Inclusive Leadership in Male-Dominated Occupations – An Investigation into Whether Line Managers’ Experiences and Traits Matter in Norway

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Abstract: While many organisations in male-dominated occupations are investing large resources in order to increase and retain women with the aim of achieving gender balance, responsibility for diversity management on a daily basis relies on line managers. To learn more about the underlying mechanism of line managers’ engagement in managing diversity and, thus, fostering inclusion in such settings, this study proposes and tests a model of male line managers’ experiences and traits on the one hand, and subordinates’ outcomes on the other. In addition, it investigates the role of lateral relationships at a male-dominated workplace. In a field study conducted from 172 pairs of line manager-subordinate dyads at a highly technical and male-dominated research institute in Norway, it was observed that male line managers’ experiences and traits did not relate to female subordinates’ perceived support nor inclusion. Further, the results show that perceived supervisor, but not co-worker, support contributes to female employees’ inclusion, while factors beyond workplace social support and inclusion predict their embeddedness in the job. Hence, the present study indicates that perceptions of line managers’ support are highly important for effective diversity management on the line in male-dominated occupations. Theoretical and practical implications, together with suggestions for future research, are discussed.

Keywords: Job Embeddedness, Line Manager, Male-Dominated Occupations, Perceived Inclusion, Perceived Supervisor Support, Traits

1. Introduction

Female employees in traditionally male-dominated occupations and fields continue to face gender barriers in both international and national organisations [18, 38, 83, 95, 100]. While large progress has been made regarding representation of women in both the public and private sectors, where legislation requirements in Norway achieved 35.5 per cent of board seats at Norwegian companies to be held by women [36], inequalities are still large and leader positions predominantly male-held [12]. Segregation of occupations and jobs is a tenacious characteristic of labour markets across countries, where in some industries women are in the vast minority, constituting only 25 per cent of employees at the most [13]. Such occupations are particularly prone to masculine stereotypes that create obstacles for women to excel, being the proximate cause of many forms of gender inequality [38, 46, 53, 59].

Diversity literature has recognised that the quality of relationships managers have with the subordinates [78], their values [75] and responsibility for diversity management (DM) [91] are important in order for them to effectively manage diverse workgroups, as well as promote inclusion among subordinates. However, attention dedicated to the internal organisational processes that create inclusion has been somewhat scarce, as focus has mostly been on pure numerical representations of diversity [92]. In addition, important consequences of context are demonstrated in the meta-analysis by Joshi and Roh [53]. The findings showed that while the direct effect of all types of diversity on performance is essentially zero, gender diversity is particularly challenging and has negative effects on
performance outcomes in male-dominated occupations and high-technology settings. Similarly, several studies have shown that the negative relationship between dissimilarity on the one hand, and organisational inclusion and attachment on the other is especially likely to occur when dissimilarity is based on gender, age or race [50, 80, 102].

Moreover, while several studies have shown and argued that top managers’ interests and priorities are important elements of their engagement in DM [35, 45, 75, 76, 91], these individual factors have not been thoroughly investigated within the literature on gender diversity and on the level of line managers (LMs). For instance, research has demonstrated that CEOs with higher social values tend to successfully manage diversity [75]. On the line, LMs need to choose on a daily basis between serving their own interests, interests of the workgroup or some organisational goals [23, 34, 42]. Yet, the degree to which they are oriented towards and would prioritise own and/or others’ interests tends to vary between individuals, causing variation in their actions [10, 24, 37, 68]. Empirical studies have shown that other-oriented individuals achieve higher agreement between self- and supervisor-ratings [61], are more affected by group-level job attributes [24], prioritise personal outcomes in decision-making processes less [60], are more empathetic [6] and have more perspective taking [22]. Thus, other-orientation of LMs may have implications for how they manage gender-diverse workgroups in male-dominated occupations and whether they foster inclusion and provide support across gender of the subordinates.

Drawing on DM and inclusion research, by emphasising the important role of LMs in managing diversity on the line, this study aims to contribute to both theory and practice. By utilising and complementing the concepts of leader experiences and traits, and examining dyadic relationships with subordinates’ perceptions in the domain of DM on the line within a male-dominated and highly technical setting, this study will provide theoretical and practical contribution to effective DM. Thus, this study will answer calls for future research by Joshi and Roh [53], who called for further research paying special attention to the context. Moreover, it will also answer calls for future research by Nishii [77], who suggested that individual-level LMs’ factors might make unit leaders more likely to create inclusive environments, by examining LMs’ experiences and traits that may contribute to management of gender-diverse groups. Moreover, by investigating the differences between the mechanisms of female and male perceptions of inclusion, arguing that genuine inclusion is only achieved when both minority and majority employees feel included (e.g., [78]), this study contributes to the research on inclusion. In addition, by applying the two-dimensional inclusion framework of Shore et al. [92], and examination of both antecedents and outcomes of inclusion, this study further contributes to empirical research on inclusion within male-dominated and high-technology settings, often challenged by expectations from female employees to assimilate to dominant norms [28]. Thus, this study seeks to contribute to practice by investigating who good leaders are in predominantly male and highly technical occupations.

2. Theoretical Background and Hypotheses

Literature on DM has highlighted that final responsibility for DM on the line relies on LMs and their supportive actions [78, 88, 91, 92]. Thus, these individuals’ efforts in promoting equality and inclusion at the workplace, and their active engagement in DM, are relevant for all subordinates, as found by McKay, Avery, Tonidandel, Morris, Hernandez, and Hebl [67]. These authors revealed that perceptions of fair treatment and integration of minority employees into the work environment have positive implications for both minority and majority employees. In the following section, challenges of gender diversity in male-dominated settings are reviewed. Next, contact quality, other-orientation and social dominance orientation (SDO) of LMs are elaborated, as possible antecedents of support subordinates perceive from these individuals. Further, the concept of inclusion is reviewed as an indicator of effective DM on the line. Moreover, antecedents of perceptions of inclusion in male-dominated occupations are examined. Furthermore, it is argued that the relationship between perceptions of support and embeddedness in the job is obtained through perceived inclusion, where job embeddedness is demonstrated to be one of the most robust predictors of turnover [52]. Finally, gender differences in perceptions within male-dominated settings are proposed.

2.1. Gender Diversity in Male-dominated Occupations

Diversity as a term refers to differences between individuals, including both observable (gender, race, ethnicity and age) and non-observable (culture, education, tenure, functional and socioeconomic background) attributes [71, 86]. In organisational settings, workforce diversity may be defined as “the division of the workforce into distinction categories that (a) have a perceived commonality within a given cultural or national context and that (b) impact potentially harmful or beneficial employment outcomes such as job opportunities, treatment in the workplace, and promotion prospects – irrespective of job-related skills and qualifications” [70]. Thus, the focus of integration and diversity efforts in organisations have frequently been on diversity dimensions related to demographic characteristics [54], such as gender, age, ethnicity and race [79]. The salience of these dimensions is not surprising: knowing that labour markets across countries are persistently characterised by segregation of occupations and jobs, some industries are so highly male or female dominated that many of them have less than 25 per cent employees of the minority gender [13].

In Norway, where the present study originates, horizontal gender segregation is high across occupations, as it appears that men and women continue to choose traditional career paths [101]. While women dominate professions within
In male-dominated occupations, women may attempt to assimilate to the dominant norms [28, 31, 77]. This implies that they would alter their thoughts, feelings, behaviours and expectations at the workplace in order to mirror those usually associated with men [31]. Knowing that women have traditionally had lower status in organisations [15, 50] and generally feel more excluded than men do [73], such assimilative behaviour would allow them to identify themselves with the male out-group and achieve positive social identity [99]. However, even the same behaviour exhibited by men and women has a tendency to be perceived differently due to gender roles. These originate from social role theory, implying that perceivers assume there is a correlation between the kinds of actions individuals engage in and their inner dispositions [27]. Moreover, there is evidence of the differential treatment that women perceive in the workplace [72]. For instance, Mor Barak et al. [72] found that after experiencing organisational barriers due to gender, women have a tendency to view organisational practices and procedures less favourably than men do. Therefore, many organisations are directing their endeavours to integration of female employees [62, 88]. However, such integration efforts usually position employees within distinct group categories that tend to reflect the social reality of intergroup interaction and/or affect it [57]. Thus, LMs’ actions of support are necessary for successful management of gender imbalanced workgroups aiming to attenuate such categorisation and foster inclusion (e.g., [78, 91]). In addition, inclusive forms of leadership on the line are crucial in order to embrace differences in the workplace [78]. Thus, what makes men supportive and inclusive leaders at a male-dominated arena, inclined to provide support and foster inclusion across genders in the workgroups they lead, represents an area ripe for future research [77].

2.2. Line Managers’ Experiences and Traits, and Subordinates’ Perceptions of Support in Male-Dominated Settings

Within a single organisation, there is a tendency for inclusion to significantly vary between workgroups [77], emphasising the important role that LMs’ personality and actions may play in within-group dynamics [66, 77]. When individuals hold a stereotype towards a certain social group that differs from the attributes thought to be required for success in the particular types of social roles, a potential for prejudice arises [27]. However, the intergroup contact theory posits that intergroup contact experiences with out-group members are prone to attenuate prejudice [2, 81]. This decline in prejudice entails more favourable attitudes towards the particular members of an out-group, towards the out-group as a whole and out-group members in very distinct circumstances [81]. According to Pettigrew and Tropp [81], contact attenuates prejudice because familiarity between people tends to create liking. This explains why the stated mechanism of optimal conditions by Allport, such as pursuit of common goals, equal status and institutional support, is not necessary to achieve the positive impact of contact. Thus, inspired by contact theory, favourable contact experiences of male LMs with female colleagues in a male-dominated setting may decrease their biased attitudes towards the out-group and positively influence their perceptions of women in predominantly male occupations. In turn, such positive perceptions of and attitudes towards female colleagues may create a more supportive environment in the gender-diverse workgroups they lead, where all subordinates might feel that the supervisor cares about their well-being. On the contrary, if male LMs did not experience any or experienced undesirable contact with female employees, they might be less prone to give support to female subordinates, jeopardising balance and creating differentiation in the workgroup.

Thus, drawing on research on intergroup contact, the present study suggests that quality of contact male LMs had with female colleagues will be associated with the extent to which these individuals care about well-being and goals of female subordinates in a male-dominated setting. Hence, male LMs who had favourable and elevating contact with female colleagues should be more prone to show concern for female subordinates’ opinions and ambitions. In turn, their female subordinates should feel supported at the workplace. On the contrary, male LMs with lower quality of contact should be less likely to care about values and well-being of their female subordinates and, thus, these employees should feel less supported. Aligned with Nishii and Mayer’s [78] findings, who observed harmful influence of LMX differentiation on turnover, as well as Barsade [4], who detected emotional contagion in workgroups with substantial impact of a single person on workgroups’ affect and mood, the present study suggests that male LMs’ ability to show interest in female subordinates’ opinions and values will provide a sense of supportive environment to their male colleagues as well, thus attenuating salience of gender as a social category. Hence, instead of investigating the relationship solely between male LMs’ quality of contact and female subordinates’ perception of support, this study examines the relationship between LMs’ quality of contact and both female and male subordinates’ perceived support.
Moreover, to capture the degree to which male leaders’ experiences and traits contribute to sense of leader support of each employee, this study examines the dyadic relationship between male LMs and each of the subordinates. Dyadic analysis allows for measuring the degree to which male LMs’ experiences and traits are associated with perceived support from the supervisor of each employee in the workgroup. Accordingly, it is hypothesised:

**Hypothesis 1a. There is a positive relationship between male LMs’ contact quality and subordinates’ perceived supervisor support.**

While a considerable body of research has underlined the significance of LMs’ interests and values as a crucial element for successful management of diverse workgroups [43, 45, 91], these factors have not received much attention in the diversity literature. It is certain that managers’ behaviour is powerfully influenced by self-interest [34]. However, its strength systematically varies across individuals, while other drives, such as other-orientation, remain largely ignored [37]. Namely, an individual’s self-concern leads the individual to focus on personal traits, qualities, inputs and individual successes and outcomes; while other-orientation stimulates consideration of collective qualities and traits, joint inputs, outcomes and collective successes [24], as well as being related to supportiveness toward diversity practices [1]. Together, these orientations may highly influence the manner in which LMs perceive their surroundings, focus their attention and actions they undertake while managing diverse groups.

Drawing on existing research, it is expected that male LMs with higher other-orientation will be more prone to being supportive towards both female and male subordinates in workgroups they lead. Accordingly, this study suggests that male LMs’ other-orientation will positively relate to their subordinates’ perceptions of supervisor support. Male LMs with higher other-orientation should be more inclined to provide support to the subordinates, since they are genuinely concerned for others’ needs and aspirations, thus effectively managing gender diversity on the line. Accordingly, it is hypothesised:

**Hypothesis 1b. There is a positive relationship between male LMs’ other-orientation and subordinates’ perceived supervisor support.**

Some managers tend to believe that traditional distributions of power and status should be preserved within society, where this tendency to endorse and maintain these distributions varies across individuals and is referred to as SDO [94]. SDO implies acceptance of ideologies that legitimise and behaviours that foster inequality and is partly determined by individuals’ general desire for group-based dominance [93]. This psychological orientation is crucial, not only for understanding individual differences in socio-political attitudes and behaviour, but also in order to understand group differences in behaviours, such as in-group favouritism and intergroup bias, as well as acquiring social roles which affect the degree of hierarchy [93]. In their extreme form, social dominance struggles may even explain terror and intergroup violence [44].

Accordingly, beside male LMs’ different contact experiences and orientation towards others’ interests that may be associated with their perceptions of the world and, ultimately, behaviour, they are also prone to variation in the degree to which they endorse the belief that members of traditionally considered high-status groups within society should dominate members of traditionally considered low-status groups (e.g., [94]). Based on the existing research on SDO, this study suggests that male LMs’ SDO will be negatively associated with the degree to which female subordinates perceive support from their immediate leader in a male-dominated setting. More specifically, male LMs with higher SDO should be more involved in preserving hierarchy and exercising group-based dominance, while underestimating competence of female subordinates, implying that they would provide less support to these employees. On the other hand, those with lower levels of SDO should be more likely to pursue attenuation of hierarchy and promote equality, thus being more successful in managing diversity on the line, while female subordinates should feel more supported by their supervisor. Accordingly, it is hypothesised:

**Hypothesis 1c. There is a negative relationship between male LMs’ social dominance orientation and subordinates’ perceived supervisor support.**

### 2.3. The Concept of Inclusion

During the last couple of years, diversity rhetoric has switched from a focus on DM to inclusion [17, 49, 71, 82, 86, 88]. The term inclusion may be referred to as the extent to which a person feels a part of the organisational system within both the formal and informal processes [70]. In inclusive environments, not only members of the historically powerful identity group, but individuals of all backgrounds are fairly treated, valued for the true self and included in organisational decision making [80, 92]. In gender imbalanced workgroups, being different from others represents a disadvantage in terms of organisational inclusion, since the individual of the minority gender has a tendency to face a more unfriendly work environment, feel more uncomfortable and confront more communication hurdles than individuals of the other gender do [50, 80]. On the other hand, women are generally more often exposed to discrimination and exclusion at the workplace than men [72]. However, these status hierarchies are likely to diminish when both men and women have similar characteristics that are valued in particular contexts, such as access to resources, opportunities and voice [77].

Shore et al. [92] noted that beside focusing on social rejection, as previous research mostly did, shedding light on need for uniqueness may be equally important, since working with colleagues who do not value unique traits of an individual might add to feelings of exclusion. According to Shore et al. [92], the uniqueness theme may be defined by key phrases such as “contribute fully”, “individual talents”, “to have their voices heard and appreciated” and “valuing
contributions from all employees”. As they argued, and based on the literature underlining the importance of valuing individuals for their unique viewpoints, as well as on evidence from stigma literature indicating that low valued identities are normally dampened in order to avoid rejection from a workgroup, value in uniqueness is consistent with the optimal distinctiveness model on satisfaction of need for uniqueness. Investigating need for uniqueness may be particularly important in order to determine perceptions of inclusion of female employees in male-dominated occupations. The reason is that female employees may tend to assimilate to the dominant culture and norms [77], implying that they may feel accepted in the workgroup, but not necessarily valued for their uniqueness.

Accordingly, joint examination of belongingness and uniqueness through the concept of inclusion may have high potential to contribute to diversity research and practice, while it also provides a basis for future research on diversity with focus on capitalising on the unique value of individuals different from the corporate mainstream [92]. However, this study aims to go beyond Shore et al.’s [92] propositions of inclusive climate, leadership and practices as potential contextual antecedents of employees’ perceived inclusion by investigating this conceptual model and identifying additional factors that may significantly contribute to perceptions of inclusion and, thus, successful DM on the line in male-dominated occupations.

2.4. Antecedents of Perceived Inclusion in Male-Dominated Occupations

The relationships between supervisor and subordinates [78], as well as relationships between co-workers [19], may provide a key insight into the social environment in an organisation. The closest supervisor is likely to have a rather strong influence on the subordinates’ perceptions in a workgroup, while this may be especially true in diverse workgroups with large variation in attitudes and perspectives [30, 92]. The importance of an inclusive leader has been broadly emphasised in the diversity literature [25, 74, 78, 92]. For instance, words and actions of leaders that welcome and appreciate subordinates’ contributions are likely to help in overcoming the negative impact of status on psychological safety [74]. Likewise, employees are more prone to feel supported and valued by their immediate manager if he/she takes their individual differences into consideration and is aware of unique qualities and contributions each of the subordinates makes in the organisation [64].

However, beside the daily contact with the closest leader, employees also meet their colleagues on a daily basis in organisations. Co-workers play such a key role regarding social environment that it may be literally said that they define the place [89]. Employees have colleagues who actually represent their partners in task and social interactions, which is true for all kinds of today’s organisations, since lateral interactions become more frequent and meaningful as a result of flatter organisational structures and increasingly team-based work [19]. Co-workers may be defined as other individuals who are situated on the same level of an organisational hierarchy and with whom an individual performs tasks and has routine interactions, while they can both support and antagonise them [19]. Consequently, when employees perceive antagonism from their colleagues, specifically in cases when they are “singled out” (such as in situations of workgroup exclusion), this affects their individual performance leading to a severe decrease [26]. As postulated by the fairness theory, in situations when individuals encounter unpleasant accidents, as for example antagonism from a colleague, they make cognitive comparisons known as counterfactual thoughts, when they compare what happened in contrast to what might have happened [26]. Their research indicated that in situations when an employee perceives being the only one excluded from the workgroup, such exclusion has very strong effects on this individual’s outcomes. Accordingly, it is hypothesised:

Hypothesis 2. There is a positive relationship between (a) perceived supervisor support and (b) perceived co-worker support on the one hand, and perceived inclusion on the other.

As previously elaborated, this study proposes a relationship between male LMs’ experiences and traits, and their effective management of gender imbalance in male-dominated occupations, seen through subordinates’ perceptions of supervisor support. Revolving around the concept of supervisor support and moving a step further, this study argues that such support subordinates perceive from the immediate manager acts as a mediator between LMs’ experiences and traits, and subordinates’ perceptions of inclusion. While LMs’ experiences with female employees in the organisation may largely influence their perceptions and attitudes towards women in general in predominantly male occupations, organisational roles that these employees hold may lead to different perceptions. Namely, male LMs may perceive contact situations with women working in the administration completely differently from those with women in scientific research, as these positions represent the opposite sides of a continuum with respect to traditional gender roles in the workplace [55]. Thus, they may be more sceptical towards women entering new, male-dominated occupations, as they represent a threat to the established gender order [95]. However, as proposed by contact theory, contact experiences with members of an out-group are prone to attenuate prejudice [2, 81]. Thus, in case male LMs did not experience any or have experienced undesirable contact with female employees, they might have no interest in supporting these individuals and, thus, fostering inclusion. On the other hand, male LMs who had favourable contact experiences should be more prone to show interest for well-being and opinions of these subordinates, which should, in turn, be related to higher perceived inclusion among the group members.

Moreover, other-orientation directs search for information and its processing on group-level characteristics, social cues and outcomes [24]. Thus, other-orientation dispositions are
“characterized by empathy and concern for the welfare of others” [68]. Accordingly, in male-dominated occupations, the degree to which male LMs are other-oriented may be highly related to the degree to which they provide support to their subordinates and, thus, nurture inclusion across genders and members in the workgroup. Thus, male LMs with higher levels of other-orientation should be more empathetic toward their subordinates and more concerned for their welfare. Hence, their subordinates will likely perceive higher levels of supervisor support and, in turn, higher levels of perceived inclusion in the workgroup.

Further, according to social dominance theory, members of high-status groups tend to have greater general preferences for group-based hierarchies and inequality, while members of low-status groups prefer equality [63]. This would imply that male LMs would attempt to maintain hierarchy between genders at a male-dominated workplace, since lower status has traditionally been assigned to women [93]. Moreover, Feather and McKee [33] showed that SDO is positively related to both hostile and benevolent sexism, while being negatively related to universalism and benevolence. Therefore, the extent to which male LMs believe that traditional distributions of power and status should be maintained within society may play an important role with regard to the support they provide to female subordinates and, in turn, inclusive behaviour they exercise as supervisors. It is likely that male LMs with higher levels of SDO would be less inclusive leaders, since they would not be inclined to show concern for opinions and well-being of female employees. However, the role of SDO has been neglected in the existing research within DM on the line in predominantly male occupations, providing a fruitful area for investigation. Accordingly, it is hypothesised:

\[ \text{Hypothesis 3. The relationship between male LMs' (a) contact quality, (b) other-orientation and (c) social-dominance orientation on the one hand, and subordinates' perceived inclusion on the other, will be mediated by perceived supervisor support.} \]

2.5. The Mediating Role of Perceived Inclusion

While a large body of research has investigated and suggested potential antecedents of inclusion, such as inclusive practices, climate and/or leadership [74, 78, 92, 103], DM [51, 71], authentic leadership [11], diversity climate [50], demographic dissimilarity [80], organisational transformation [7, 82], relational culture of integration [17], leadership’s commitment to diversity and/or institutionalisation of participatory work systems [86], policy implementation [87] and all-inclusive multiculturalism [49], rather few studies have examined its outcomes, such as absenteeism [50], unit satisfaction and turnover [77], as well as organisational performance [88]. This might be a consequence of somewhat less complete development of the inclusion concept, before Shore et al.’s [92] conceptualisation as a two-facet framework entailing the need for belongingness and need for uniqueness. Especially in male-dominated occupations, misogynistic behaviours are rather common, implying that male employees are often sceptical about female co-workers’ competence and motivation for choosing that particular occupation, while female employees may also be seen as a threat to self-image of their male counterparts [38]. Thus, voluntary turnover of women represents an important issue in male-dominated settings [50, 95], since women, being employees in the minority, frequently face stereotypes [14], lack of acceptance, self-efficacy, as well as social support from organisations, colleagues and family [38].

The closest supervisors play a vital role in delegitimising status expectations, through successful implementation of diversity programmes, established norms and provided opportunities to diverse employees, which have a crucial influence on the dynamics in the workgroup [74]. Further, employees’ perceptions of high-quality exchange relationships with the immediate manager tend to influence their perceived status, worth in the workgroup and inclusion [78]. On the other hand, research has shown that LMs are often perceived as agents of the organisation, representing both its attitudes and values [64, 85]. Therefore, the extent to which subordinates see themselves as valuable and well-included workgroup members is expected to depend on the extent to which they see the immediate supervisor as supportive. Thus, subordinates who perceive inclusion in their workgroup may feel more strongly attached to their job and the organisation.

On the other hand, the contributions of colleagues to the social environment at the workplace may also influence an employee’s behavioural outcomes, such as effort reduction, turnover intention and turnover [19]. Findings of Chiaburu and Harrison’s [19] meta-analysis revealed that co-workers literally “make the place” by serving as a potentially rich source of information and help, which is related to reduced role ambiguity, conflict and work overload of their colleagues. In addition, this meta-analysis showed that co-workers have the ability to increase satisfaction and involvement in one’s job, as well as commitment to the organisation. Employees build links with their co-workers and the quality of these relationships influences the extent to which these individuals search for an alternative job and leave the organisation [69]. Thus, when employees are dissatisfied with negative interactions with their colleagues, they experience a system shock, which, in turn, leads to turnover [65].

Research within demographic dissimilarity has predominantly investigated its relationship with turnover [38, 40, 48, 50, 67, 95, 102, 104], which provides little knowledge on the factors that may reliably predict both turnover and turnover intentions. Hence, drawing on the existing research on supervisor and co-worker support, inclusion and job embeddedness, as well as answering Chiaburu and Harrison’s [19] calls for future research on co-worker influences as part of the social environment at work, and interplay of co-worker and supervisor impact on the employee outcomes, this study proposes that the degree to which employees feel supported by their closest manager and co-workers will be related to the
degree to which they perceive being well-accepted in the
workgroup, and appreciated for their unique attributes. In
turn, those employees who feel included in their workgroup
will feel tighter bonds to the job at hand. Consequently, it is
hypothesised:

Hypothesis 4. The relationship between (a) perceived
supervisor support and (b) perceived co-worker support
on the one hand, and job embeddedness on the other is
mediated by perceived inclusion.

2.6. Gender Differences

The last question addressed in this study is whether the
hypothesised relationships differ between male and female
employees in male-dominated occupations. Previous research
has demonstrated differences in how male and female
employees perceive their diverse work environments [16, 41,
50, 102]. While some studies have demonstrated more
negative perceptions of minority employees [50, 72], others
have suggested and showed more negative perceptions of
employees in the majority [16, 102]. Hence, instead of stating
an explicit hypothesis regarding the differences between
female and male employees’ perceptions in male-dominated
settings, the present study explores how the hypothesis
relates to differences in the perceptions of the employee genders. This, in
order to capture the extent to which male LMs’ experiences
and traits relate to perceptions of leader support and inclusion of
each employee in the workgroup, the dyadic relationship
between male LMs and each of the subordinates is
investigated.

3. Method

3.1. Sample and Procedure

Two separate electronic surveys were distributed to 586
employees and 64 LMs. LMs provided data on contact
quality with female colleagues, self-concern, other-
orientation and SDO, whereas employees provided data on
perceived supervisor support, perceived co-worker support,
perceived inclusion and job embeddedness. Data were
collected from a national Norwegian research institute where
the primary activity (highly technical research) attracts a
large proportion of employees from traditionally male-
dominated fields. In order to achieve a more gender-balanced
workforce, this institute strives for recruitment of female
employees and inclusion at the workplace. Thus, the existing
HR diversity practice is aimed at increasing and retaining
representation of women in research and leader positions,
through moderate gender quotas in recruitment and an
inclusive and equitable environment that encourages women
to stay in the organisation. During the data collection
process, the participants were assured that confidentiality of
their responses was guaranteed. Complete responses were
received from a total of 364 subordinates and 41 LMs,
corresponding to response rates of approximately 62 and 64
per cent, respectively. However, for the purposes of matching
the LMs’ and subordinates’ responses, only responses where
the complete surveys of a minimum of one LM and two
subordinates for each project team or unit could be matched
were retained. This resulted in a sample size of 205
subordinates (35 per cent of the initial sample) and 32 LMs
(50 per cent of the initial sample).

Given the aim of investigating the relationship between
male LMs’ experiences and traits on the one hand, and
employee outcomes in a male-dominated setting on the other,
only male LMs and their subordinates were retained in the
dyadic analysis. This led to an effective sample size of 172
subordinates and 26 LMs; on average, 6.62 subordinates
from the same project team or unit responded per LM. Of
these respondents, the majority of the subordinates (61 per
cent) reported that they had been working under their current
LM for more than three years, and the majority of the LMs
(73 per cent) reported that they had been employed in their
current position for more than three years. The majority of
subordinates (72 per cent) were, as expected, male. In order
to be able to analyse the differences in relationships between
male LMs and their female and male subordinates, they were
divided by gender in the analysis, which led to two samples
of 49 female and 123 male subordinates, with 19 and 24 LM
respondents, respectively. A regression analysis including
variables on only one level (subordinates) was applied in a
similar manner for 49 female and 123 male subordinates, all
supervised by a male leader.

3.2. Measures

All the items (excluding demographic variables) were
scored on two types of a five-point Likert scale, either
measuring agreement with statements, ranging from 1
(strongly disagree) to 5 (strongly agree), or measuring
occurrence of behaviour, ranging from 1 (never) to 5
(always).

Independent variables. Contact quality was assessed with
the eight-item scale developed by Islam and Hewstone [47]
with an internal consistency (alpha) of .78 (female
subordinates) and .88 (male subordinates). Other-orientation
was measured using the three-item scale developed by De
Dreu and Nauta [24]. However, looking at the factor
structure, the first item was not retained, resulting in an
internal consistency (Spearman-Brown) of .67. SDO was
assessed by the sixteen-item scale developed by Pratto et al.
[84]. However, items seven and eight were not retained due
to low factor loadings, resulting in an internal consistency
(alpha) of .67. Perceived co-worker support was assessed by
the three-item scale developed by Susskind, Kacmar, and
Borchgrevink [98], with an internal consistency (alpha)
of .85.

Mediating variable. Employees’ perceived inclusion was
measured by a two-dimensional eight-item scale based on
theoretical suggestions of Shore et al. [92] with an internal
consistency (alpha) of .90 (female subordinates) and .80
(male subordinates). The two dimensions addressed
perceived belongingness (assessed by a four-item scale
developed by Godard [39]) and perceived value in
uniqueness (four items developed by the researcher in line
with theoretical suggestions by Shore et al. [92]) in order to measure the two-facet construct of perceived inclusion. This measurement assessed perceived inclusion on the group level, as all the statements referred to the extent to which employees perceive inclusion in their workgroup. The intention was to capture the extent to which both leader experiences and traits, and perceived support from the leader and colleagues contribute to the sense of inclusion an employee perceives in the closest environment at work, which is the workgroup.

Dependent variables. Perceived supervisor support was measured by the short four-item scale developed by Crossley et al. [21], with an internal consistency (alpha) of .94 (female subordinates) and .93 (male subordinates). Job embeddedness was assessed by the seven-item scale developed by Crossley et al. [21], with and internal consistency (alpha) of .91 (female subordinates) and .90 (male subordinates).

Control variables. To rule out alternative explanations of the observed relationships, it was controlled for LMs’ self-concern, since De Dreu and Nauta [24] suggested that, while self-concern and other-orientation are independent, orthogonal dimensions, investigating both constructs may provide a more precise and sophisticated comprehension of different kinds of work-related behaviour. It was measured by these authors’ three-item scale. However, looking at the factor structure, the first item in the scale was not retained, resulting in an internal consistency (Spearman-Brown) of .87. Moreover, it was controlled for organisational tenure and affiliation of both the subordinates and the LMs, as well as their age, to help eliminate potential socio-demographic effects.

3.3. Analytic Strategy

The present study examined dyad data from male LMs and their subordinates. Contact quality, self-concern, other-orientation and SDO were measured from the LMs. The mediating and dependent variables were measured from the subordinates. The data were primarily assessed using factor analysis, where principal component analysis with varimax rotation was applied on all multiple scale items in order to determine item retention [20]. This analysis demonstrated that the mediating and dependent variables (perceived inclusion, supervisor support and job embeddedness), as well as perceived co-worker support, were different constructs, although they were collected from the same source (subordinates), since separate factors with eigenvalues greater than one emerged for each construct where each item loaded on its appropriate factor. Together, these factors accounted for 71.64 per cent of the variance. Employee means on all the variables were compared across genders, which were highly similar, and no differences were observed.

Before analysing the model, it was examined whether dyadic data analysis was appropriate for the present data. Thus, intraclass correlation of perceived supervisor support and perceived inclusion were estimated. The intraclass correlation represents the degree of non-independence among the scores of the partners that are all connected to the same person (LM in this study) [56]. It is applied in dyadic data analysis, as well as in more general multilevel modelling [9, 56, 58]. The intraclass correlation was .13 (p < .01) for perceived supervisor support among male subordinates and non-significant among female subordinates, as well as non-significant for perceived inclusion among both female and male subordinates. Nonetheless, dyadic analysis was used in order to account for the dyadic data structure in testing the hypotheses (e.g., [32, 50]), while this is addressed in the discussion section.

The data were analysed using multilevel modelling (MLM), which is usually referred to as hierarchical linear modelling, and represents a rather new statistical method especially useful for dyadic data analyses [56]. According to Birdi, Clegg, Patterson, Robinson, Stride, Wall, and Wood [8] and Kenny et al. [56], this technique can be used in cases when data have a hierarchically nested structure. In one-with-many design, such as this one where subordinates are tied to their supervisor, data are hierarchically structured, as several partners are linked to a focal person [56]. Between subsequent stages of analysis, improvement in model fit is defined by the change in −2 times the log-likelihood statistic (−2LL) compared to the change in degrees of freedom with a chi-square distribution [8]. There are many advantages with this technique. For instance, it allows for exploration of within-subjects and between-subjects variance separately, as opposed to standard regression techniques [8]. For the present study with indistinguishable members in one-with-many design, it is preferable to analyse the data by MLM, which provides a far more detailed analysis of dyadic relationships compared to the standard design [56]. Moreover, this method allows for testing the consistency of the relationship between LMs’ experiences and traits on the one hand, and dependent variables across subordinates on the other.

For this technique, software SPSS 22.0.0.0 (SPSS Mixed, IBM SPSS Statistics) was used for multilevel modelling. In order to test the mediation hypothesis, the three-step procedure recommended by Baron and Kenny [3] was used. Therefore, perceived inclusion was regressed onto the LMs’ experiences and traits in the first step, and perceived supervisor support was entered in the second step in order to test the mediating effect. For the purpose of testing Hypotheses 3 and 4, linear regression modelling was applied. This analysis was appropriate for testing these hypotheses, since all the variables were assessed on one level (the subordinates).

4. Results

Means, standard deviations, bivariate correlations, Cronbach’s alpha and Spearman-Brown for all multiple and two-item scales are reported in Tables 1 and 2.
Multicollinearity, homogeneity of variance and error terms of the data were investigated, where the results indicated that the data met the assumptions of the statistical models. This allowed for proceeding with the examination of the prerequisites for a leader to be supportive and inclusive and, thus, testing of hypotheses. In the first stage of the modelling process, a baseline (null) model was constructed, consisting of only the dependent variables. The simplest multilevel model, referred to as the unconditional (intercept only) or the empty model, was initially fitted, with neither control nor independent variables, as suggested by Kenny et al. [56]. Further, control variables were entered (affiliation, subordinates’ age and tenure, LMs’ age, tenure and self-concern) in model 1. Finally, the independent variables were introduced in model 2 (LMs’ contact quality, other-orientation and SDO). The results are presented in Tables 3 and 4.

Table 1. Means, standard deviations, scale reliabilities, and bivariate correlations – Female subordinates.

| Variable                           | Mean  | SD    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   |
|------------------------------------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Employee age                      | 3.00  | 1.11  | –    |      |      |      |      |      |      |      |      |      |      |      |      |
| Employee tenure                   | 3.54  | 1.53  | .70**| –    |      |      |      |      |      |      |      |      |      |      |      |
| Manager age                       | 3.00  | 1.03  | .30**| .23* | –    |      |      |      |      |      |      |      |      |      |      |
| Manager tenure                    | 4.25  | 1.22  | –.01| .11  | .22* | –    |      |      |      |      |      |      |      |      |      |
| Affiliation                       | 1.15  | .36   | .30**| .14  | .47***| –.45***| –    |      |      |      |      |      |      |      |      |
| Self-concern                      | 4.04  | .86   | –.09| –.00| .16  | –.36***| .18**| (.87) |      |      |      |      |      |      |      |
| Contact quality                   | 4.39  | .44   | –.01| .06  | .28**| –.01 | .21* | .24**| (.88) |      |      |      |      |      |      |
| Social dominance orientation      | 4.52  | .54   | –.07| –.13| –.06| –.37***| .37***| .04 | (.67) |      |      |      |      |      |      |
| Perceived supervisor support      | 3.30  | .39   | .16  | .08  | .15  | .00  | .36***| .38***| –.32**| –.12| (.67) |      |      |      |      |
| Perceived co-worker support       | 4.16  | .86   | –.04| .03  | –.06| –.08  | –.07 | –.06| .25**| –.16| (.93) |      |      |      |      |
| Perceived inclusion               | 4.16  | .74   | –.05| .05  | .15  | .14  | –.12| .04  | .15  | .11  | .22**| .29**| (.85) |      |      |
| Job embeddedness                  | 3.51  | .83   | .24**| .39***| .16| .23* | –.08 | –.12| .14  | .00  | –.15| .24**| .29**| .39***| (.90) |

Table 2. Means, standard deviations, scale reliabilities, and bivariate correlations – Male subordinates.

| Variable                           | Mean  | SD    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   |
|------------------------------------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Employee age                       | 2.00  | .96   | –    |      |      |      |      |      |      |      |      |      |      |      |      |
| Employee tenure                   | 3.18  | 1.47  | .66***| –    |      |      |      |      |      |      |      |      |      |      |      |
| Manager age                       | 3.00  | .92   | .42**| .22  | –    |      |      |      |      |      |      |      |      |      |      |
| Manager tenure                    | 4.11  | 1.29  | –.41**| –.32*| –.03 | –    |      |      |      |      |      |      |      |      |      |
| Affiliation                       | 1.27  | .45   | .48***| .27  | .60***| –.60***| –    |      |      |      |      |      |      |      |      |
| Self-concern                      | 4.03  | .90   | .32* | .16  | .19  | –.35* | .17  | (.87) |      |      |      |      |      |      |      |
| Contact quality                   | 4.41  | .36   | .16  | .16  | .24  | –.16| .34* | .06  | (.78) |      |      |      |      |      |      |
| Other-orientation                 | 4.60  | .43   | .12  | –.02| –.19| –.23 | .01  | .24  | .14  | (.67) |      |      |      |      |      |
| Social dominance orientation      | 2.22  | .41   | –.22| –.08| –.23 | .13  | –.18 | –.14| –.20 | –.13| (.67) |      |      |      |      |
| Perceived supervisor support      | 3.94  | 1.06  | –.05| –.16| .11  | –.08 | .09  | .03  | .27  | .14  | .01  | (.94) |      |      |      |
| Perceived co-worker support       | 4.01  | .86   | –.36**| –.32*| .04  | .19  | –.03| –.22| –.01 | –.12| –.12| .48**| (.85) |      |      |
| Perceived inclusion               | 4.05  | .81   | –.21| –.18| .11  | –.07| .16  | –.13| .15  | .05  | .12  | .69***| .50***| (.90) |      |      |
| Job embeddedness                  | 3.38  | .84   | –.12| –.17| .28  | .17  | –.02| .01  | –.20| –.14| .12  | .22  | .32* | .36**| (.91) |      |      |

Notes: The correlations and internal reliabilities (Cronbach’s alphas) are based on n = 49 (level 1) and n = 19 (level 2). Scale reliabilities are displayed on the diagonal. p < .05; **p < .01; ***p < .001

4 Mean: In order to more precisely present the sample, mode of the respondents’ age was reported, where 44.9 per cent of female subordinates was aged between 30 and 39, while 47.4 per cent of the LMs was aged between 40 and 49.

b Age: Owing to issues of anonymity, age was assessed on an interval scale where 18–29 years was coded as “1”, 30–39 years was coded as “2”, 40–49 years was coded as “3”, 50–59 years was coded as “4”, and 60 years and above was coded as “5”.

c Tenure: The employees’ and LMs’ organisational tenure were assessed on interval scales where 0–2 years was coded as “1”, 3–5 years as “2”, 6–9 years as “3”, 10–15 years as “4”, 16–30 years as “5”, and more than 30 years as “6”.

d Affiliation: Subordinates affiliated in research were coded as “1” and individuals affiliated in administration as “2”.

Note: The correlations and internal reliabilities (Cronbach’s alphas) are based on n = 123 (level 1) and n = 24 (level 2). Scale reliabilities are displayed on the diagonal. p < .05; **p < .01; ***p < .001

4 Mean: In order to more precisely present the sample, mode of the respondents’ age was reported, where 35 per cent of the male subordinates was aged between 40 and 49, while 41.7 per cent of the LMs was aged between 40 and 49.

b Age: Owing to issues of anonymity, age was assessed on an interval scale where 18–29 years was coded as “1”, 30–39 years was coded as “2”, 40–49 years was coded as “3”, 50–59 years was coded as “4”, and 60 years and above was coded as “5”.

c Tenure: The employees’ and LMs’ organisational tenure were assessed on interval scales where 0–2 years was coded as “1”, 3–5 years as “2”, 6–9 years as “3”, 10–15 years as “4”, 16–30 years as “5”, and more than 30 years as “6”.

d Affiliation: Subordinates affiliated in research were coded as “1” and individuals affiliated in administration as “2”.


Table 3. Regression analysis predicting employees’ perceived inclusion – Female subordinates.

| Variable                      | Perceived supervisor support | Perceived inclusion |
|-------------------------------|------------------------------|---------------------|
|                               | Step 1 | Step 2 | Step 1 | Step 2 | Step 3 |
| Employee age                  | −.04   | −.02   | −.35   | −.39   | −.33 |
| Employee tenure                | −.24   | −.26   | −.07   | −.07   | .11  |
| Manager age                   | .26    | .32    | .22    | .30    | .08  |
| Manager tenure                 | −.24   | −.27   | −.19   | −.19   | −.02 |
| Affiliation                    | −.12   | −.25   | .13    | .07    | .24  |
| Self-concern                  | −.04   | −.08   | −.14   | −.17   | −.11 |
| Contact quality                | .32†   | .12    | .17    | .07    | .07  |
| Other-orientation              | .15    | .17    | .17    | .11    | .11  |
| Social dominance orientation   | .10    | .17    | .17    | .11    | .11  |
| Perceived supervisor support  |        |        |        |        |      |
| ICC                           | .00    | .00    | 108.56 | 105.89 | 74.74 |
| \( Δ \) 2Log Likelihood       | 139.93 | 134.72 | 8.55   | 2.67   | 31.15*** |
| \( R^2 \) level 1             | .07    | .16    | .16    | .20    | .58  |
| \( ΔR^2 \) level 1            | .09    | .05    | .05    | .38    |      |

Note: Standardized regression coefficients are shown; \( n = 49 \) (level 1), \( n = 19 \) (level 2); \( \cdot \cdot \cdot p < .001 \)

† Age: Owing to issues of anonymity, age was assessed on an interval scale where 18–29 years was coded as “1”, 30–39 years was coded as “2”, 40–49 years was coded as “3”, 50–59 years was coded as “4”, and 60 years and above was coded as “5”.

† Tenure: The employees’ and LMs’ organisational tenure were assessed on interval scales where 0–2 years was coded as “1”, 3–5 years as “2”, 6–9 years as “3”, 10–15 years as “4”, 16–30 years as “5”, and more than 30 years as “6”.

† Affiliation: Individuals affiliated in research were coded as “1” and individuals affiliated in administration as “2”.

Table 4. Regression analysis predicting employees’ perceived inclusion – Male subordinates.

| Variable                      | Perceived supervisor support | Perceived inclusion |
|-------------------------------|------------------------------|---------------------|
|                               | Step 1 | Step 2 | Step 1 | Step 2 | Step 3 |
| Employee age                  | .11    | .04    | −.00   | −.02   | −.04 |
| Employee tenure                | −.10   | −.05   | .10    | .10    | .13  |
| Manager age                   | .20    | .17    | .03    | −.02   | −.14 |
| Manager tenure                 | −.22   | −.07   | −.18   | −.06   | −.00 |
| Affiliation                    | −.26   | .06    | −.18   | .00    | −.04 |
| Self-concern                  | .01    | −.08   | −.09   | −.01   | −.03 |
| Contact quality                | −.24   | .01    | −.13   | −.19   | −.19 |
| Other-orientation              | .33**  | .01    | −.23   | −.27   | −.12 |
| Social dominance orientation   |        |        |        |        |      |
| Perceived supervisor support  |        |        |        |        |      |
| ICC                           | .18†   | .00    | 217.65 | 213.42 | 160.01 |
| \( Δ \) 2Log Likelihood       | 297.41 | 287.57 | 160.01 |        |      |
| \( R^2 \) level 1             | −.05   | .00    | .06    | .08    | .39  |
| \( ΔR^2 \) level 1            | .05    | .03    | .03    | .31    |      |

Note: Standardized regression coefficients are shown; \( n = 123 \) (level 1), \( n = 24 \) (level 2); \( \cdot \cdot \cdot p < .001 \)

† Age: Owing to issues of anonymity, age was assessed on an interval scale where 18–29 years was coded as “1”, 30–39 years was coded as “2”, 40–49 years was coded as “3”, 50–59 years was coded as “4”, and 60 years and above was coded as “5”.

† Tenure: The employees’ and LMs’ organisational tenure were assessed on interval scales where 0–2 years was coded as “1”, 3–5 years as “2”, 6–9 years as “3”, 10–15 years as “4”, 16–30 years as “5”, and more than 30 years as “6”.

† Affiliation: Individuals affiliated in research were coded as “1” and individuals affiliated in administration as “2”.

In the first step where control variables were entered, none of them significantly related to perceived supervisor support. The model showed a small improvement in model fit of \( Δ−2LL = 3.95 \), n.s. (female subordinates) and \( Δ−2LL = 3.79 \), n.s. (male subordinates). In the second step, independent variables were introduced – LMs’ contact quality, other-orientation and SDO. Contact quality reached only the border of significance for female subordinates (\( β =.32, p =.05 \)) (Table 3), while it negatively related to perceived supervisor support of male subordinates (\( β =−.24, p <.05 \)) (Table 4). Moreover, other-orientation was significantly related only to male subordinates’ perceived supervisor support (\( β =.33, p <.01 \)). The model had an improvement in fit of \( Δ−2LL = 5.21 \), n.s. (female subordinates) and \( Δ−2LL = 9.84, p <.01 \) (male subordinates). Accordingly, Hypothesis 1, predicting relationships between male LMs’ (a) contact quality, (b) other-orientation and (c) SDO, and subordinates’ perceived supervisor support, received support for the positive relationship between LMs’ other-orientation and male subordinates’ perceived supervisor support and, thus, for Hypothesis 1 (b) only for male subordinates. Further, Hypothesis 2, predicting a positive relationship between (a) perceived supervisor support and (b) perceived co-worker support, and perceived inclusion was investigated. The results revealed that both kinds of support were positively related to perceived inclusion of male employees (\( β =.59, p <.01 \)).
<.001; $\beta = .19$, $p < .05$), while only perceived supervisor support was related to perceived inclusion for female respondents ($\beta = .66$, $p < .001$) (Tables 5 and 6). Accordingly, Hypothesis 2 (a) was supported for both genders and 2 (b) only for male subordinates.

### Table 5. Regression analysis predicting employees’ job embeddedness – Female subordinates.

| Variable                      | Perceived inclusion | Job embeddedness |
|-------------------------------|--------------------|-----------------|
|                               | Step 1  | Step 2  | Step 3  | Step 1  | Step 2  | Step 3  | Step 4  |
| Employee age a                | -.35    | -.36    | -.31    | -.03    | -.04    | .06     | .19     |
| Employee tenure b             | -.04    | .10     | .11     | -.16    | -.12    | -.11    | -.15    |
| Affiliation c                 | .34     | .25***  | .23     | .04     | .02     | .02     | -.11    |
| Perceived supervisor support | .66**   | .60***  | .15     | .15     | .15     | .15     | .15     |
| Perceived co-worker support  |         |         | .16     | .16     | .16     | .16     | .16     |
| Perceived inclusion           | .14     | .42     | .02     | .03     | .04     | .05     | .07     |
| $\Delta R^2$                  | .14     | .55     | .57     | .03     | .07     | .11     | .18     |
| Total $R^2$                   | 2.36    | 41.12   | 1.45    | .46     | 1.72    | 2.25    | 3.60    |

**Note:** Standardized regression coefficients are shown; $n = 49$; *$p < .05$; **$p < .01$; ***$p < .001$

a Age: Owing to issues of anonymity, age was assessed on an interval scale where 18–29 years was coded as “1”, 30–39 years was coded as “2”, 40–49 years was coded as “3”, 50–59 years was coded as “4”, and 60 years and above was coded as “5”.

b Tenure: The employees’ and LMs’ organisational tenure were assessed on interval scales where 0–2 years was coded as “1”, 3–5 years as “2”, 6–9 years as “3”, 10–15 years as “4”, 16–30 years as “5”, and more than 30 years as “6”.

c Affiliation: Individuals affiliated in research were coded as “1” and individuals affiliated in administration as “2”.

### Table 6. Regression analysis predicting employees’ job embeddedness – Male subordinates.

| Variable                      | Perceived inclusion | Job embeddedness |
|-------------------------------|--------------------|-----------------|
|                               | Step 1  | Step 2  | Step 3  | Step 1  | Step 2  | Step 3  | Step 4  |
| Employee age a                | -.01    | -.10    | -.10    | .00     | -.04    | -.03    | -.00    |
| Employee tenure b             | .08     | .16     | .16     | .41***  | .44***  | .44***  | .40***  |
| Affiliation c                 | -.10    | -.04    | -.02    | -.14    | -.12    | -.10    | -.09    |
| Perceived supervisor support | -.59*** | .53***  | .19     | .25**   | .18     | .03     | .03     |
| Perceived co-worker support  |         | .39***  | .17     | .17     | .23     | .29     | .33     |
| Perceived inclusion           | .01     | .34     | .03     | .17     | .06     | .06     | .04     |
| $\Delta R^2$                  | .01     | .35     | .39     | .17     | .23     | .29     | .33     |
| Total $R^2$                   | .53     | 62.00   | 6.50    | 8.10*** | 9.24**  | 9.16**  | 7.72**  |

**Note:** Standardized regression coefficients are shown; $n = 123$; *$p < .05$; **$p < .01$; ***$p < .001$

a Age: Owing to issues of anonymity, age was assessed on an interval scale where 18–29 years was coded as “1”, 30–39 years was coded as “2”, 40–49 years was coded as “3”, 50–59 years was coded as “4”, and 60 years and above was coded as “5”.

b Tenure: The employees’ and LMs’ organisational tenure were assessed on interval scales where 0–2 years was coded as “1”, 3–5 years as “2”, 6–9 years as “3”, 10–15 years as “4”, 16–30 years as “5”, and more than 30 years as “6”.

c Affiliation: Individuals affiliated in research were coded as “1” and individuals affiliated in administration as “2”.

Hypothesis 3, predicting the relationship between male LMs’ (a) contact quality, (b) other-orientation and (c) SDO, and subordinates’ perceived inclusion will be mediated by perceived supervisor support, was tested. After introducing the control variables, none of them related significantly to the dependent variable. The model showed a small improvement in model fit of $\Delta = 2LL = 8.55$, n.s. (female subordinates) and $\Delta = 2LL = 4.13$, n.s. (male subordinates). By introducing the independent variables, LMs’ contact quality, other-orientation and SDO, only SDO was significantly and negatively related to perceived inclusion of male subordinates ($\beta = -.27$, $p < .05$). The model fit improved by $\Delta = 2LL = 4.23$, n.s. After entering the mediator variable, perceived supervisor support was positively related to perceived inclusion of female subordinates ($\beta = .67$, $p < .001$), with an improvement in model fit of $\Delta = 2LL = 31.15$, $p < .001$ (Table 3), and of male subordinates ($\beta = .62$, $p < .001$), with an improvement in model fit of $\Delta = 2LL = 53.41$, $p < .001$ (Table 4). A supplementary Sobel test [96] was performed which indicated that the reduction was not statistically significant ($z = -1.72$, n.s.). Accordingly, Hypothesis 3 was not supported.

Further, Hypothesis 4, predicting that the relationship between (a) perceived supervisor support and (b) perceived co-worker support on the one hand, and job embeddedness on the other will be mediated by perceived inclusion, was tested. Tables 5 and 6 showed that neither kind of support related to job embeddedness of female subordinates, while both perceived supervisor support ($\beta = .25$, $p < .01$) and perceived co-worker support ($\beta = .25$, $p < .01$) were positively related to job embeddedness of male subordinates. Entering perceived inclusion in the model, it was not significantly related to job embeddedness for female subordinates. On the other hand, the relationship was diminished and reduced for perceived supervisor support and perceived co-worker support, respectively, when perceived inclusion ($\beta = .27$, $p < .01$) was entered in the model of male subordinates, indicating mediation and partial mediation. A supplementary Sobel test was performed which indicated that the reduction was statistically significant for perceived supervisor support ($z = 3.09$, $p < .001$) and for perceived co-worker support ($z =$...
2.64, \( p < .001 \). Accordingly, Hypothesis 4 (a) was supported and (b) partially supported for male subordinates.

5. Discussion

The segregation of jobs and occupations is a tenacious characteristic of many labour markets and the immediate cause of different forms of gender inequality \([46]\). While women’s entry into male-dominated occupations has increased during recent decades, it has failed to diminish occupational segregation by gender \([100]\). At the same time as women have come a long way, there is still a long way ahead in order to achieve equality in both opportunities and salary \([97, 100, 101]\). Organisations worldwide are designing HR strategies aimed at promoting diversity and equality in the workplace \([70, 91]\), however, the extent to which DM will be effective on the line depends on LMs \([78, 91, 92]\). Therefore, when organisations conduct recruiting or promotions to the positions of LMs and assign responsibility for DM, they need to be aware of the possibly important role individuals at these positions play, in terms of the support they provide and high-quality relationships they build with the subordinates \([64, 78]\). While many organisations within male-dominated settings do not have any specific diversity practices targeted at promotion of women in the workplace defined, their general aim is to foster inclusion and equality throughout the organisation in order to retain their employees and avoid the costs of turnover \([77]\).

The findings of this study indicate that how LMs are perceived by their subordinates may be more important than experiences and traits of these individuals with regard to their ability to manage gender diversity at a highly male-dominated workplace. Hence, the more LMs are perceived as supportive, the more likely they will manage fostering inclusive environments for all the subordinates in the workgroup. In addition, comparison of means on subordinates’ perceptions across genders indicated that subordinates perceived their work environment rather similarly, implying that perceptions at the workplace may have a spill-over effect between employees, which goes beyond gender differences in male-dominated occupations. Thus, the present findings underline the importance of employees’ perceptions of the leader beyond leader experiences and traits, as well as fostering a supportive and inclusive environment throughout the workgroup without differentiating between subordinates, as such differentiation is likely to backlash \([78]\).

The results show that measured male LMs’ experiences and traits are not related to the degree to which their female subordinates feel supported and included. The lack of relationship for female subordinates also explains the insignificant intraclass correlation, as leader experiences and traits do not relate to variance in female subordinates’ perceptions of supervisor support and workgroup inclusion. On the other hand, male LMs’ contact quality with female employees and other-orientation related to male subordinates’ perceptions of a supportive supervisor negatively and positively, respectively, while SDO was negatively related to their perceived inclusion. Moreover, only perceived support from LMs contributed to female subordinates’ perception of inclusion, while both supervisor and co-worker support was associated with perceived inclusion of male employees. Further, neither kind of support, nor inclusion, appeared relevant for female subordinates to build attachment to their job, emphasising that there appear to be factors beyond support from the social environment at the workplace that play a role with regard to bonds that highly skilled female employees build to their job in male-dominated occupations. On the other hand, support male subordinates perceived from both the immediate manager and co-workers was related to creation of strong ties to the job through the perception of inclusion. This infers that male employees who perceive support, also feel well-accepted and appreciated as members of the workgroup and, in turn, feel attached to their job in male-dominated occupations.

5.1. Theoretical and Practical Implications

The present study contributes to the research on effective DM, by employing and complementing the concepts of intergroup contact and orientations to the field of effective DM on the line in male-dominated and high-technology settings. Moreover, it adds to the literature on inclusion by investigating the differences between the underlying mechanisms of female and male perceptions of inclusion in male-dominated occupations, as well as its mediating role between support perceived from the supervisor and job embeddedness. This study also contributes to the inclusion literature by adding to the previous research mostly conducted on a group \([77, 78]\) and organisation level \([49, 88]\), by employing dyad as a level of analysis. In addition, present study adds to empirical research on inclusion within male-dominated and high-technology settings by applying the two-dimensional framework of Shore et al. \([92]\), entailing both belongingness and uniqueness facets.

Furthermore, this study sheds light on the important role of employees’ perceptions related to the immediate supervisor. The findings enrich our understanding of how perceived supervisor support may contribute to workgroup inclusion and job embeddedness in male-dominated and high-technology settings. This is in line with Joshi and Roh’s \([53]\) calls for future research acknowledging the role of context in explaining research findings, as both male-dominated and highly technical settings may have a large impact on workgroup functioning and are particularly challenged by gender diversity. Such investigation was also called for by Shore et al. \([92]\), suggesting that future research should take into account both the experiences of majority and minority members in a workgroup to examine the effect of inclusion on all employees. These findings imply that the extent to which both female and male subordinates perceive support from their male supervisor in a male-dominated occupation is related to the degree to which these subordinates feel included in their workgroup. This contributes to the implications of Nishii’s \([77]\) findings, underlining the
significance of leadership in highly gender-diverse settings that might be more disposed to conflict, revealing the importance of LMs in predominantly male environments. Moreover, present study answers calls for future research by Nishii and Mayer [78] on other aspects of organisational environment that might contribute to employees’ feeling included and valued, by examining the role of lateral relationships at the workplace. Hence, the results demonstrate that perceived support from co-workers, together with supervisor’s, represents an important contributor to male employees’ perceived inclusion, while it does not appear relevant for female employees to feel included in male-dominated and highly technical settings.

Finally, investigating the outcomes of perceived inclusion, the results of this study indicate that it is related to job embeddedness of male employees in such a way that perceived supervisor and co-worker support lead to perceptions of inclusion and, in turn, perceived inclusion acts as a predictor of male employees’ attachment to their job. Thus, the more included they feel in the workgroup, the stronger ties they report to their workplace. As findings of Jiang et al.’s [52] meta-analysis demonstrated, those who perceive embeddedness in the job are very unlikely to have intentions to leave and, finally, leave, where this relationship holds beyond affective organisational commitment, job satisfaction and alternative job opportunities. This is particularly important in the context of male-dominated occupations, as majority employees may be negatively affected by emerging heterogeneity, even more than minority employees [102]. On the other hand, female employees appeared to build ties to their job based on factors beyond support they perceive from the immediate leader and colleagues, and perceived inclusion at the workplace. This is curious and provides a fruitful ground for future research on factors that foster attachment to job for highly skilled female employees in male-dominated occupations, as supportive social environment seems not to be one of them.

For practitioners, the present study emphasises the importance of male LMs being perceived as supportive in male-dominated and high-technology settings. First, the extent to which both female and male subordinates feel included is dependent on the support they perceive from the immediate supervisor. These findings indicate that other-oriented LMs with lower levels of SDO are perceived as more supportive and inclusive leaders by male subordinates, respectively. Second, while co-worker support also plays a role in male employees’ feeling of inclusion, acting as a substitute for good leadership, only support perceived from the immediate supervisor seems important for female employees to feel included, emphasising the importance of supportive and inclusive LMs in male-dominated settings. Finally, male employees who feel supported by supervisor and colleagues, also feel included in their workgroup, which, in turn, leads to higher attachment to their job. This is one of the main goals of HR managers and organisational top management, since the costs of turnover represent a sizable amount for any organisation, especially for those with highly skilled employees, as is the case with the organisation that participated in the present study. In addition, these financial estimates do not include losses in core strategic knowledge, which may be draining in knowledge-intensive workgroups, such as research and development units [77]. Thus, organisations will certainly benefit by being aware of the effect LMs’ supportive and inclusive behaviour has and, hence, carefully selecting individuals they hire and promote to leader positions in male-dominated occupations.

5.2. Suggestions for Future Research

This study provides several directions for further research. First, a curious area of further investigation would be to explore whether these findings hold in other types of male-dominated occupations, such as police or military, as well as test the present hypotheses in larger samples. This would allow for investigating whether contact quality male LMs have with female colleagues would reach significance with respect to female subordinates’ perceptions of support from the closest leader. Moreover, the results from this study can be applied in order to examine how LMs’ experiences and traits relate to subordinates’ perceived supervisor support and inclusion in other male-dominated occupations and whether these findings are contextually related to highly technical research institutions. Second, an interesting direction for future studies would be to investigate whether these relationships hold for other types of diversity in high-technology settings, such as ethnic background. More specifically, these findings can be used to test how LMs’ experiences and traits influence the extent to which subordinates perceive support from the closest supervisor and inclusion in the highly multicultural workgroup within a knowledge-intensive organisation. Finally, studies investigating the association between LMs’ experiences and traits on the one hand, and implementation of HR diversity practices promoting inclusion and equality on the other, are warranted to increase our understanding of effective DM on the line.

5.3. Limitations

The findings of the present study need to be regarded in light of several limitations. First, the applied research design is cross-sectional. Namely, because the data collection occurred at a single point in time, it is not possible to draw inferences of causality nor rule out the possibility of reverse causality [90]. For instance, subordinates’ perceptions of an inclusive LM might lead to perception of support, and not vice versa. It is neither possible to be certain whether all the alternative explanations have been ruled out with regard to spurious relationships, even though it was controlled for different variables in terms of potential socio-demographic differences (e.g., [24]). Therefore, to remedy these shortcomings and broaden our understanding of these relationships, longitudinal and experimental or quasi-experimental studies with larger samples are needed.
6. Conclusion

It appears that perceptions of LMs’ support are highly important for effective DM on the line in male-dominated occupations. Nowadays’ organisations are investing large resources with the aim to develop diversity practices that are more user-friendly, arrange diversity trainings and several forms of diversity education for LMs seeking to enhance inclusion across different social groups in the organisations. However, this study shows that choosing LMs who provide support and act inclusively towards both their female and male subordinates may be the solution for the challenges DM faces in male-dominated settings. Moreover, these findings indicate that both perceived supervisor and co-worker support contribute to feeling of inclusion of male employees, while only supervisor support seems relevant for their female counterparts, underlying the importance of LMs in predominantly male occupations. However, since none of the investigated LMs’ experiences and traits were related to perceptions of a supportive leader for female subordinates, this might imply that it is more important how LMs are perceived, than who they are. Besides, perception is often assumed to be the reality in diversity studies. Finally, both kinds of support appear to contribute to job embeddedness of male employees, through the perception of inclusion at the workplace. However, it seems that other factors, beyond support from the social environment, contribute to strong bonds highly skilled female employees build with their job in male-dominated settings. Thus, this study represents a further step towards better understanding the prerequisites for effective DM on the line in male-dominated occupations that might be beneficial to both HR academics and practitioners.

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