentists and most dental hygienists have a positive attitude towards it. An interprofessional gap is determined regarding independent dental hygiene practice. A minority of all dentists have a positive attitude towards independent dental hygiene practice compared to a majority of all dental hygienists. This suggests that acceptance of dental hygiene independence is a considerable an obstacle to overcome when implementing task shifting. Dentists would like to maintain control over the dental hygiene practice (Adams, 2004; Adams, 1999; Konzelmann & Yokom, 1997), therefore, task delegation is likely to be more preferred than task substitution which concerns task shifting with professional autonomy (Sibbald, Laurant & Scott, 2006; Sibbald, Shen & McBride, 2004).

The second study (Chapter 3) revealed that flexible collaboration is the perceived advantage of task shifting and, therefore, it can be a strategy for improving interprofessional collaboration. This becomes more successful when task shifting is not perceived as an intergroup threat.

Most issues considered by dental hygienists are related to job content and professional identity. New style dental hygienists, dental hygienists with an extended scope of practice, experience less job satisfaction when they perceive less autonomy (Jerković-Ćosić, van Offenbeek & van der Schans, 2012). Even if dental hygienists are willing to perform new treatment measures, the traditional methods of delegating tasks can prevent them from doing so (Virtanen et al., 2011). A lack of autonomy can be a reason for leaving the dental hygiene practice (Johns, Gutmann, DeWald & Nunn, 2001). Also, a variety in the scope of practice is related to job satisfaction (Calley, Bowen, Darby & Miller, 1996; Jerković-Ćosić et al., 2012).

Besides factors related to job satisfaction, dental hygienists also reported professional identity as a reason in favor of task shifting. This did not appear to be an issue to the dentists involved. The importance of task shifting to dental hygienists could be explained by the pursuit of a full professional status which is common among professionalizing occupations (Macdonald, 1995).

This study revealed opposing views between dentists and dental hygienists with regard to quality of care. Many dental hygienists perceive themselves as competent; however, dentists generally do not share this view as a consideration for task shifting. This could be explained by the lack of knowledge regarding the competence of dental hygienists or it may possibly originate from ulterior motives such as protecting economic interests.

The third study (Chapter 4) revealed shared perceptions of dental and dental hygiene students with regard to the social attributes of dentists. Dentists are perceived as being more assertive and dominant compared to dental hygienists but equally respectful. Dominance differences between professions is acknowledged by the parties involved and, therefore, is not usually considered a problem (Leisnert, Axtelius, Johansson & Wennerberg, 2012). Dental students perceive assertiveness and dominance as slightly more distinctive regarding interprofessional differences. Dental and dental hygiene students especially identify with the social attributes of their own profession.

The fourth study (Chapter 5) concerned an intervention to influence the social interaction between dental and dental hygiene students through psychological group formation based on principles of social identity formation. A social identity is constructed by individuals through differentiation between groups (Barnes, Carpenter & Dickinson, 2000; Forgas & Williams, 2014). Therefore, it was expected that intergroup comparison would indirectly change hierarchical behavior between members of different professions through the formation of a mixed profession group identity. Not the identity, but the behavior, that was expected to be guided by a new social or group identity was measured and did reveal the hypothesized outcome. No conclusive evidence was found for change in professional positions, although interprofessional hierarchy decreased with the intervention. This finding is valuable to the quality of oral health care. A recent study ascertained evidence that interprofessional communication between dentists and dental hygienists influences dental treatment outcomes (Hamasaki, Kato, Kumagai & Hagihara, 2017).

In the fifth study (Chapter 6), the effect of an intervention on perceived task distribution between dentists and dental hygienists was investigated. This intervention was conducted in an educational setting with these students and concerned intergroup comparison of interprofessional interaction. Half of all of the basic dental tasks became less dentist-centered. The perceptions of dental students were especially changed following the intervention.

However, interprofessional task distribution of a caries diagnosis and caries treatment tasks were not changed after the intervention. This cannot be attributed to a lack of dental hygiene competence. Evidence reveals positive results with regard to a caries diagnosis, treatment, and restorative procedures performed by dental hygienists and dental hygiene students (e.g., Brocklehurst, Ashley, Walsh & Tickle, 2012; Daniel & Kumar, 2016; Macey, Glenny & Brocklehurst, 2015; Post & Stoltenberg, 2014; Öhrn, Crossner, Börgesson & Taube, 1996). It is more likely that these caries related tasks are of special interest to dental students and their profession. Specific professional tasks can have a symbolic value that can distinguish one profession from another (Omark, 1978). After all, distinctiveness is the basis of professional existence. This is also reflected in papers and policy statements regarding curriculum development for cariology which only targets dental schools and excludes dental therapist and/or dental hygiene schools (e.g., Fontana et al., 2016; Nascimento, Behar-Horenstein, Feng, Guzmán-Armstrong, Fontana, 2017; Schulte et al., 2011; Schulte, Pitts, Huysmans, Splieth & Buchalla, 2011; Anderson et al., 2011). This suggests that caries treatment related tasks are too strongly associated with the professional identity of dentists to alter perceptions with regard to the redistribution of these tasks. This redistribution seems to be more likely when dentists maintain the 'official ownership' of the task or have control over the delegated task at hand. This becomes apparent with the delegation of restorative procedures to Dutch dental assistants by dentists. Strangely enough, when restorative tasks are delegated to dental assistants, competence does not seem to be an argument against delegating restorative procedures. Dutch dental assistants can perform restorative procedures but receive much less training than new style Dutch dental hygienists (Northcott et al., 2013). In addition, one can also wonder whether every basic dental task could and should be redistributed between dentists and dental hygienists. It is doubtful that any team will benefit from becoming a too homogeneous collective. A team with no expert diversity is a team that will respond to its dynamic environment less effectively.

7.2 Towards an extended professional identity theory (EPIT)

Demographic changes, technical advancements, patient safety, and workforce challenges necessitate new models of care organization (Thistlethwaite, 2012). Therefore, collaborative practice becomes increasingly important, and interprofessional teamwork receives worldwide attention (Reeves, Pelone, Harrison, Goldman & Zwarenstein, 2017; Reeves, Perrier, Goldman, Freeth & Zwarenstein, 2013). Teamwork can increase effectiveness and team adaptability depends on the diversity of its composition (Robbins & Judge, 2013). Thus, diversity in skills and expertise enables a team to adapt to a complex and dynamic environment. However, at the same time, team diversity poses a potential threat that can result in a loss or absence of group cohesion while the latter predicts team performance. Social or group behavior can limit effective collaboration because of intergroup behaviors within a team (Tajfel &

Turner, 1979; Tajfel & Turner, 1986; Denmark, 2010; Fiske, 1998). Team diversity manifests in social distinctions between its individual team members. When cooperating collectively in a work context and with different professional backgrounds, professional identity can emphasize these social distinctions. Interprofessional collaboration itself is often perceived as a professional identity threat (Aquino & Douglas, 2003; McNeil, Mitchell & Parker, 2014) and can lead to competition between members of different professions (McNeil, Rebecca, Mitchell & Parker, 2013). Professional identity and interprofessional collaboration constitute a paradox in which professional demarcation appears to be incompatible with the tendency to share tasks and autonomy with another profession. So far, there are few solutions for solving this 'paradox of Whittington' (Whittington, 2003), however, changing the professional identity is assumed to do so (Wackerhausen, 2009).

When team cohesion decreases because of internal competition, individual commitment to the team as a whole will also decrease. Commitment refers to the intensity in which individuals are psychologically connected to their group and how much they value their group membership (Lee, Carswell & Allen, 2000). It concerns the intention to perform a certain action, influence a certain outcome, or produce consequences that are perceived to be a social obligation and require an investment of personal or social resources (Baxter, 1990). Commitment to a group is voluntary and individuals may feel obligated to keep it.

Instead of team commitment, occupational commitment might become predominant in a mixed profession group when competitive triggers become a factor. This occupational commitment is an important component of professional identity (Alutto, Hrebiniak & Alonso, 1973) that guides professional behavior (Hogg, Van Knippenberg & Rast III, 2012). Therefore, professional identity is an important predictor of performance in the work place (Cohen, 2003). Positive emotions attributed by individuals to their occupational ingroup promote commitment to their ingroup while they also contribute to an increasing differentiation between ingroup and outgroup (Lawler, Thye &Yoon, 2008).

Differentiation in social categories is inherent to the stereotype concept (Linville, Salovey, Fischer, 1986). It is for this reason that the conventional approach in interprofessional education is used to dispel these occupational stereotypes. The main strategy to accomplish this is by facilitating social contact between different professional groups (Allport, 1954). Several studies confirm the effectiveness of this strategy and report positive changes in stereotypical perceptions (e.g., Barr, 2013; Mohaupt et al. 2012; Thistlethwaite, 2012; Evans, Henderson & Johnson, 2012). However, the results of Chapter 5 show that mere intergroup contact is not likely to change interprofessional communication in terms of reciprocal behaviors. An important explanation for this can be found in the 'anatomy' of the social identity. Occupational stereotypes are beliefs, and these are inherent to any social identity (Barbour & Lammers, 2015). Yet, social identity also consists of two other components: perceived

group membership and attachment. Perceived group membership concerns self-perceived membership of an existing group while attachment is related to the commitment to that group. Thus, even though interprofessional beliefs can be changed by disproving occupational stereotypes, interprofessional commitment is unlikely to be established when only applying the intergroup contact strategy. Since the commitment component of professional identity constitutes a potential problem to interprofessional collaboration, it might also be the key to solving the 'paradox of Whittington' (Whittington, 2003). For this reason, several authors are convinced that interprofessional collaboration should be enhanced by changing professional identity (e.g., Barnes et al., 2000; Stull & Blue, 2016; Lymbery & Postle, 2007; Langendyk, Hegazi, Cowin, Johnson & Wilson, 2015). However, the few contemporary theories that exist differ with regard to the appropriate strategy to do so.

One approach is to enhance interprofessional collaboration by weakening professional identity (Barnes et al., 2000; Stull & Blue, 2016). However, a weakened professional identity is associated with decreased professional meaningfulness and the decreased perceived value of an individual's own profession (Kremer & Hofman, 1985; Osborn & Broadfoot, 1992). Since professional uniqueness in interprofessional collaboration is all about added value, a weakened professional identity would jeopardize this. A number of authors emphasize the importance of strengthening professional identity instead of weakening it (Hammerness, Darling-Hammond & Bransford, 2005; Kardos & Moore, 2007). Individuals with a denigrated professional identity will be unable to manage different situations with diverse needs and expectations (Mikkelson & Jourdenais, 2015).

Another potential approach is the formation of an additional identity which might solve interpersonal issues between members of different professions. However, this will potentially create a new problem as it is difficult to manage multiple identities (Dyble, 2012). This problem is of an intrapersonal nature. According to the identity theory (Stets & Burke, 2000), individuals choose between different roles or social identities. Each person organizes these identities into a salience hierarchy. This means that individuals choose between their different identities based on the perceived relevance and importance of a specific identity. Therefore, it would be impractical to switch between a professional and an interprofessional identity.

A more viable approach with regard to solving the paradox of Whittington (2003) was proposed by several authors (Lymbery & Postle, 2007; Langendyk et al., 2015) and regarded extending professional identity by integrating interprofessionalism into the existing professional identity. This perspective is in accordance with the concept that individuals have widening circles of group membership to which they have varying degrees of commitment (Turner, 1987). Also, Khalili, Orchard, Spence Laschinger and Farah (2013) introduced the concept 'dual identity'. This is a professional identity based on a "sense of belonging to, and simultaneously identify themselves with both individual's own profession and that of the

interprofessional community". However, the term 'dual identity' is also used as an important concept in the social movement literature (Klandermans, 2013) wherein "individuals hold multiple identities at the same time that do not necessarily work in the same direction". Since a professional identity with an interprofessional orientation should not lead to loyalty issues, 'dual identity' can be a confusing term to use. From a social psychological perspective, an interprofessional orientation should be an integrated part of professional identity in order to avoid conflicting roles (Dyble, 2012; Stets & Burke, 2000).

Another term used to describe a professional who is focused on interprofessional collaboration is 'T-shaped professional'. This concept originates from the field of ICT job recruitment, and the earliest reference is by David Guest in The Independent of September 17, 1991 (Conley, Foley, Gorman, Denham & Coleman, 2017). T-shaped professionals combine their own domain of expertise with broad complex-communication skills across many other domains in order to enable a more integrated approach to complex problems (Donofrio, Spohrer & Zadeh, 2010). Although the name 'T-shaped' describes or visualizes the desired behavioral outcome, it does not describe the cause of this behavior, i.e., the professional identity itself that also includes other disciplines. Therefore, a more appropriate name for a professional identity with an interprofessional orientation would be 'extended professional identity'. Because this concerns a social identity, the same principles of social identity formation should also apply to an extended professional identity, in this case, interprofessional membership, interprofessional membership beliefs, and interprofessional membership commitment (attachment).

7.2.1 Basic assumptions of the extended professional identity theory (EPIT)

Clues for how to change professional identity related to interprofessional collaboration are provided by earlier research and will be referred to. In addition, they are also provided by our findings as reported in Chapters 5 and 6. Based on these clues and the rationale as described above, the proposed extended professional identity theory has ten basic assumptions.

1. Social belonging is a common human need that predicts group commitment and group loyalty. People can feel committed to any social group under the right circumstances and have the tendency and desire to belong to a social group (Beal, Cohen, Burke & McLendon, 2003).

2. A group is a social psychological construct and thus a psychological reality. The perception that a collection of individuals is a psychological unity or group, also known as entitativity (Campbell, 1958), will depend on three aspects: common fate, similarity, and proximity. This is why new groups can be composed and accepted as a social psychological reality. Groups can also include smaller groups because people can have widening circles of group membership (Turner, 1987).

3. Social differentiation is essential for creating a strong professional identity. A social identity such as a professional identity is constructed by individuals through differentiation between groups as a result of intergroup comparison (Barnes et al., 2000; Forgas & Williams, 2014). This differentiation enables self-definition as a group member because individuals have a need for psychological distinctiveness. Psychological distinctiveness related to social identity formation is only possible when using a reference group (Turner & Reynolds, 2010).

4. Interprofessionality cannot exist without distinct professional identities. When a professional identity has an interprofessional orientation, the uniqueness of one's own field of expertise becomes emphasized because interprofessional collaboration concerns connecting distinct fields of expertise. Thus, the uniqueness of a professional identity in an interprofessional team is related to the added value to the interprofessional team. When professional uniqueness decreases, so will the added value to the team. Team diversity is only utilized when there is interprofessional commitment. The relationship between team diversity and team effectiveness is moderated by team identity (Mitchell, Parker & Giles, 2011).

5. According to the team development model of Tuckman (1999, 1965), internal conflict or competition in a team is a risk after a team is formed. Introducing a comparable outgroup will shift the risk of internal competition to external competition. This way, interprofessional conflict or competition within a mixed profession group can be avoided and will not decrease group cohesion (Munkes & Diehl, 2003).

6. Only intergroup contact between members of different professions will enhance interprofessional tolerance but not change interprofessional positions. Attributions of professional characteristics can deviate from true group characteristics (Baker, Egan-Lee, Martimianakis & Reeves, 2011). Therefore, intergroup contact can enhance interprofessional tolerance through discrediting occupational stereotypes. However, it will not enhance interprofessional commitment because there is no sense of belonging to an interprofessional team that does not psychologically exist.

7. The nature of intergroup comparison dimensions will indirectly guide behavior through professional identity. A professional identity is a mental representation of professional behavior and, therefore, also interprofessional behavior. This identity subsequently guides professional and interprofessional behavior (Owens, Robinson & Smith-Lovin, 2010). When reciprocal behaviors (such as equal conversational turn-taking) between members of different professions are a comparison dimension or performance indicator, beliefs regarding interprofessional relationships will be altered through observational learning (Bandura, 1988) and social comparison (Festinger, 1954). This way, when such beliefs are developed in a work related context, they will become internalized and initiate interprofessional behaviors.

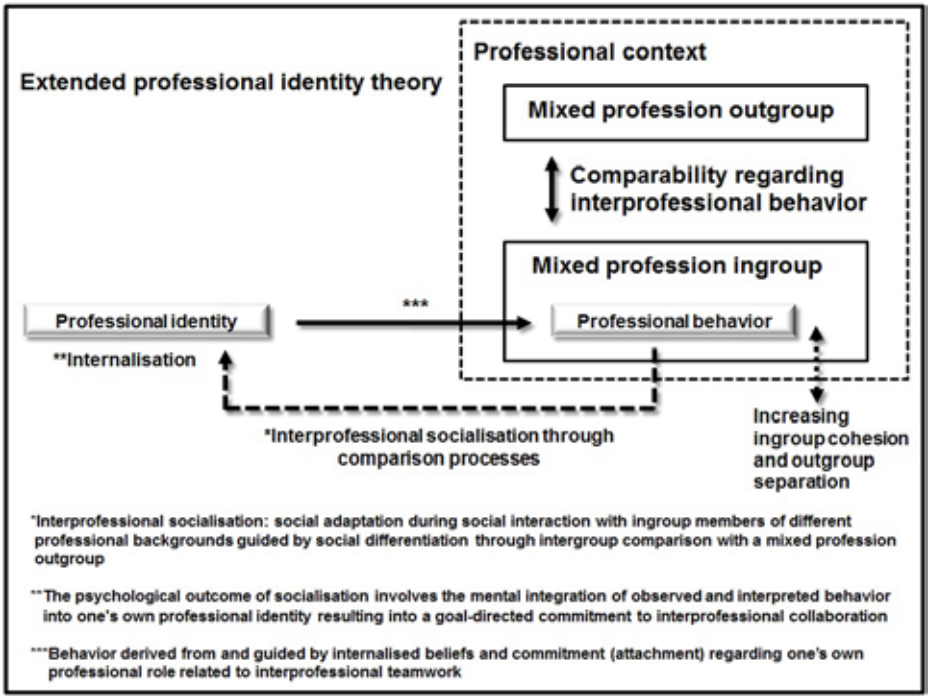
8. A professional identity with an interprofessional orientation is context dependent. A social identity is triggered by the context that is relevant to that identity (Finn, Garner & Sawdon, 2010; Ginsburg, Regehr & Lingard, 2003; Lingard, Garwood, Szauter & Stern, 2001). Interprofessional behavior does not always have to be necessary but is appropriate in dynamic situations and complex patient categories (Donofrio, Spohrer & Zadeh, 2010).

9. Intergroup comparison simultaneously enhances ingroup cohesion and outgroup separation. It is associated with intragroup cooperation (Böhm & Rockenbach, 2013), and outgroup derogation is often accompanied by ingroup favoritism (Hewstone, Rubin & Willis, 2002).

10. The group cohesion in a mixed profession group can increase through time without developing an interprofessional team culture. According to the team development model of Tuckman (1999, 1965), group cohesion will develop after a group has evolved beyond the storming phase. However, this model describes the development of any team and not just an interprofessional team. Thus, team cohesion is distinct from team culture.

Based on these ten basic assumptions, an extended professional identity is created when mixed profession groups are facilitated in comparing their interprofessional performance in a professional context (Fig. 1). The extended professional identity theory states that interprofessional collaboration can be enhanced by facilitating intergroup comparison on interprofessional reciprocity between mixed profession groups.

Figure 1.
The extended professional identity theory



Interprofessional reciprocity is likely to be associated with a consequential interdependence because this reciprocity is applied as a comparative dimension or performance indicator. This way, interprofessional actions of members of different professions become relevant and manifest. For example, 'symmetrical communication' can only result from the appropriate contributions of all of the parties that are involved (Chapter 5). A couple of other examples that could function as performance indicators to enhance interprofessional self-definition might be 'mutual consult', 'inventorization of treatment interdependencies' to optimize care planning, 'enabling multiple patient entry points' to enhance efficient patient routing, 'sharing of clinical information' to reduce costs and enhance shared clinical decision-making, 'interprofessional task division' to enhance efficiency with a shared work load, and 'integrated patient-centeredness' as reported by patients. This way, interprofessional collaboration becomes more explicit and helps to define the interprofessional team as a new social identity. This social identity formation that will then be based on professional diversity is a necessity and inherent to being a competent professional and team member. Professional distinctiveness can then be perceived as an asset instead of a threat.

7.3 Integration of EPIT into a meta-model of interprofessional development

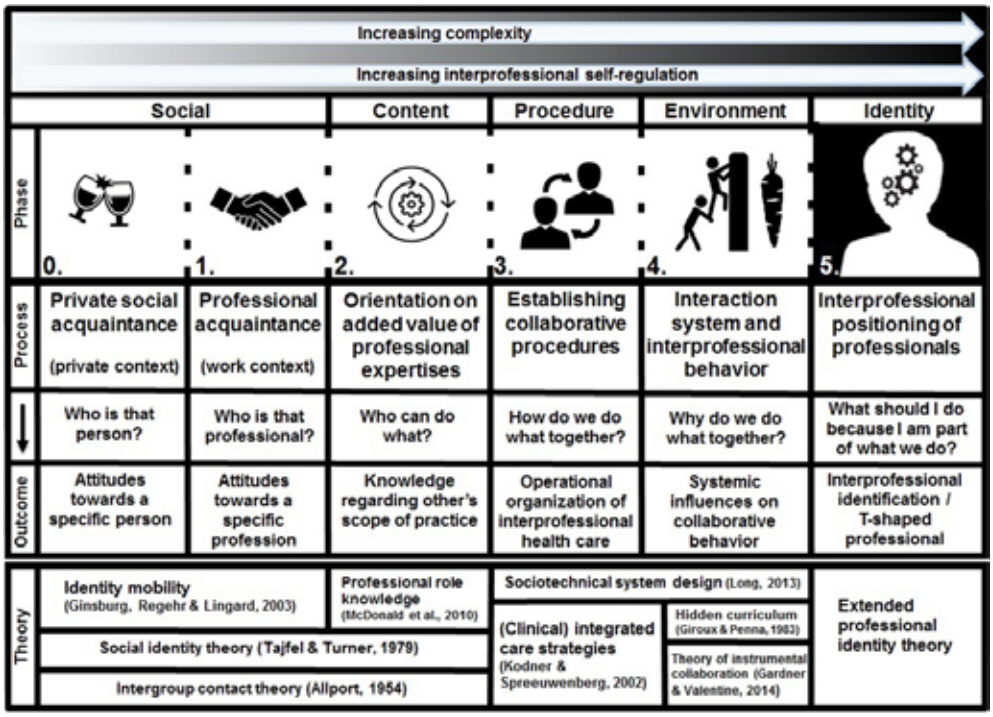
A professional identity with an interprofessional orientation is important for enhancing interprofessional collaboration; however, it is only one component of professional competence. It is a meta-competence that influences priorities and actions (Harrington & Hall, 2007). Thus, professional identity does not include competences with regard to discipline specific expertise, knowledge of other disciplines, or collaborative skills and procedures. Professional identity guides priorities and actions built on the available attitudes, knowledge, and skills that are required to function as a professional in a work related context. In order to fully comprehend the requirements that an individual needs for interprofesional collaboration, a model is needed to guide the development of a professional with his or her own expertise and uniprofessional identity as a starting point.

Many models and theories concerning interprofessional collaboration describe the competencies, characteristics, desired outcomes, or conditions that are required for interprofessional collaboration (e.g., Anderson & Lennox, 2009; Barr, 1998; WHO Working Group, 2010; Vyt, 2009). However, these models do not provide a practical incremental approach to interprofessional development. Furthermore, these types of models are also criticized for lacking 'conceptual clarity' (Carpenter & Dickinson, 2008). A recent model, DPIIM (Dual Professional and Interprofessional Identity Model), predicts that a combination of team and professional commitment will enhance interprofessional collaboration (Khalili et al., 2013). A study confirms the predictions of the DPIIM (Caricati et al., 2015). However, the DPIIM is a predictive model with general developmental phases for identity formation and is not an intervention model nor is it related to interprofessional development in general. The extended professional identity theory is meant to be an intervention theory and also does not include all of the requirements for interprofessional development. Therefore, this theory should be an element of an overarching model to clarify developmental steps. Therefore, a new model is proposed: a meta-model of interprofessional development. The purpose of this meta-model is to provide specific priorities for curriculum and team development beginning with an encounter between individuals with uniprofessional identities. An intrinsic motivated individual with an extended professional identity is the final phase of interprofessional development. In this context, both the extended professional identity theory and the meta-model of interprofessional development are complementary to the work of Khalili et al. (2013) and a logical follow up.

The meta-model of interprofessional development consists of several conditional requirements (phases) for interprofessional development numbered from 0 to 5 (Fig. 2). Each phase is semi-conditional to the next phase, has an increasing complexity because of a cumulative nature, and moves towards an increasing interprofessional self-regulation (intrinsically motivated interprofessionality). Even though phases are (semi-) conditional, they can overlap

and occur in a short amount of time, i.e., a couple of hours. However, investing more time in each phase will result in a more comprehensive development during a phase. The first three phases concern an orientation without connecting fields of expertise. The phases after these first three concern an instrumental and rational approach to connecting different fields of expertise ending with internal motivation to connect more than one expertise.

Figure 2.
Meta-model of interprofessional development



Phase 0 is a non-work related social orientation or acquaintance and will lead to a connection on a personal level but is not related to occupations or professional positions. Becoming familiar with someone will emphasize unique individual characteristics and make professional characteristics less prominent (Brewis, 2008). The outcome of this phase includes attitudes towards a specific person.

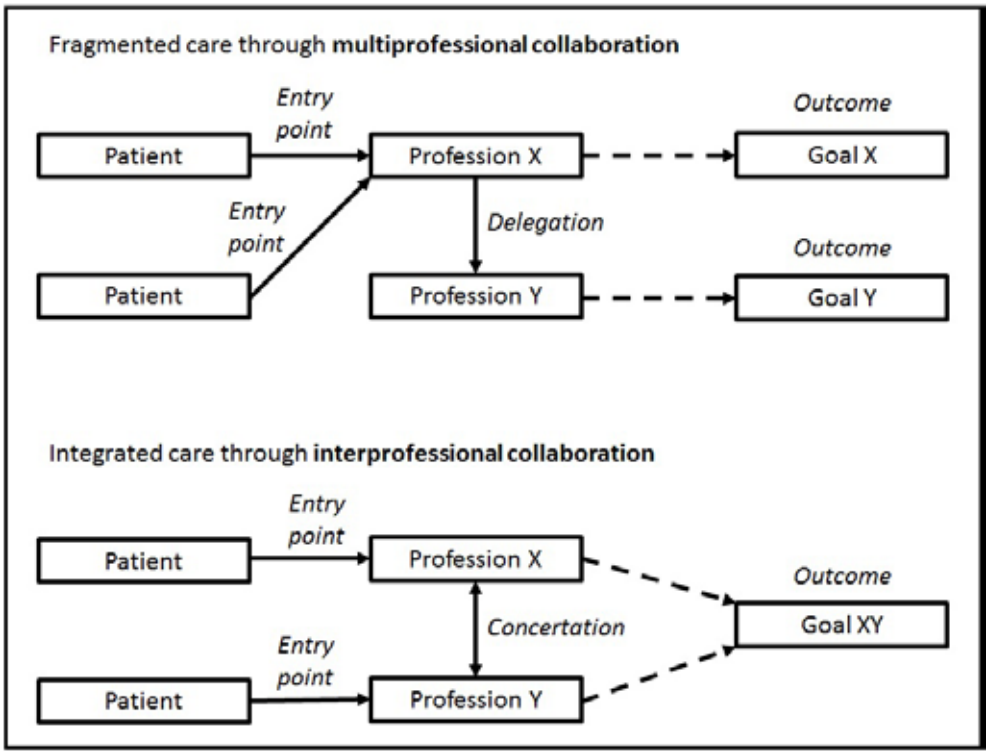
During Phase 1, the professional capacity emerges and the acquaintance will usually occur in a work related context. In contrast to personality, social identities are contextual and moderately stable (Ginsburg et al., 2003). Each context can trigger another social identity or several of them. Thus, context will activate a corresponding social identity or role identity which will

subsequently guide corresponding behavior. However, before this professional acquaintance takes place, occupational stereotypes can influence ingroup-outgroup behaviors and selective perceptions (Tajfel & Turner, 1979). Intergroup contact can dispel such stereotypes (Allport, 1954) which is why facilitating personal contact between members of different professions is one of the most popular strategies applied in interprofessional education (e.g., Carpenter & Dickinson, 2016; Khalili et al., 2013; Mohaupt et al., 2012; Hean & Dickinson, 2005). However, according to the proposed extended professional identity theory, mere intergroup contact between members of different professions will not enhance interprofessional commitment but only increase positive attitudes and interprofessional tolerance. The study of Chapter 5 provides some evidence for this assertion. Interprofessional contact in 'isolated' mixed profession groups will not change the relative professional positioning between different professions, and social commitment will remain uniprofessional.

In Phase 2, the professional orientation can become more comprehensive and the scope of practice and profession specific expertise can become clearer. This phase is conditional for the next phase since knowledge of professional roles makes it possible to assess the added value of a certain profession for patient centered care (Macdonald et al., 2010). Lack of knowledge regarding role or scope of practice can also contribute to assumptions regarding occupational competence or lack thereof when evaluating other professions. Therefore, orientation on professional content or other's scope of practice can also contribute to the discrediting of occupational stereotypes (Allport, 1954). Once professionals have a relatively clear view on the added value of other fields of expertise, interprofessional connections can be made.

Phase 3 consists of interprofessional procedures that facilitate interprofessional connections. This concerns information sharing, shared (clinical) consultation and decision-making, and shared care planning and evaluation. Therefore, skills related to team building and interprofessional collaboration are also inherent in this developmental phase. Shared procedures are the instrumental foundation of interprofessional collaboration. However, innovations are needed; new strategies must be developed to enable integrated care (Kodner & Spreeuwenberg, 2002; Stange, 2009). Thus far, the conventional health care system is especially focused on the coordination of different care paths by one leading profession instead of integrated connections between several professionals in a single care path (Stange, 2009). This is also the essential difference between multi- and interprofessional collaboration (Fig. 3). Even though these two concepts are often confused (Perreault & Careau, 2012), they are distinct constructs. Multiprofessional collaboration is more directed towards delegation from one (leading) profession to another and only concerns the involvement of different health professions. Interprofessional collaboration is directed towards concertation between health professions and concerns collaboration between health professions (Bachmann, Kiessling, Härtl & Haak, 2016).

Figure 3.Multiprofessional versus interprofessional collaboration



Thus, multiprofessional collaboration leads to the coordination of separate 'production lines' per patient each of which is the domain of a specific discipline with its own distinct goals. This way, the care of one patient becomes fragmented (Kodner & Spreeuwenberg, 2002; Stange, 2009). Interprofessional collaboration emphasizes content related connections (concertation) between different fields of expertise. Naturally, this applies to the entire integrated care path of each patient whereby the patient routing begins with the point of entry. This also means that even the necessity of involving a certain discipline in a care process cannot be determined by just one profession. More than one profession should be able the be a point of entry to the health care system as long as they are competent and authorized to do so. Macey, Glenny, and Brocklehurst (2016) provide evidence that collaboration between dentists and dental hygienists can be advantageous to patients when dental hygienists also perform check-ups. This way, the health care system can be organized more efficiently. In this case, the responsibility for integrated care is the responsibility of any recognized profession. To address complex and multi-facet care problems, not one single discipline or professional can possess all of the knowledge needed to comprehensively shape an integrated care path of a specific and unique patient. Thus, delegation based on general assumptions about the expertise of

another discipline is, generally, not interprofessional but multiprofessional and can reduce quality of care. Even more so, fragmented care poses a threat to patient safety. Therefore, interprofessional collaboration is also perceived to be a way to enhance patient safety (Thistlethwaite, 2012; Tjia et al., 2009). The organizational structure of health care and the way professionals are trained mutually affect each other (Long, 2013) and sustain a fragmented care approach as long as these interacting factors mutually reinforce each other. This is the reason that new methods of working and training are required if we want to overcome the rising costs and future challenges of health care.

Phase 4 concerns the environment in which collaborative action takes place. Collaborative procedures can be obstructed or enabled by environmental factors. Thus, collaborative procedures, as part of the clinical and professional context, are imbedded in organizational and systemic environments. These environments play an important role in behavioral guidance and professional socialization. This distinction of different levels in the health care system are confirmed and described by several models: Person-centered Practice Framework (McCormack & McCance, 2011), The Bellagio Model (Schlette, Lisac, Wagner & Gensichen,2009), Rainbow Model of Integrated Care (Valentijn, Schepman, Opheij & Bruijnzeels, 2013), and Development Model for Integrated Care (Minkman, 2012). This distinction helps us to understand the impact of the organizational and systemic environment on interprofessional collaboration in both educational and work settings. In the educational setting, the organizational and systemic factors are represented by influences of the 'hidden curriculum'. A hidden curriculum is a side effect of education that becomes visible in learned but unintended transmission of norms, values, and beliefs conveyed in the educational environment (Henry & Anthony, 1979). It reinforces existing social inequalities by educating students according to social position (Apple & King, 1983). Another educational influence is the impact of reward and feedback methods on individual and collective behavior. Simular to the hidden curriculum are the influences of organizational culture on relationships and communication between co-workers. In the work setting, organizational reward and feedback methods are not the only influence on the work climate. The organization itself must operate in an even larger and more complex system in which politics and policies, laws and regulations, and health insurance and remuneration methods impact work behaviors and professional priorities.

Phase 5 concerns the internalization of interprofessional belonging, interprofessional beliefs, and interprofessional commitment as a component of the professional identity. This is not the result of extrinsic motivators that derive from environmental influences but concerns an intrinsic motivation to work with other professionals and utilize more than just an individual's own field of expertise. This way, interprofessional commitment can guarantee interprofessional self-regulation without the need for continuous external reinforcement. In this phase, interprofessionality is internalized and becomes a natural element of a person's

professional identity and the professional competencies that are guided by this identity.

7.4 Implications for education

Both the meta-model of interprofessional development and the extended professional identity theory provide clues on how to facilitate and develop interprofessional collaboration in order to enable integrated care. This concerns the timing of interprofessional education, the important but limited value of conventional intergroup contact, the need for innovations with regard to interprofessional procedures, the impact of the hidden curriculum on interprofessional relationships, the importance of using reward and feedback to reinforce collective and not only individual behaviors, and the importance of implicit next to explicit learning related to professional identity formation.

7.4.1 Interprofessional education is not effective when introduced too early

Interprofessional education (IPE) is important for dental hygienists for learning to become an equal professional team player, and dentists must become more aware of the professional boundaries of the dental hygienist's role (e.g., McComas & Inglehart, 2016; Moffat & Coates, 2011; Gillis & Parker, 1996; Knevel, Gussy, Farmer & Karimi, 2016; Muroga, Tsuruta & Morio, 2015; Pervez, Kinney, Gwozdek, Farrell & Inglehart, 2016). Therefore, both dental and dental hygiene students should first become familiar with their own profession so that they are able to communicate their added value to the interprofessional team. A clear professional identity must be developed prior to the development of an interpofessional identity. Interprofessional orientation complements a professional identity as an extension. The added value of different professions depends on their complementary and unique expertise. When this is ambiguous and underdeveloped, the professional identity will be substandard. This will subsequently weaken the professional position as a member of an interprofessional team or alliance. Therefore, when interprofessional education is introduced too early in the curriculum, students will have a difficult time expressing what can be expected of them and their profession (Barth, Godemann, Rieckmann & Stoltenberg, 2007). Moreover, first-year students hold perceptions that are more stereotypical compared to students with advanced training (Hammick, Freeth, Koppel, Reeves & Barr, 2007; Meirs et al., 2007). These strong occupational stereotypes do not always improve the outcomes of interprofessional education. In addition, mature-aged and experienced students appreciate interprofessional education more than younger students and are also more active participants during it. The debate regarding the optimal time to introduce it has not yet been resolved (Hall & Weaver, 2001). Current evidence shows that interprofessional education appears to be most effective when introduced vertically with progressive collaboration that is more advanced (McNair, Btown, Stone & Sims, 2001). This is also a consideration of the proposed meta-model of interprofessional development. Based

on the described phases of this meta-model, professional identity formation should first focus on clarifying its own uniqueness before becoming acquainted with members of other professions. Furthermore, the complexity of interprofessional development should increase during student training.

The first year of the dental and dental hygiene curriculum should be uniprofessional in order to acquire profession-specific knowledge and skills but also a clear sense of identity. The same social psychological processes on which the strategy of the proposed extended professional identity theory is based can also be used to enhance the formation of a clear professional identity. Before participating in interprofessional education, they should be fully aware of their added value in an interprofessional team or alliance and must be able to articulate this clearly without too much hesitation and indecision. Once students are well-acquainted with their own profession, they could show and teach students of other professions what their added value is. Such activities could be executed during multiprofessional education in which only knowledge of more than one scope of practice is shared and demonstrated among students. Multiprofessional education can involve attending the same lectures and learning about each other's scope of practice without true collaborative efforts. This can also help define an individual's own professional identity and further clarify professional distinctiveness related to other professions (Bridges, Davidson, Odegard, Maki & Tomkowiak, 2011). By using each other's profession as a reference, professional uniqueness and added value can be magnified and become clearer. The psychological need for distinctiveness will enhance professional uniqueness (Turner & Reynolds, 2010). Therefore, the effects of intergroup comparison on complementary characteristics and qualities shape the professional identity through interprofessional differentiation when dental and dental hygiene students meet but do not 'team up' (Forgas & Williams, 2014). Based on the arguments and evidence mentioned above, multiprofessional education is a valuable starting point for discrediting occupational stereotypes and for developing a discipline-specific professional identity through comparison and interprofessional differentiation. This strategy can precede interprofessional education in order to maximize distinctiveness as added value. A parallel but not isolated curriculum on profession-specific expertise may help to understand the unique side of an individual's own professional identity in combination with learning to collaborate (Kururi et al., 2017). Critical resources for a succesful interprofessional curriculum are commitment from departments and colleges, curriculum development by an interprofessional team of staff members, diverse calendar agreements, curricular mapping, mentor and faculty training, a sense of community, adequate physical space, technology, and community relationships (Bridges et al., 2011).

7.4.2 The important but limited value of the conventional intergroup contact approach

According to the findings of the experiment as described in Chapter 5, mere intergroup contact did not improve the behavioral equality that was displayed between the members of the different professions involved. However, conventional interprofessional education is

generally focused on 'isolated' mixed profession groups which are a social reality on their own. Relationships between the different professions within that group will not be changed but be mutually reinforced.

The results of the experiment described in Chapter 5 concerned an intervention to enhance interprofessional behavior. This behavior was operationalized as social equality or lack of interprofessional hierarchy. Such interprofessional behavior is inherent to interprofessional collaboration (D'Amour, Ferrada-Videla, San Martin Rodriguez & Beaulieu, 2005; Headrick, Wilcock & Batalden, 1998). Experimental results showed a decrease of interprofessional hierarchy reflected in social interaction between dental and dental hygiene students in a mixed profession group. However, the interprofessional hierarchy within the mixed profession groups in the control condition of this same experiment did not decrease. Interprofessional behavior did not change when dental and dental hygiene students were facilitated in getting know each other by learning and working together. This result deviates from current opinions on intergroup contact and its effect on interprofessional collaboration. It appears to be contradictory to the intergroup contact theory (Allport, 1954) which is one of the most popular theories used in contemporary interprofessional education (e.g., Carpenter & Dickinson, 2016; Khalili et al., 2013; Mohaupt et al., 2012; Hean & Dickinson, 2005). Therefore, just bringing groups of students together is not enough to promote interprofessional collaboration. Intergroup comparison processes between mixed profession groups should be facilitated in order to enhance not only positive attitudes but also interprofessional behavior. The experiments described in this dissertation were based on the idea that professional identity related to interprofessional collaboration can be changed through purposeful and systematic socialization in small groups and in a relatively brief period of time.

7.4.3 The need for innovations with regard to interprofessional procedures

Students must also be able to design interprofessional procedures to facilitate effective and efficient interprofessional collaboration. This can deviate from conventional routines and requires an innovative use of modern technology (Kodner & Spreeuwenberg, 2002; Stange, 2009). It also involves ideas on how to guarantee clear care paths, complaints procedures, the sharing of patient information, and screening or diagnosis. Instead of delivering and transferring 'correct' answers, as conventional education is accustomed to doing, students could also contribute to divergent processes in developing innovative integrated care procedures from their young, modern, and refreshing perspectives. Concertation does have to be limited to interprofessional collaboration alone.

7.4.4 The impact of the hidden curriculum on interprofessional relationships

The environment in which interprofessional collaboration occurs contains antecedents that can enhance or obstruct interprofessional behavior. Therefore, the influence of role models must be explored and clues must be found on how to counterbalance or utilize those influences that

can limit or increase interprofessional collaboration in the educational setting (Lempp & Seale, 2004). Undesirable influences of the hidden curriculum can result in students' fears of personal inadequacy and making errors, students' feelings of being publicly belittled and subject to other forms of abuse, and students' prejudice against other professions (Benbassat, 2013). A hidden curriculum is a side effect of education that becomes visible in learned but unintended transmission of norms, values, and beliefs conveyed in the educational environment (Henry & Anthony, 1979). This side effect can also influence career choices and enhance performance in certain areas depending on the influence or role models (Stagg, Prideaux, Greenhill & Sweet, 2012). On the other hand, unintentional influence of faculty can be communicated through mixed and hidden messages with regard to professionalism (Hawick, Cleland. & Kitto, 2017). The formal and hidden curriculum can contradict one another and be evident in staff knowledge and behavior, required resources and available facilities, and lack of clear guidance regarding educating students in professionalism (Hawick, Cleland & Kitto, 2017).

Exploring the hidden curriculum can provide clues for changing the cultural climate by training faculty in the principles of interprofessional collaboration and integrated care. The impact of the hidden curriculum could also be reduced with teacher-independent education. For example, simulation-enhanced education with objective interprofessional performance-indicators might increase control over socialization processes.

7.4.6 The importance to use reward and feedback to reinforce collective behaviors

Generally, conventional education is focused on the performance of individual students rather than the performance of groups of students (e.g., Bierer & Dannefer, 2016; Burk-Rafel, Santen & Purkiss, 2017; Domac, Anderson, O'Reilly & Smith, 2015). However, an assessment will determine the goal-directed study behavior of students. Therefore, individual assessments will direct individual behavior and not collective behavior. Educational programs should also have to apply collective rewards and feedback if collaborative behavior needs to be a desired outcome.

7.4.7 The importance of implicit next to explicit learning related to identity formation

Conventional education is primarily focused on explicit learning instead of implicit learning. In contrast to explicit learning, implicit learning is learning without being aware of it (Frensch & Runger, 2003). Since education is expected to change student behavior in such a way that graduates are competent enough to work as a professional, anything that can positively contribute to this competence should be a relevant educational tool. Since professional identity is a meta-competence (Harrington & Hall, 2007) and professional identity formation consists of both explicit (conscious) and implicit (unconscious) learning processes (Pompper, 2014), education should also teach students by facilitating desired learning outcomes indirectly through the facilitation of psychological processes. Clues for how to indirectly facilitate student behavior through professional identity formation are provided by the extended professional identity theory and the evidence provided in Chapters 5 and 6.

7.5 Implications for clinical practice

The experiments of Chapters 5 and 6 demonstrate that interprofessional collaboration not only depends on predefined team objectives or rules of engagement. Behavioral and perceptual effects of these experiments are beyond mere reasoning. They are the results of active interventions influencing emotionally driven social behavior and team functioning. Therefore, the attitudes towards an extended scope of practice and independent practice as reported in Chapter 1 are also likely to reflect irrational and social psychological processes. The same applies for the communicated reasons for opposing or supporting an extended scope of practice as reported in the study of Chapter 2. Therefore, there are two simultaneous priorities of equal importance with regard to interprofessional collaboration and task shifting between dentists and dental hygienists: systemic change and operational change. Even when it is known how to meet all of the requirements to enable interprofessional care, we still depend on the influence of the environmental factors that affect our behavior. With regard to operational change, several implications can be mentioned: sharing a team practice or independent practices in close proximity, task shifting to dental hygienists can improve accessibility of oral health care, the incentives in and structure of the national assurance system should be adapted, new competences of dental hygienists should also be facilitated in practice, and the nature of task shifting should depend on its functionality to integrated care.

7.5.1 Sharing a team practice or independent practices in close proximity

Interprofessional group formation or interprofessional commitment are more difficult when dentists and dental hygienists do not physically work together in close proximity. This indicates that a shared team practice or independent practices in very close proximity should be preferred. Proximity is an essential component of entitativity (the perception of being a group). In turn, entitativity is required for social commitment. When this group is a mixed profession group, commitment of individual group members to their mixed profession group can increase over time. When all team members are committed, the mixed profession group cohesion will increase. Competition with other simular groups can increase the chance this will happen. In turn, group cohesion is a predictor of team performance. When the mixed profession group is cultivated by making interprofessional behavior a performance indicator and when they can compare themselves with a simular mixed profession group, the group members are likely to collaborate interprofessionally with the members of their own mixed profession group. Finally, the mixed profession group will develop into an interprofessional team.

Studies regarding independent dental hygiene practice show no increased risk to patient safety (e.g., Astroth & Cross-Poline, 1998; Innes & Evans, 2013; Freed, Perry & Kushman, 1997). When dentists and dental hygienists share the same practice location, small groups will express more and stronger cohesion than large groups or individuals that work independently

from a distance. In large team practices, it will be wise to introduce several mixed profession groups between which interprofessional intergroup comparison is facilitated. In addition, interprofessional behavior should be rewarded and not just financially. Selfish and egocentric behaviors are potentially stimulated by only focusing on individual rewards and feedback. When applying the extended professional identity theory in clinical practice, mixed professions groups should be enabled to compare the interprofessional behavior and performance of other mixed groups or practices with their own mixed group or practice.

7.5.2 Task shifting to dental hygienists can improve accessibility of oral health care

Dental hygienists play an essential part in oral health care with regard to prevention (Thevissen, De Bruyn & Koole, 2016) and especially when diagnostic tasks are shared to enable clinical concertation. The dental hygienist could also, in collaboration with the dentist and other oral health care professionals, improve oral health care in additional ways such as performing additional dental tasks. Task shifting can be cost-effective (Beach, Shulman, Johns & Paas, 2007; Matthiesen, 2012), and dental hygienists who perform basic dental tasks can improve the accessibility of oral health care (Bell & Coplen, 2016; Myers, Gadbury-Amyot, VanNess & Mitchell, 2014).

7.5.3 The incentives in and structure of the national assurance system should be adapted

Several barriers limit task shifting to dental hygienists. Financial systems can negatively influence the dissemination of task shifting in oral health care (Brocklehurst et al., 2016; Coplen & Bell, 2015). This financial infrastructure, of which insurance companies are a part, is not always perceived by patients as being adequate (Edgington & Pimlott, 2000). In addition, to assure that dentists and dental hygienists do not pay too much attention to the needs of relatively healthy individuals, the delivery of dental care should be in accordance with the severity of the disease, and these oral health care providers should share views on diagnosis and treatment (Leisnert et al., 2015). The incentives in and structure of the national insurance system should be adapted to change these patterns.

7.5.4 New competences of dental hygienists should also be facilitated in practice

Besides the economics of oral health care, sustaining the competence of dentists and dental hygienists also remains of major importance. Just like dentists, dental hygienists should be facilitated in maintaining their competence through regular practice. Skills are acquired during undergraduate training and should be maintained after graduation. However, in practice, this opportunity is not always reality (Jerković-Ćosić et al., 2012; Northcott et al., 2013; Virtanen et al., 2011). In addition, task shifting can lead to polarization between professions like dentistry and dental hygiene (Adams, 2004; Knevel et al., 2016; Northcott et al., 2013; Ross & Turner, 2015). This polarization can subsequently lead to the underutilization of the dental hygienist (Knevel et al., 2016; Kreindler, Dowd, Dana Star & Gottschalk, 2012). Polarization between professions reflects social-political processes that also seem normal between other medical

professions, nursing, and allied health occupations (Macdonald, 1995).

Several studies report that patients trust in the competence of dental hygienists and their ability to function independently (e.g., Edgington & Pimlott, 2000; Innes & Evans, 2013; Phillips, Shaefer, Aksu & Lapidos, 2016; Turner & Ross, 2017). Many studies provide evidence that they are competent when performing specific dental tasks (e.g., Brocklehurst et al., 2012; Daniel & Kumar, 2016; DeAngelis & Goral, 2000; Macey et al., 2015; Post & Stoltenberg, 2014; Öhrn et al., 1996). Another study reports that dental hygienists are confident about their own competence and about working without dental supervision (Catlett, 2016). However, many patients are not well-informed about the role and qualifications of these individuals, and this makes it difficult for them to have a realistic opinion about task shifting (Brocklehurst et al., 2016; Pippi, Bagnato & Ottolenghi, 2017).

7.5.5 The nature of task shifting should depend on its functionality to integrated care

Inherent to interprofessional collaboration is professional autonomy (e.g., D'Amour et al., 2005; Headrick et al., 1998). Shifting tasks to dental hygienists not only concerns extending their scope of practice with or without certain dental supervision requirements (Johnson, 2009). The types of specific tasks shifted to the dental hygienist can vary per country, and specific dental tasks have distinct functions in oral health care. It is important to understand why certain dental tasks should be shifted to the dental hygienist and to what degree. Task shifting can have at least three different functions: intraprofessional (as an addition to profession-specific care), multiprofessional (coordination of shared case load), and interprofessional (for clinical concertation by shared diagnostic tasks). Local anesthesia for painful periodontal treatments and dental radiography to identify potential bone loss are examples of functional additions to the periodontal treatment by dental hygienists (Nield-Gehrig & Willmann, 2008). Cariologic diagnosis by dental hygienists can have different functions. Dental hygienists can discover caries when cleaning teeth and removing calculus. Dental radiography, initially used for periodontal diagnostic purposes, can sometimes show tooth decay before it becomes visible (Zadik & Bechor, 2008). Therefore, both dentists and dental hygienist can contribute to optimizing caries management with a multifunctional utilization of dental radiography. When used properly, this might improve oral health care efficiency. An effective sharing of dental radiographs and other diagnostic information between dentists and dental hygienists might also lower costs. Another function of cariologic diagnosis by the dental hygienist is not only to identify caries but also the degree of its complexity. Based on such an assessment, the dental hygienist could consult a dentist or refer to a dentist when the caries is overly complex and restorative procedures are not allowed to be performed by the dental hygienist. This way, the dental hygienist can focus on more common and less complex cariologic problems, share the case load with dentists, and make oral health care more accessible. When dentists and dental hygienists commit to an interprofessional practice in which they combine their added value, a dental hygiene diagnosis should also be conducted by the dentist. In that case, the

dentist should consult a dental hygienist and refer to that individual when the dental hygiene problem is too complex or the treatment is too extensive.

7.6 Concluding remarks

From an interprofessional perspective, task shifting is especially functional when it improves the care provided by a specific profession. However, when task shifting blurs the professional identity, it also reduces the added value of the separate disciplines involved in the team and does not do justice to their unique specialization. Because of increasing specialization, it becomes almost impossible for a single profession to be all encompassing. The interprofessional team members must overcome this problem by altering their perceptions and commitment regarding the position of their own profession towards other professions. Instead of becoming a generalist, they should remain a specialist in their own field of expertise but also discover ways to connect their expertise with other fields of expertise. Thus, professional distinctiveness represents added value which means that dentists and dental hygienists should become more distinctive but also more connected professions. This also means that task shifting, in particular dental restorative procedures, can distract dental hygiene students and professionals by focusing too much on dental tasks while neglecting their own expertise or core business. Specialists do not distinguish themselves by being overly versatile. They distinguish themselves because they are better at something compared to non-specialists. When dentists and dental hygienists are more distinct specialists, they will be more valuable to the interprofessional team as long as they are willing to combine their expertise.

Task shifting is an umbrella term that can apply to many different types of tasks with or without additional supervision requirements. This task shifting is not always a solution nor is it a goal. However, it can be a solution as long as interprofessional belonging, commitment, and beliefs are enhanced, and task shifting does not degenerate the distinctive features of professional identities. To improve health care, the focus should be on how we utilize expertise in general and how our own expertise is functionally related to other fields of expertise. Task shifting can be a tool to enhance an individual's own professional contributions and simultaneously be a tool to enable integrated health care through diagnostic overlap and mutual understanding. To do so, we must change the way we think, the way we do, and the way we feel. Even more so, good health care should be the result of what 'we' do together.

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