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Peer influence in clinical workplace learning

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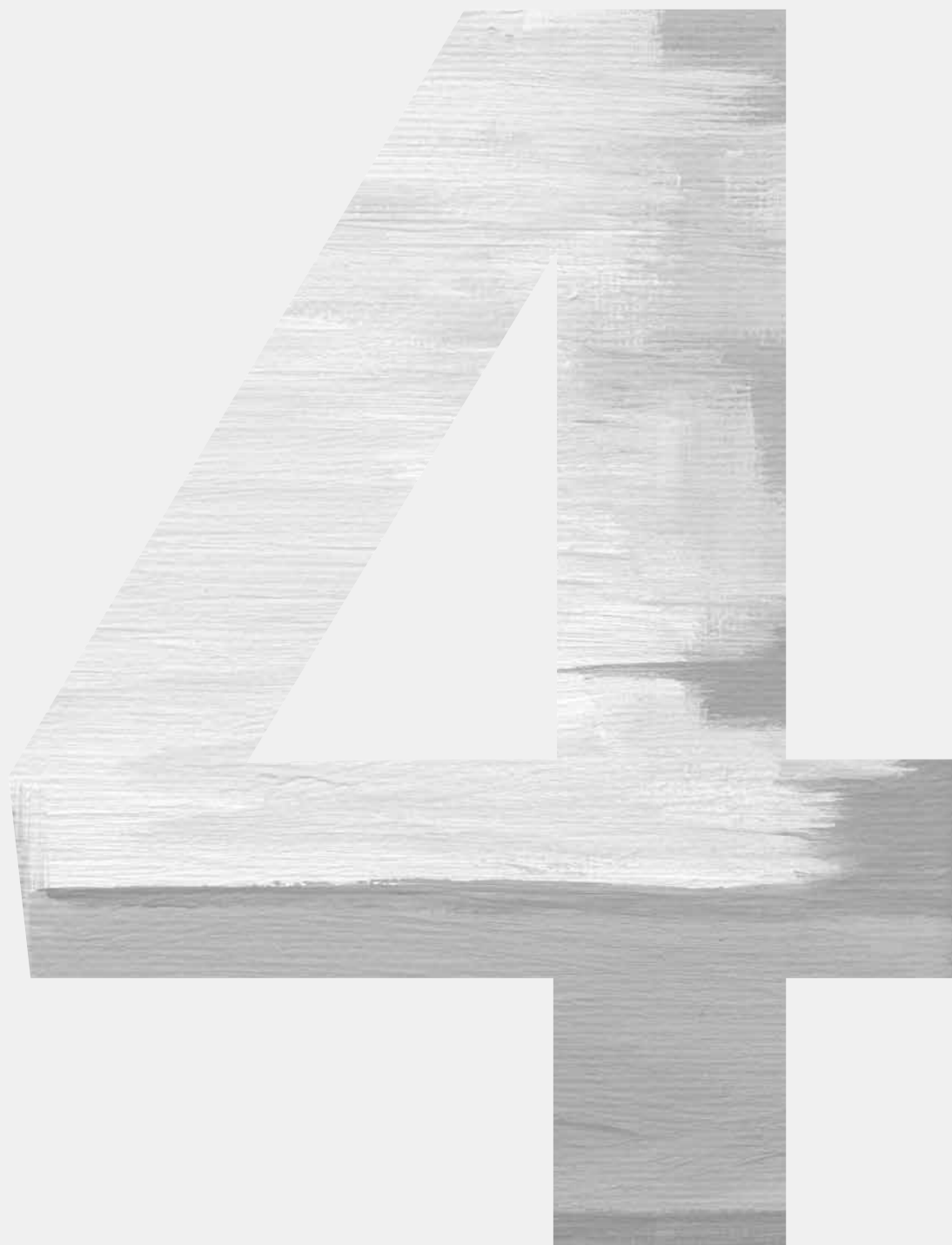
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Chapter 4

Social comparison: peer influences on students' trajectories towards becoming doctors

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ABSTRACT

Purpose Students training together to become doctors inevitably make so-called social comparisons with one another. To understand the process, we investigated the nature of the comparisons and their mechanisms and effects.

Method The research used constructivist grounded theory methodology, drawing sensitising insights from social comparison theory. Six male and 6 female medical students in the first clerkship year of a Dutch undergraduate medical program, kept audio diaries in which they recounted 74 instances of social comparison. All data were transcribed verbatim and analysed, constantly comparing the evolving interpretation against the original transcripts.

Results Participants' comparisons with peers gave meaning to their clerkship experiences. The comparisons were in three domains: participants' ability to perform medical tasks; their interactions with others; and their selves. The most common net effects were reassurance, self-affirmation and motivation to make further progress. The extent to which participants identified with or contrasted themselves against peers' levels of performance and experience influenced the outcome of the comparisons.

Conclusions Peer comparison had an important place in participants' professional development. They provided benchmarks against which participants appraise their current position and the progress they had yet to make. Educators should be aware of this important influence on medical students' practice-based learning. Future research could usefully explore how social comparison contributes, over time, to students' identity development.

INTRODUCTION

When the supervisor told her to be more brief and to the point ... I related this to my own performance, which is also lengthy... The next morning, I tried to be more succinct...

Ineke (P1,3.2)

Modern conceptualisations of workplace education see learning as not just an outcome of teaching but of students' complex experiences as a whole.¹⁻³ Many different people including staff, residents, patients, and peers make important contributions to this comprehensive process. Lave and Wenger coined the term 'Communities of Practice'⁴ to describe the social contexts in which those people contribute to individuals' learning. A 'community', according to the theory, is a group of practitioners who are mutually engaged in a 'practice', which comprises a set of shared skills and ways of addressing problems. Novices in a community are described to start in a peripheral position in which they observe and perform basic tasks. They travel more centrally as they become more skilled and experienced. Communities that interconnect with each other constitute a 'landscape of practices'.⁵ Novices in such landscapes – like medical students – develop their professional identities by crossing boundaries and experiencing multiple different communities, a trajectory that requires sustained participation over time. Social interaction is central to this type of learning. Steven et al.¹ showed how students' interactions with doctors are particularly important because they provide access to the practice of patient care and help students learn from that practice. Other researchers have drawn attention to the relevance of interactions with patients^{3,6-7} and staff.⁸⁻¹⁰ It seems logical that interactions with peers are also important but surprisingly little is known about the impact they have on students' development.

In earlier work, we showed that clerkship students frequently compared their own position and performance with those of peers.¹¹ Festinger's 'Theory of social comparison processes'¹² describes these processes as thinking about information concerning one or more others in relation to the self.¹³ People commonly use social comparison to make sense of themselves in relation to their social surroundings.¹⁴ They prefer to compare themselves with others close to their own position or level of competence because 'similar others' are most relevant to their own situation.¹² In the context of medical education,

students compared themselves with peers more often than with residents and staff.¹¹ Peers have comparable levels of experience and are similarly situated in the clinical hierarchy so they were best able to inform students about opportunities and threats in their current situations. A later experimental study of students' estimates of performance showed that comparison with a peer who had already completed a novel clinical situation affected students' perception that they could master that situation.¹⁵ Such views about one's own ability to fulfil a task or situation are in line with Bandura's concept of self-efficacy.¹⁶ Thinking 'I can do it as well' strengthens a person's self-efficacy whereas thinking 'I will also have difficulty' diminishes it.¹⁵ Self-efficacy is known to affect people's aspirations, selection of activities, and perseverance during difficulties.¹⁷ Therefore, students' use of social comparison affects their engagement in clinical practice.

The aim of the current study was to help medical students benefit from comparison processes by investigating how they use social comparison in authentic clinical settings. The data gathering technique of solicited audio diaries¹⁸ provided a means of examining students' experiences of social comparison close to the event, in order to establish the nature of the comparisons and their mechanisms and effects.

METHODS

Conceptual orientation

We took a constructivist epistemological stance, which holds that knowledge is constructed by human interpretation and, therefore, shaped by social, cultural and personal factors.¹⁹ A constructivist orientation assumes that research processes are influenced by researchers' disciplinary perspectives and background assumptions. This project was informed by our previous work in the domain^{11,15,20} and conceptual orientation towards social comparison theory,^{12,21-22} which provided sensitising insights for constructivist analysis.

Context

The setting was the University Medical Center, Groningen, The Netherlands, whose undergraduate curriculum includes six years of training: a three-year pre-clinical Bachelor's programme, followed by a three-year clinical Master's

programme. The first year of the latter includes four twelve-week rotations, each of which has a six-week period of skills training, followed by a six-week period of full-time engagement in clinical practice. During these clinical periods, students meet each other once a week for coach-group sessions.

Participants and Research team

Participants were undergraduate medical students in the first year of their Master's programme recruited from 189 students who were attending tutorials during the skills training periods. They were informed about the aims of the study and told that participation was voluntary and confidential. Since the gender distribution in our institution is 70:30 in favour of female students, we explicitly encouraged male students to participate. Students who considered participating were invited to send an email with the text 'I am interested' to the first researcher (ANJR). In reply, they were given further information and asked to sign the informed consent form and collect an audio recorder. The research team, consisted of: a first researcher and medical sociologist/ethicist (ANJR), an education researcher and medical doctor (TD), an education researcher and educationalist (NR), a medical doctor and curriculum leader of the Master's programme (JBMK), and a psychologist and head of the Center for Research and Innovation in Medical Education (JCS). The Ethical Review Board of the Netherlands Association of Medical Education, NVMO-ERB,²³ approved this study. To maintain confidentiality, pseudonyms are used to identify participants.

Procedures

Participants kept audio diaries recounting their experiences of social comparison over a 4-week period, following instructions shown in Box 1. The first two weeks, in which participants completed their skills training, were used for familiarisation. The second two weeks, in which participants were engaged in clinical practice, were used for analysis. ANJR listened to the recordings and clarified her interpretation with participants if necessary. All recordings were transcribed verbatim and anonymized.

Box 1 Audio diary instructions

Please record experiences of comparing yourself with one or more peer students. The nature of these comparisons is up to you. There are no good or bad comparisons. Comparisons can be based on conversations or on observed situations or performances. Comparisons can just pass by or can be experienced rather intensely. Some comparisons are forgotten almost immediately while others will be remembered for a long time. Do not make choices; all comparisons are relevant to this study.

When you make your recordings, please think about these things:

- Give some background information, like where and when the comparison happened.
 - Give some information about the comparison peer(s) and your relation to that/those peer(s)
 - Recount the comparison as clearly as possible
 - Try to explain the effect of the comparison, such as how it influenced your feelings or (intended) behaviour.
-

Analysis

Two of us (ANJR, NR) read all transcribed recordings closely and independently and discussed their first impressions with the rest of the team (TD, JCS and JBMK). ANJR open-coded all data, using the constant comparative method,²⁴ and selected a diversity of transcripts for TD to read and reread. In the meantime, ANJR developed a preliminary interpretative model, which she discussed with TD and NR. Subsequently, ANJR performed axial and selective coding of all data in close consultation with TD, critiqued by NR. This exercise resulted in an initial answer to the research questions, which was commented on by the whole team. Then, we prepared a condensed narrative of results for the present report. Quotations presented in this report were chosen for their ability to illustrate findings that were strongly represented in the whole dataset.

RESULTS

Participants

Six male and 6 female students recorded an average of 6 (range 4-11) entries in their diaries, totalling 74 entries. Demographic details of participants are shown in Table 1. Sixty-one percent of comparisons were made on the ward, 16% during coach-group sessions, and the remainder in informal places like

clerks' rooms, hospital restaurants, corridors, and while travelling together to and from the hospital. Seventy three percent of comparisons were with one other peer and the remainder with more than one peer. Participants recorded more comparisons with women than men, as would be predicted from the excess of female students in the program.

Table 1 Characteristics of participants

Participant (pseudonym)	Gender	Age	Number of prior rotations completed	Discipline at time of study	Number of diary entries
Ineke	F	25	3	Orthopedics	4
Annemarie	F	24	3	Psychiatry	10
Henk	M	23	2	Pediatrics	7
Pieter-Jan	M	24	2	Cardiology	4
Anneke	F	25	1	Internal Medicine	4
Jeroen	M	24	3	Orthopedics	5
Jolanda	F	22	2	Pediatrics (oncology)	6
Tjitske	F	22	2	Gynecology	11
Frank	M	22	2	Urology	5
Jelle	M	25	3	Pediatrics (surgery)	5
Saskia	F	25	1	Dermatology	6
Maarten	M	22	0	Pediatrics	3

Processes of comparison

Three successive stages could be identified in participants' diary entries: observation, reflection, and response. These phases are summarized in table 2 and explained here.

Observation

Participants observed similarities and differences between themselves and peers regarding: their ability to perform clinical tasks; how they interacted with patients, residents, and staff; and their selves.

Ability to perform tasks. Peer comparison helped participants judge what clinical tasks they should be capable of at their current level of experience:

Example 1

He seems to be far more assertive and experienced than I am. (...) he immediately offered his help, while I was still wondering if I was up to it. He had already inserted several cannulas. (...) I had not inserted one yet (...) He made me think... Of course... he is in his fourth rotation, but that is not so far ahead. He is just one block further on...

Frank (P9,4.2)

Interactions with others. Some comparisons concerned how participants connected emotionally with patients:

Example 2

In pediatric oncology (...) I am more touched than I expected. (...) Some peers told me not to take these stories with me. It made me think... is it better not to become a pediatrician? (...) I decided to watch myself on this.

-

Today, I met a very nice peer, who I knew from former rotations (...) She told me that she is seriously moved by some children; she thinks about them at night ... Then, I thought, well ..., I am not the only one, and ... this is probably something that is part of the rotation. At the moment, I think this is all part of learning how to balance.

Jolanda (P7,3.3)

Other comparisons concerned participants' ability to interact with residents and staff, get access to patient care activities, and show what they had done:

Example 3

She told me that she did not do any pelvic exam herself yet. That surprised me because I did many. When we talked about it, I noticed that she is much more reserved, not asking questions or offering help (...) I always ask them if I could perform some acts (...) The comparison confirmed me in my own approach... I will continue with it.

Saskia(P11,3.3)

Table 2 Coding template

First level code	Second level code	Third level code
Phase I Observation	Ability to perform tasks (doing)	Compile records Insert a cannula Handover Admit a patient etc.
	Interactions with others	Staff/trainees Patients Others (parents/nurses etc.)
	The 'self' (being)	Feelings / uncertainties Assertiveness Self-assurance Self-presentation etc.
Phase II Reflection	Identification	Expressing similarities (‘like me’, ‘he/she also’ etc.)
	Contrast	Expressing differences (‘much more’, ‘less experienced’ etc.)
Phase III Response	Awareness of position	Understanding / insight
	Motivates to progress	Confidence in own approach Motivates to progress further Motivates to catch up
	Self-enhancement	Self-confirmation Relief / reassured Opposite: distress / insecure

Their selves. The most frequent topic of comparison was participants’ *selves*. They compared their own behaviours, uncertainties, expectations and self-presentation with peers:

Example 4

White coats are not allowed in psychiatry (...) I was really puzzled about what to wear, because I do not know how to look professional without one (...) When I arrived, a peer who also started today, immediately asked if I also had difficulties deciding what to wear (...) It somehow confirms me... it is not silly to be uncertain about this.

Annemarie(P2,3.1)

Reflection

All comparisons contained reflective phrases in which participants gave meaning to the similarities and differences they had observed between themselves and their peer(s). Participants used expressions like *'he is not that far ahead'* or *'she just started, while I ...'* to locate themselves in relation to peers in the education continuum. Likewise, they evaluated comparison peers' performance; *'she is much faster than I am'*, *'she did exactly the same'*. In all reflections, participants expressed signs of *identification* or *contrast*, weighing the impact of the comparison. In Example 1, above, the contrast made by Frank with a peer - *'Of course, I can say he is in his fourth rotation...'* - provided a reason for not yet being able to insert a cannula. But he went on to identify with his peer, when he said he himself would be in that position rather soon - *'... but that is not that far ahead. He is just one block further on...'* He appreciated that he had to step forward and offer to insert cannulas in order to make progress.

Response

In the third phase of comparison, participants responded to the comparison information by expressing a clearer understanding of the progress they had already made:

Example 5

When I tried to help him, I noticed how much trouble he had, doing that admission which was rather straightforward (...). And then, well... I thought it was special... Of course he is in his first rotation and I am in my fourth, but... I did not realize before that I had grown that much. Yeah, I liked it. I really progressed this year.

Jeroen (P6,4.1)

They also saw what they could aspire to in the near future:

Example 6

Today I just followed the others, a student who is already in her third year, and two trainees (...) I compared myself mainly with the other student... because, as a student myself, I know exactly how far ahead she is (...) I really admire her performance (...) I hope I can also reach that level.

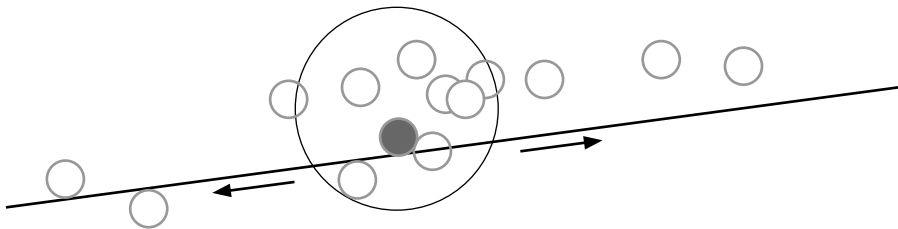
Maarten (P12,4.3)

Participants spoke of how their feelings of self-esteem and self-efficacy had been enhanced and how they felt motivated to progress further. Reports of negative responses, like feeling insecure or distressed, were few and, when present, often accompanied by another comparison with a more positive outcome, as in Example 3.

Theoretical interpretation

Figure 1 shows schematically how, as predicted by social comparison theory,²⁵ participants identified with, or contrasted themselves against, ‘comparison other(s)’.

Figure 1 A model of peer comparison



Legend A student (filled circle) uses downwards (down arrow) and upwards (up arrow) comparisons with peers to give meaning to his/her current stage of development.

Upward comparison: Reflective comparisons with more experienced or successful peers, as represented by the upward arrow in Figure 1, showed what could be reached in the near future and how: what level a participant had reached, what was yet possible, and what needed to be done to reach that higher level of performance. **Upward identification** with a higher-performing peer motivated participants to strive to improve their own performance. But if the comparison peer’s performance seemed too far out of reach to be achievable, **upward contrast** was discouraging or less relevant to a participant’s current situation, as in the case of Maarten, Example 7.

Downward comparison: Comparisons with peers who were less experienced or successful, illustrated by Jeroen, Example 5, is represented by the downward arrow in Figure 1. **Downward contrast** made participants aware of the progress they had made and increased their self-esteem and confidence. **Downward identification** as in: ‘then I noticed ...she is also having difficulties with that’, helped them understand and accept their current stage of development.

DISCUSSION

Principal findings and meaning

Peers had a central place in participants' learning. They provided benchmarks against which participants compared their ability to perform clinical tasks and interact with others, and their feelings and attitudes towards themselves. Participants identified and/or contrasted themselves with peers and it was the balance between these reflections, which determined the effect of peer comparison. The most common net effect was reassurance, self-affirmation and motivation to progress. Peer comparison, we can conclude, helps medical students understand their current position and determine what they can aspire to. The way they check and recheck their learning experiences against one another indicates that thinking about students in isolation from their peers would only tell part of the story of clinical learning.

Strengths and limitations

A strength of this study was the use of an established social psychological theory as an a priori theoretical stance to provide sensitizing insights for the qualitative analysis. The use of qualitative methodology was both a strength and a limitation. Audio dairies, as has been reported previously,¹⁸ allowed participants to provide rich, contemporaneous accounts of their peer comparisons. Using a constructivist analytical method, we were able to provide a thick description of the process of comparison. But, as is typical of qualitative research, we obtained our data from an opportunity sample of students, who were eager to participate. Whilst their eagerness made it possible to do the study, it may have introduced a bias towards more positive findings. That does not invalidate what we found because qualitative methodology does not claim to produce generalizable findings but it does seek to produce transferable ones.²⁶ Whilst urging caution in transferring the results to other students in other contexts, we note that a tendency towards positive comparisons has been recognized in the research literature.²⁷ Most people tend to avoid painful comparisons and couple negative comparisons with more positive ones or adjust their comparison level, as in the saying 'there's always someone worse off than yourself'. There may not, we suggest, be so much of a bias as at first appears. The theoretical model in Figure 1 equates to a 'mid-range theory', which educators could easily transfer to their interactions with students and researchers could test, as suggested below.

Relationship to prior research and theory

This investigation was part of a novel programme of research into social comparison in medical education. The findings support our previous observations that medical students made social comparisons in clinical workplaces. The findings strengthen our theory that comparisons with peers may be beneficial to students' learning and professional development,¹¹ and that students use such comparisons to estimate their abilities to master clinical situations.¹⁵ Likewise, they are consistent with our suggestion that peer comparisons could play a role in preventing distress because they provide students something to grasp hold of.²⁰ We suggested, at the start of this article, that it is useful to think of social comparisons, as first described by Festinger¹² and elaborated by other theorists,^{21,22,28,29} as taking place within Communities of Practice. Participants' comparisons with congruent others evaluated identity issues such as the wearing of a white coat and the use of medical terminology. These can be related to dimensions of a practice, which, according to Wenger, are vital to the peripheral participation of newcomers to a community: mutual engagement with the actions and 'repertoire in use' of other people.⁵ According to social comparison theory, reflections on similarities and differences between oneself and others help to make sense of oneself in one's current situation.²⁹ In the context of COP, such a weighing of differences and similarities could be interpreted as the negotiation of meaning, the interplay between participation and reification that makes us who and what we are.⁵ Peers, therefore, seem to play a pivotal role in the identity formation of students in clinical practice. Travelling on similar trajectories, they provide reference points that help individuals precede along their own trajectories and shape their identities as (proto)professionals.

Implications for practice and research

Box 2 suggests some implications for educational practice. First, we should not overlook the existence of peers when we think about learning in clinical practice alongside practitioners and patients. We should be aware that students perpetually compare themselves with their peers, which increases the number of important players on the field of medical education.

Box 2 Implications for practice

- Do not overlook the existence of peers
 - Be conscious of students' tendency to compare themselves with peers
 - Be conscious of the vital role of such comparisons in students' professional development
 - Promote peer comparisons by facilitating student encounters in coach groups, joint lunches, clerks' rooms
 - Talk with students about their comparison behaviour
 - Keep an eye on possible negative effects of peer comparisons
-

Having recognised that peer comparisons play an important part in students' development, it seems wise to support such comparisons. Interactions with a diversity of peers will increase students' opportunities to make comparisons according to their personal needs. Talking with students about their comparisons might reveal assumptions, which are worth encouraging or challenging. Besides that, mentoring conversations provide opportunities to watch for negative comparison outcomes, like insecurity or distress.

This research has implications that go beyond students' individual development because it provides an explanation for how clinical communities are changed by new generations. When students check their own experiences with those of peers at similar stages of development, they also give a contemporary meaning to these experiences, which may differ from how they would have been experienced in earlier times. We propose, therefore, that future research could usefully seek to understand students' use of social comparison over time as their professional identities mature. We also advocate research to explore and specify how organizational situations and personal circumstances interact to influence comparison processes.

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