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Are transformational and laissez-faire leadership related to state anxiety among subordinates? A two-wave prospective study of forward and reverse associations

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ABSTRACT

The aim of this study was to determine the direction of associations between perceived leadership styles of an immediate leader and state anxiety among subordinates using time-lagged data from a large and heterogeneous probability sample of Norwegian employees. It was hypothesised that high levels of transformational leadership would be associated with a decrease, whereas high levels of laissez-faire leadership would be associated with an increase, in subsequent levels of anxiety. Reciprocal associations were also expected in that higher levels of anxiety were hypothesised to be related to subsequent increase in reports of laissez-faire, and decrease in reported exposure to transformational leadership. The sample comprised 1149 Norwegian employees. The design was a two-wave full panel study with a six-month time interval between the baseline and follow-up assessments. Contrary to hypotheses, neither transformational nor laissez-faire leadership were significantly related to subsequent levels of state anxiety. In support of hypotheses, baseline low levels of state anxiety were associated with reporting the immediate leader as less transformational and more laissez-faire six months later. In conclusion, the findings challenge theoretical models that explain leadership as a one-way superior-subordinate influence process.

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Psychological distress; managers; laissez-faire; transformational; health; longitudinal; prospective

Despite widespread beliefs that supervisors are a key source of subordinate moods, there is little empirical research documenting these effects (Bono, Foldes, Vinson, & Muros, 2007). The existing literature on the topic is heavily skewed towards the beneficial effects of positive moods and emotions, with negative moods and emotions being vastly understudied (Goody, Connelly, Griffith, & Gupta, 2010). Anxiety is a common negative emotion experienced by most employees from time to time, characterised by an unpleasant state of inner turmoil, often accompanied by nervous behaviour, such as pacing back and forth, somatic complaints and rumination (Seligman, Walker, & Rosenhan, 2001). Because leaders can create situations where employees have limited power to vent their emotions due to their lower hierarchical position, leader behaviour has been suggested to be an important

antecedent of employee anxiety (Bono et al., 2007; Pyc, Meltzer, & Liu, 2017). Supporting this assumption, cross-sectional research indicates that exposure to destructive leadership behaviour is associated with elevated levels of anxiety in subordinates (Pyc et al., 2017; Tepper, 2000). However, as cross-sectional designs do not provide indications of causal directions, there is a need for time-lagged studies that can shed light on potential cause and effect relationships (Pyc et al., 2017). Although there are theoretical reasons for assuming that leadership impacts anxiety among subordinates, we cannot rule out the possibility that existing levels of anxiety also influence subordinates' experiences and reports of leadership (Howell & Shamir, 2005; Shamir, 2007). The overarching aim of this study was therefore to determine forward and reverse associations between reports of the immediate leader as transformational and/or laissez-faire, and subordinates' levels of state anxiety using time-lagged data. To our knowledge, this is the first study that examines these associations by using prospective data from a national probability sample of employees.

The impact of transformational and laissez-faire leadership on state anxiety

Anxiety is an indicator of psychological well-being that has a key role in occupational stress theories, models and literature reviews, and is usually considered as an individual's response to a given exposure to a perceived threat (Beehr & McGrath, 1992; Bhui, Dinos, Stansfeld, & White, 2012). It is common to distinguish between trait and state anxiety. Trait anxiety reflects an enduring and trans-situational characteristic of the individual, whereas state anxiety is presumed to be caused or aroused by some more or less temporally proximal event and therefore to be situation-specific. When anxiety is addressed in job stress research, it is typically assumed to be caused, or at least precipitated, by situationally anchored stressors. Hence, in examining job stress, we are dealing with state rather than trait anxiety (Beehr & McGrath, 1992, p. 8). Still, state and trait anxiety are closely inter-related in that trait anxiety reflects a stable tendency to respond with state anxiety (Schwarzer, 1984), and people high on trait anxiety will therefore be likely to respond with elevated state anxiety across time and situations.

Supervisor-subordinate relationships are characterised by supervisors having and controlling power and situational resources, and subordinates' perceptions of their supervisors' expectations may therefore lead them to constrain their emotional expressions due to a fear of doing or saying something wrong (Bono et al., 2007; Diefendorff & Richard, 2003; Glasø & Einarsen, 2006). As a consequence, some subordinates will probably find it difficult to channel emotions back at their supervisor due to the asymmetry of power and risk of reprisals (Pyc et al., 2017). As subordinates may feel unable to vent their frustration, persistent suppressions of emotions and behaviours may subside into anxiety and tension (Grandey, 2003). However, it is reason to believe that the impact of leadership on subordinate anxiety will depend upon the type of leadership enacted. Following the widely cited Full Range Model of Leadership (Avolio, Bass, & Jung, 1999; Bass & Riggio, 2006), leadership can be described on a continuum from passive and ineffective leadership styles, such as laissez-faire leadership, to active, inspiring and effective leadership styles, such as transformational leadership. Transformational leadership is argued to cause changes in individuals and systems

... when leaders broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group, and when they stir their employees to look beyond their own self-interest for the good of the group. (Bass, 1990b, p. 21)

At an individual level, transformational leadership has positive effects on subordinates' trust in leadership and by actively engaging in and developing their followers' self-concept, transformational leaders are expected to have a strong positive influence over time on followers' personal values (Gardner & Avolio, 1998).

Contrasting transformational leadership, *laissez-faire* leadership refers to the avoidance or absence of leadership (Bass & Avolio, 1994). Based on Avolio, Bass, Walumbwa, and Zhu (2004) operational definition, Skogstad, Hetland, Glasø, and Einarsen (2014) define *laissez-faire* leadership as a non-responsive and avoidant type of leadership in situations when active involvement by the superior is needed. Accordingly, *laissez-faire* leaders do not meet the legitimate expectations of their subordinates (Skogstad, Einarsen, Torsheim, Aasland, & Hetland, 2007), and, hence, fall under Einarsen, Aasland, and Skogstad's (2007) definition of destructive leadership. These leaders avoid making decisions and do not carry out their supervisory responsibilities (Kelloway, Turner, Barling, & Loughlin, 2012). The destructive nature of *laissez-faire* leadership is further substantiated by a wide range of studies documenting the negative consequences associated with it, including increased role stress, interpersonal conflicts, emotional exhaustion, reduced job satisfaction and health problems (Skogstad, Nielsen, & Einarsen, 2017). Hence, *laissez-faire* is not merely about non-leadership but rather the avoidance of leadership when leadership is needed.

Based on their characteristics, transformational and *laissez-faire* leadership are likely to influence state anxiety among subordinates in opposite directions. Transformational leaders should foster an environment of trust and support and by having a clear vision, prioritising staff development, supportive leadership, and constructive role modelling, such leaders should be able to forego organisational pressures for short-term financial outcomes, and instead focus their efforts on the long-term health and well-being of their employees (Kelloway et al., 2012). The power in transformational leadership comes by recognising the varying needs and motives of potential followers and elevating them to transcend personal self-interest (Goertzen, 2013). Followers are mobilised by leaders' ability to appeal to and strengthen those motives through word and action (Goertzen, 2013). Transformational leaders should make followers feel more confidence in the leader, reduce perceptions of power asymmetry, and the employee may thereby be more able to vent issues and frustration when necessary, as well as being lower in tension and frustration in the first place. Transformational leaders will provide needed empathy, compassion, support, and guidance that influence employees' well-being, and they can inspire employees to surmount psychological setbacks and instil in them the strength to tackle future hurdles (Kelloway et al., 2012). Hence, employees who have a highly transformational leader will probably experience lower levels of negative job-related emotions, and in cases where such emotions develop, they will probably be able to vent these at the workplace. Transformational leaders may also create a more predictable and health-promoting working environment, hence lowering the anxiety of subordinates through predictability and general good working conditions.

In contrast, employees with laissez-faire leaders are more likely to experience higher levels of job-related anxiety. A leader who avoids taking supervisor responsibility in the workplace when warranted (Skogstad, Hetland et al., 2014) may create uncertainty and ambiguity (Hinkin & Schriesheim, 2008; Skogstad, Hetland, et al., 2014). Laissez-faire leadership reduces or removes information, guidance and fundamental communication, and constitutes as such a fundamental lack of social engagement in others (Robinson, O'Reilly, & Wang, 2013). Accordingly, persistent exposure to this leadership style will probably thereby instigate negative emotions and increasing levels of frustration that the subordinate may find it difficult to channel to the leader as long as the latter has more power and, in addition, does not show any concerns about the subordinate. The longer the subordinate has to suppress and regulate his/her emotions, the higher the risk for developing anxiety. Even, more directly, as laissez-faire leaders avoid taking decision and avoid acting when needed, insecurity and distress may follow even more directly from the lack of action on behalf of the immediate leader. In addition, a lack or avoidance of leadership is likely to create frustration and stress within the work group, which may result in interpersonal tensions, escalated conflict levels, and antisocial behaviour that again may manifest itself in lowered well-being at the workplace (Kelloway et al., 2012; Skogstad et al., 2007).

The impact of anxiety on transformational and laissez-faire leadership

Although there are strong theoretical reasons for expecting that transformational and laissez-faire leadership should influence subordinates' anxiety levels, we cannot rule out the possibility of a reverse or reciprocal relationship in which levels of anxiety influence the experience of the immediate leader. Highlighting the potential for such a reverse relationship, Burns (1978) conceived transformational leadership as a mutual influence process between leaders and subordinates by claiming that transformational leadership is a dynamic and reciprocal process in which both leaders and followers are being transformed by each other. In a similar manner, Shamir (2007) used theories on cognitions and social construction to argue for a follower-centred perspective on leadership by claiming that followers are not merely passive recipients of leadership, but active co-producers. Accordingly, the relationship between leaders and subordinates may therefore be considered as reciprocal. Hence, leadership is not a static phenomenon, and followers' perceptions of leadership may, or may not, change over time.

Theoretically, a reversed effect of state anxiety on transformational and laissez-faire leadership can be explained by both behavioural and perceptual mechanisms (Nielsen, Skogstad, Matthiesen, & Einarsen, 2016). It is generally accepted that leaders may change their behaviour from one situation to another and from one subordinate to another (Hersey, 1985; Mumford, Gessner, Connely, O'Connor, & Clifton, 1993). Hence, with regard to a behavioural mechanism, it may be that a subordinate's levels of anxiety influences the actual behaviour of a leader towards that specific subordinate. Depending on both contextual factors and leader characteristics such a behavioural mechanism may work in different ways. For instance, anxiety among subordinates may encourage leaders to behave in a manner that is associated with high transformational and low laissez-faire leadership as a mean to help anxious subordinates. That is, in the case of transformational leadership, leaders who experience an anxious

subordinate may strive to become a stronger role model for their followers, provide them encouragement and optimism, while also showing individual consideration through being supportive and understanding. In a reverse manner, subordinates' anxiety can also be difficult to deal with and handle for a leader, thus leading to avoidant as well as withdrawal behaviours that are associated with being less transformational and more laissez-faire in the display of leadership.

As for a perceptual mechanism, the theory of rosy/gloomy perceptions suggests that levels of well-being, in this case anxiety, influence how workers perceive and attribute the behaviour of their leader (de Lange, Taris, Kompier, Houtman, & Bongers, 2005). Specifically, gloomy perceptions mean that anxious subordinates are likely to evaluate their superiors in a gradually more negative way across time as a consequence of their anxiety (de Lange et al., 2005). In a similar manner, rosy perceptions suggest that non-anxious workers colour their perceptions of work characteristics in a rosier and more positive light, for instance, because such healthy workers can have more energy to work faster, and this energy can lead them to reinterpret their job demands as less demanding across time (de Lange et al., 2005).

Empirical evidence

While the evidence for a reciprocal relationship between leadership and state anxiety is relatively limited, some previous studies have examined relevant associations (e.g. Tafvelin, Armelius, & Westerberg, 2011). For instance, with regard to the potential impact of transformational leadership on subsequent emotional states, an experience sampling study that included data from healthcare workers recorded four times a day for two weeks, showed that employees with supervisors high on transformational leadership experienced more positive emotions throughout the workday (Bono et al., 2007). In studies examining reciprocal association between leadership and anxiety related indicators, the evidence is indecisive. A full reciprocal relationship was established in a study of 188 Danish employees working in elderly care. Transformational leadership was associated with increased psychological well-being 18 months later, while psychological well-being at baseline also was related to an increase in transformational leadership at follow-up (Nielsen, Yarker, Brenner, Randall, & Borg, 2008). In another study that examined reciprocal associations between supportive leadership and subordinate well-being, a four-wave full panel longitudinal study over a 14-month time period provided support for temporal associations (van Dierendonck, Haynes, Borrill, & Stride, 2004). Specifically, the results showed supportive leadership and subordinate responses to be linked in a feedback loop. Supportive leadership behaviour at Time 1 influenced supportive leadership at Time 4. Subordinate well-being at Time 2 synchronously influenced supportive leadership at Time 2. Supportive leadership behaviour at Time 4 synchronously influenced subordinate well-being at Time 4. However, in a large-scale study of Norwegian governmental employees that examined bidirectional association between leadership styles and psychological distress, only a reverse relationship was found (Birkeland, Nielsen, Knardahl, & Heir, 2016). Whereas supportive, fair, empowering, and laissez-faire leadership were not related to distress one year later, existing symptoms of distress were associated with ratings of the immediate leader as less fair as well as empowering over time.

Aim of the study and hypothesis

The existing literature on leadership is limited by a lack of knowledge about how different forms of leadership is associated with distal variables over time (Bluedorn & Jaussi, 2008; Shamir, 2011), and time-lagged studies that can help explain how leadership is related to the emotional well-being of subordinates has been specifically requested (Pyc et al., 2017). As our literature review has shown, the existing longitudinal evidence is limited, mixed, and inconclusive, and few studies have examined the potential reverse impact of state anxiety on ratings of leadership. By employing a prospective study design in a large-scale probability sample of employees, the current study aims to extend previous knowledge by empirically testing how transformational and laissez-faire leadership are inter-related with state anxiety. As described above, there are theoretical reasons for expecting that transformational leadership should lead to reduced levels of anxiety among subordinates, whereas laissez-faire leadership should lead to increased levels of anxiety. Consequently, to test these “forward” associations, we hypothesise:

H1: Higher levels of transformational leadership are associated with a decrease in levels of anxiety over time.

H2: Higher levels of laissez-faire leadership are associated with an increase in levels of anxiety over time.

As for a potential impact of anxiety on leadership, both the behavioural and perceptual mechanisms described above point to a reverse relationship. Specifically, it seems likely that anxiety should make subordinates report their immediate leader as less transformational and more laissez-faire. In order to examine whether subordinates’ anxiety is associated with subsequent ratings of leadership, the following hypotheses will be tested:

H3: Higher levels of anxiety are associated with reporting the immediate leader as less transformational over time

H4: Higher levels of anxiety are associated with reporting the immediate leader as more laissez-faire over time.

Methods

Design and sample

This study is based on a two-wave survey of the Norwegian working force with a six-month time lag between measurement points. A random and representative sample of 5000 employees was drawn from The Norwegian Central Employee Register by Statistics Norway. The Norwegian Central Employee Register is the official register of all Norwegian employees, as reported by employers. Sampling criteria were adults between 18 and 60 years of age employed in a Norwegian enterprise. At the baseline assessment (T1), questionnaires were distributed through the Norwegian Postal Service during the spring of 2015, with a response rate of 32 per cent. Altogether 1608 questionnaires were satisfactorily completed and included in this study. The survey was approved by the Regional Committee for Medical Research Ethics for Eastern Norway. Responses were treated anonymously, and informed consent was given by the respondents. The second wave of data (T2) was collected six months later following the same procedure as the baseline

assessment. There were no changes to the survey questionnaire. Only respondents who responded to the T1 survey was invited to participate at T2. Altogether 1149 respondents participated in this follow-up survey (72%).

Mean age was 45.19 ($SD = 10.04$) years with a range from 21 to 61. The sample consisted of slightly more women (52%) than men (48%). In total, 53.4% were married, 25.8% were common-law partners, 13.7% were unmarried, and 7.1% were widowed, separated, or divorced. With regard to educational level, altogether 9.4% had primary school as highest level, 31.0% had high school, 32.0% had lower level university, while 27.8% had higher level university or PhD. A total of 89.4% were in a full-time employment, 6.6% in part-time employment and 3.5% were on a sick leave or occupational rehabilitation, whereas 0.5% was disabled pensioners or retired. The latter group was not included in this study. Altogether 36% had a leadership position with personnel responsibilities, indicating an overrepresentation of leaders and managers in the sample.

Attrition analyses

Analyses of attrition from T1 to T2 showed no significant differences in T1 data between respondents and non-respondents at T2 with regard to levels of anxiety ($t = 1.89$; $df = 1603$, $p > .05$), transformational leadership ($t = -.21$; $df = 1572$, $p > .05$), and laissez-faire leadership ($t = .80$; $df = 1573$, $p > .05$) at T1. There were no significant differences in demographic characteristics between respondents and non-respondents. The findings indicate that attrition is random and that the T2 sample is representative for the overall sample.

Instruments

State anxiety was assessed with five items from the Hopkins Symptom Checklist (HSCL-10) measuring typical symptoms of anxiety during the last week. The HSCL is a valid, reliable (Rickels, Garcia, Lipman, Derogatis, & Fisher, 1976) self-administered instrument designed to measure levels of mental distress in population surveys (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). The HSCL is one the most frequently used indicators of mental distress in Norway and comparisons show that the shorter versions perform almost as well as the full version (Strand, Dalgard, Tambs, & Rognerud, 2003). Responses were given on a four-point scale, ranging from “1 = not at all” to “4 = extremely.” Example items are “Heart pounding or racing” and “Feeling fearful.” Cronbach’s alpha for this scale was .74 at both T1 and T2 in the current study. A confirmatory factor analysis showed that this indicator fit anxiety had good fit to data (CMIN = 1858.730; $df = 10$; CFI = .97; TLI = .94; RMSEA = .097; 95% CI RMSEA = .075–.112). Standardised factor loadings for the items varied from .64 to .86.

Global Transformational Leadership Scale (GTL; Carless, Wearing, & Mann, 2000) was used to assess *transformational leadership*. This seven-item short scale assesses transformational leadership as a single construct and is designed to represent a global measure of perceived transformational leadership of immediate leaders (Carless et al., 2000). The items capture seven leadership behaviours: (i) communicates a clear and positive vision, (ii) develops staff, (iii) supports staff, (iv) empowers staff, (v) is innovative, (vi) leads by example, and (vii) is charismatic. All items were answered on a 5-point scale with the alternatives “never,” “rarely,” “once in a while,” “quite often” and “very often or always”

(e.g. “My leader fosters trust, involvement and co-operation”). The GTL has good convergent validity with established lengthier scales such as the Multifactor Leadership Questionnaire (MLQ) and the Leadership Practices Inventory (LPI) (Carless et al., 2000). Translation-backtranslation procedures promoted linguistic equivalence of the Norwegian and the English versions of the scale. In the current study, Cronbach’s alpha for the GTL was .94 at T1 and .89 at T2. The GTL had acceptable psychometric properties as indicated by fit to the data (CMIN = 228.895; df = 14; CFI = .99; TLI = .99; RMSEA = .118; 95% CI RMSEA = .105–.132). Standardised factor loadings ranged from .81 to .93.

Four items adapted from the *Multifactor Leadership Questionnaire* (MLQ) was employed to measure *laissez-faire* leadership (Bass, 1990a; Bass & Avolio, 1990). It has been shown that *laissez-faire* leadership can be conducted at the individual level, the group level and at the organisational level (Schriesheim, Wu, & Scandura, 2009). To be consistent with regard to level of measurement, we have, in line with measurements of alternative forms of destructive leadership, such as abusive supervision (Tepper, 2000), adjusted the wording of items to an individual level of measurement. Rather than asking about leader behaviour in general (e.g. “My immediate supervisor delays responding to urgent questions”), the items were rephrased by emphasising the one-to-one relationship between the leader and the respondent (All items: My immediate supervisor ... “... avoids involving him/herself in tasks that are important for me and my work,” “... is absent when I need him/her,” “... avoids making decisions that are important for me and my work.” “... delays responding to questions that I need urgent answers to”). Response alternatives were “never,” “rarely,” “once in a while,” “quite often” and “very often or always.” Cronbach’s alpha for the Laissez-Faire subscale was .80 at T1 and .83 at T2 in this study. The scale had good fit to data (CMIN = 4454.986; df = 6; CFI = .99; TLI = .98; RMSEA = .104; 95% CI RMSEA = .070–.141).

Statistical analysis

Data cleaning and descriptive data analyses were performed with IBM SPSS Statistics 22.0 (IBM Corp. Released, 2013). Relationships between leadership and anxiety were analysed with structural equation modelling in Mplus version 7.11 (Muthén & Muthén, 1998–2017). Analyses were conducted in three steps. As a first step, the measurement models and the dimensionality of the latent variables at each time point were examined. As a second step, we investigated the measurement invariance across time for the latent variables. In the third step, structural models designed to address the directional associations between the indicators of leadership and anxiety were specified and tested. Through specifying and testing various cross-lagged autoregressive models, it was possible to contrast the causal directions between the variables.

Due to the categorical nature of the observed indicators, the Weighted Least Squares Means and Variance adjusted (WLSMV) estimator was employed to determine model fit and magnitude of the relationships. Being a robust estimator, the WLSMV does not require variables to be normally distributed variables and is therefore an adequate approach for modelling categorical or ordered data. To determine model fit, we assessed chi-squared (CMIN) test, root-mean-square error of approximation (RMSEA), Tucker–Lewis Index (TLI) and comparative fit index (CFI). Values of RMSEA below 0.05 and values of CFI and TLI above 0.95 were considered indicative of a well-fitting model (Hu & Bentler,

1999). All study constructs were modelled as latent variables using their respective observed indicators. The latent factors were allowed to covariate within time points. The structural regression analyses of reciprocal time-lagged relationships between leadership and anxiety were done in four steps and the following models were tested and compared.

1. *Stability model* (M1). This model estimated stabilities of the study variables over time. No cross-lagged relations between the study variables were included in this model.
2. *Normal causation model* (M2). This model is similar to M1, but included cross-lagged relations from the leadership factors at T1 to anxiety at T2.
3. *Reverse causation model* (M3). This model is similar to M1, but included cross-lagged relations from anxiety at T1 to leadership factors at T2.
4. *Reciprocal causation model* (M4). This model is similar to M1, but also contains the normal and reverse causation relations tested in models M2 and M3.

The different structural models were compared using the DIFFTEST function in Mplus, and critical values of the chi-square distribution are taken as evidence of whether or not estimation of additional parameters is preferred (Jöreskog, 1993).

Results

Measurement model and descriptive analyses

To determine whether the indicators of leadership and anxiety are empirically different, we followed a confirmatory approach with four distinguishable measurement models. These were a one-dimension model with all items measuring the same latent variable (CMIN = 36741.96; df = 120; CFI = .45; TLI = .39; RMSEA = .411; 95% CI RMSEA = .406–.416), a two-dimension model with the leadership items loading on a leadership factor and the anxiety items on an anxiety factor (CMIN = 35741.96; df = 120; CFI = .96; TLI = .95; RMSEA = .117; 95% CI RMSEA = .112–.122), and finally a three-dimension model which included transformational leadership, laissez-faire leadership, and anxiety as separate factors (CMIN = 36741.96; df = 120; CFI = .99; TLI = .99; RMSEA = .048; 95% CI RMSEA = .043–.054). The fit statistics and comparisons of models indicated that the three-dimensional model had the best fit to data, thus suggesting that anxiety, transformational leadership, and laissez-faire leadership represent empirically distinguishable constructs. The model fit for this three-dimension model did not deteriorate when constricting factor loadings of the items across time. This provides evidence for metric invariance across time points.

Table 1 presents correlation analyses and descriptive findings. At T1, anxiety was negatively correlated with transformational leadership ($r = -.22$; $p < .001$) and positively correlated with laissez-faire leadership ($r = .19$; $p < .001$). The indicators of transformational and laissez-faire leadership were negatively correlated ($r = -.54$; $p < .001$). Correlations between the same variables at T2 had similar magnitude. Transformational leadership at T1 was negatively correlated, ($r = -.19$; $p < .001$) whereas laissez-faire leadership at T1 was positively correlated ($r = .19$; $p < .001$) with anxiety at T2. Anxiety at T1 was negatively related to transformational leadership ($r = -.22$; $p < .001$) and positively related to laissez-faire leadership ($r = .22$; $p < .001$) at T2.

Table 1. Means, standard deviation, and intercorrelations for study variables. Cronbach's alpha in bold along the diagonal ($N = 1098-1104$).

	Range	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	
1	Age	21–61	46.19	9.60	–							
2	Gender	1 = male	1.53	0.50	–.09**	–						
3	Anxiety T1	1–4	1.33	0.38	.05	.05	.74					
4	Transformational leadership T1	1–5	3.68	0.84	–.03	.03	–.22***	.94				
5	Laissez-faire leadership T1	1–5	2.39	0.77	.02	–.02	.19***	–.54***	.80			
6	Anxiety T2	1–4	1.33	0.38	–.07*	.09**	.61***	–.19***	.19***	.74		
7	Transformational leadership T2	1–5	3.69	0.88	–.03	.04	–.22***	.61***	–.39***	–.21***	.89	
8	Laissez-faire leadership T2	1–5	2.35	0.79	–.01	–.02	.22***	–.38***	.50***	.20***	–.52***	.83

* $p < .05$; ** $p < .01$; *** $p < .001$.

Model comparisons and time-lagged associations

Model comparisons of different time-lagged relationship between anxiety, transformational, and laissez-faire leadership were carried out in order to test the empirical evidence for Hypotheses 1 and 2 (transformational and laissez-faire leadership as predictors for anxiety) and 3 and 4 (anxiety as predictor of transformational and laissez-faire leadership). In the analyses, forward-, reverse-, and reciprocal effects models were tested and compared using a stability model as a reference. Models were compared with the DIFFTEST function in Mplus and the fit of the models were compared using scaling corrected chi-square values. Model fit and comparisons for the different models are included in Table 2. The stability model (M1) showed acceptable fit to the data [CMIN = 1446.33; *df* = 455; *p* < .001, CFI = .984, TLI = .983; RMSEA = .045; 90% CI RMSEA = .042–.047]. Temporal stability in the study variables was high over the two-year period: laissez-faire leadership (*b* = .65; *p* < .001), transformational leadership (*b* = .71; *p* < .001), and anxiety (*b* = .84; *p* < .001).

The competing models M2, M3, and M4 were tested against the M1 stability model and against each other. As displayed in Table 2, the M2 forward model did not improve the overall fit compared to M1 stability model. The M3 reverse model showed significantly better fit compared to the M1 stability model. The M4 reciprocal model was significantly better than the stability model, but did not improve the fit from the M3 reverse model. This suggests that the M3 reverse model gave the most valid representation of the data and that the relationships between leadership and anxiety are explained by the impact of anxiety on subsequent reports of leadership. In support of Hypotheses 3 and 4, the significant structural paths in this reverse model (see Table 3) showed that anxiety at T1 was associated with decreased transformational leadership (*b* = −.10; *p* < .001) and increased

Table 2. Results of cross-lagged full panel structural regression between leadership and anxiety.

		Test statistics					DIFFTEST statistics		
		χ^2	<i>df</i>	CFI	TLI	RMSEA (90% CI)	Comparison	<i>df</i>	χ^2
M1	Stability model	1466.33	455	.984	.983	.045 (.042–.047)			
M2	Forward model (Leadership T1 → anxiety T2)	1499.37	453	.984	.982	.046 (.043–.048)	M2 vs. M1	2.276 ^{NS}	2
M3	Reverse model (Anxiety T1 → Leadership T2)	1427.93	453	.985	.983	.044 (.042–.047)	M3 vs. M1	23.01 ^{***}	2
M4	Reciprocal model	1454.82	451	.984	.983	.045 (.042–.047)	M4 vs. M1	27.00 ^{***}	4
							M4 vs. M2	25.31 ^{***}	2
							M4 vs. M3	.89 ^{NS}	2

p* < .05; *p* < .01; ****p* < .001.

Table 3. Tested associations between indicators of leadership and anxiety in the M3 reverse model (standardised coefficients).

Relationship	<i>b</i>	SE
Transformational leadership T1 → Transformational leadership T2	.68 ^{***}	.02
Laissez-faire leadership T1 → Laissez-faire leadership T2	.60 ^{***}	.03
Anxiety T1 → Anxiety T2	.87 ^{***}	.03
Anxiety T1 → Transformational leadership T2	−.10 ^{**}	.03
Anxiety T1 → Laissez-faire leadership T2	.14 ^{***}	.04

p* < .05; *p* < .01; ****p* < .001.

laissez-faire leadership ($b = .14$; $p < .001$) at T2. Significant paths in the M3 reverse model are graphically displayed in Figure 1.

Discussion

The overarching aim of this study was to determine forward and reverse associations between transformational and laissez-faire leadership, respectively, and subordinates' state anxiety. We hypothesised higher levels of transformational leadership to be associated with a decrease (Hypothesis 1), whereas higher levels of laissez-faire leadership to be associated with an increase (Hypothesis 2), in levels of anxiety among subordinates over time. Reverse associations were also expected in that existing high levels of anxiety were proposed to be related to a decrease in reports of transformational leadership (Hypothesis 3) and an increase in reports of laissez-faire leadership (Hypothesis 4). After adjusting for stability in the variables, the findings showed that neither transformational nor laissez-faire leadership were significantly associated with subsequent changes in levels of state anxiety in the study sample. These findings go against both theoretical assumptions about leadership as an antecedent of anxiety among subordinates (Bono et al., 2007; Gooty et al., 2010; Pyc et al., 2017) and some previous empirical findings on adjacent variables (e.g. Bono et al., 2007; Munir, Nielsen, Garde, Albertsen, & Carneiro, 2012; Nielsen, Randall, Yarker, & Brenner, 2008).

The finding that transformational and laissez-faire leadership were unrelated to subsequent levels of state anxiety is in line with the results from a previous prospective study on leadership and psychological distress (Birkeland et al., 2016), while it goes against both theory and a study showing significant association between transformational leadership and subsequent levels of psychological well-being (Nielsen, Randall, et al., 2008). There may be several explanation for the divergent findings on leadership and outcomes related to state anxiety. Methodological artefacts such as the six-month time lag

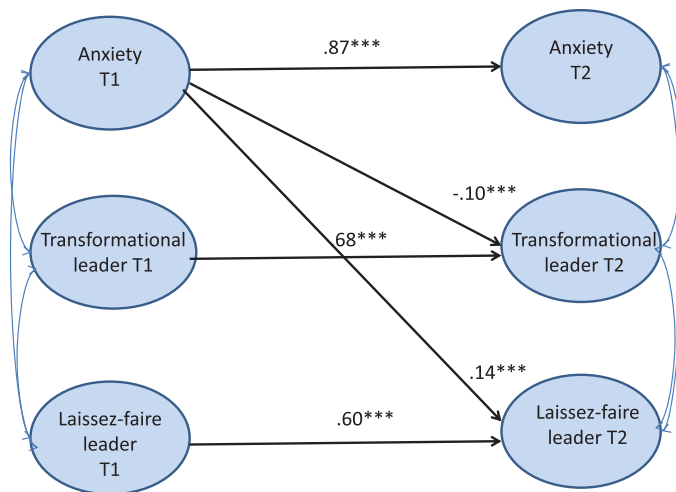


Figure 1. Associations between transformational leadership, laissez-faire leadership, and anxiety over a six-month time lag (only significant associations shown in figure).

between survey points that was used in the current study may be one possible explanation. The study by Nielsen, Randall, and colleagues (2008), which showed a significant association between transformational leadership and psychological well-being during the last two weeks before the survey, used an 18 months' time lag. In a two-sample longitudinal study, Skogstad, Aasland et al. (2014) found that laissez-faire leadership was associated with a decrease in job satisfaction over two-year time lag, but not across a six-month lag. The fact that leadership seems to predict outcomes only when using longer time lags may indicate that leadership has a sleeper effect on psychological well-being that first appears after a prolonged time period (Zapf, Dormann, & Frese, 1996). To understand how transformational and laissez-faire leadership relates to state anxiety, future research should therefore replicate the current study by addressing state anxiety using both short and long time lags.

State anxiety as a predictor of subsequent reports of both transformational and laissez-faire leadership is a relatively novel finding that extends previous research. With a few notable exceptions (Birkeland et al., 2016; Nielsen, Randall, et al., 2008; Skogstad, Aasland, et al., 2014), the issue of a reverse effect of psychological well-being on leadership has not been examined in previous longitudinal studies. Consequently, this finding at least highlights the importance of taking characteristics of subordinates into consideration both in theoretical models of leadership and when examining causes and consequences of enacted and reported leadership. While the impact of state anxiety on reports of leadership goes against most models of leadership, the findings support a follower-centric perspective on leadership by showing that the well-being of employees can influence their reports of observed leadership practices (Howell & Shamir, 2005; Shamir, 2007). A significant implication of this finding is that taking cross-sectional associations between leadership and psychological well-being as evidence for the leadership as a precursor may lead to a type I error, i.e. detecting an effect that is not present.

The finding that state anxiety relates to a decrease in transformational leadership is in line with previous findings on other constructive forms of leadership (Birkeland et al., 2016; Nielsen, Randall, et al., 2008; Skogstad et al., 2014). Taken together these studies suggest that higher levels of state anxiety relates to perceiving the immediate leader as less constructive. The finding that state anxiety predicts an increase in reported laissez-faire leadership contrasts previous research on some related variables. Skogstad, Aasland et al. (2014) found no impact of job satisfaction on subsequent reports of laissez-faire leadership, irrespective of time lag. Similarly, Birkeland et al. (2016) found no associations between psychological distress at baseline and reports of laissez-faire leadership one year later. There may be several explanations for this divergence, including methodological differences between studies as well as the influence of different contextual factors. Both Skogstad and colleagues and Birkeland and colleagues used the original laissez-faire inventory as described by Bass and Avolio (1990) which measures laissez-faire leadership without taking level of measurement into consideration (e.g. individuals vs. group). In this study, we followed Schriesheim et al.'s (2009) call to use an adapted indicator which assessed this form of leadership in a specific one-to-one relationship between an immediate leader and a follower. This is also in line with measures of active destructive forms of leadership, such as abusive supervision (Tepper, 2000). Hence, it may be that this indicator is more sensitive in terms of a leader's specific behaviour toward the given

subordinate. This measure may therefore also be more sensitive for changes within the given subordinate, e.g. in his or her state anxiety level.

While we have shown that state anxiety has a significant impact on subsequent reports of leadership, our findings do not provide information about whether this relationship is due to changes in leader behaviour, subordinate perceptions, or an interaction between both of these mechanisms. Hence, future research should aim to establish the relative magnitude of the behavioural and perceptual mechanisms as mediators of the association between state anxiety and leadership. In this respect, we may need research designs that extend the scope of self-report surveys. As the dynamics between leaders and subordinates may be determined not only by leader characteristics and behaviour, but also to a large extent by the subordinates' behaviour, cognitive schema and social perception process (Shamir, 2007), multisource designs that include ratings from both the focal leader and his/her subordinates should be applied. Similarly, multilevel approaches that can add to the understanding of the degree to which reports of leadership is determined by individual-level perceptions or the actual behaviour of the leader is important.

Potentially moderating factors should also be considered in order to understand the impact of state anxiety on reports of leadership. The present paper is based on an observational study and unmeasured third variables, such as individual characteristics (Wang, Harms, & Mackey, 2015) and situational factors, can have influenced the findings. For instance, it may be that extravert workers will experience laissez-faire leadership as less problematic than introvert workers due to the extroverts' tendency to interpret neutral or negative events in a more positive light compared to introverts (Meyer & Shack, 1989). Similarly, laissez-faire leadership may have more profound consequences in work groups with a relative strong need for leadership, in general, as compared with work groups characterised by higher levels of self-leadership. While this study was restricted to transformational and laissez-faire leadership, it may be that other relationships with state anxiety would have been established if the study have employed leadership styles such as instrumental leadership (Antonakis & House, 2014), ethical leadership (Kalshoven & Boon, 2012), authentic leadership (Avolio & Gardner, 2005), or more active forms of destructive leadership (Kant, Skogstad, Torsheim, & Einarsen, 2013; Tierney & Tepper, 2007). Furthermore, the present study is restricted to anxiety. Hence, we may have reached different conclusions by including both positive and negative affect as indicators of emotional states (Glasø, Skogstad, Notelaers, & Einarsen, 2018).

Methodological strengths and limitations

There are some notable strengths of this study that should be taken into consideration in the interpretation of the findings. The study examined bidirectional relationships between constructive and counterproductive leadership styles and anxiety in a large and heterogeneous sample using time-lagged full panel data. The sample was drawn from a representative pool of Norwegian employees and can therefore be described as a probability sample. Attrition analyses indicated that the cohort was representative for the overall baseline sample on the study variables. Psychometrically sound measurement instruments were used to measure the study variables. Extending previous research, we have developed and applied a revised indicator of laissez-faire leadership that emphasise a one-to-one relationship between the leader and the subordinate rather than employing a global

measure of the leader across situations and subordinates. While this revised instrument was statistically sound in this study, it should be further tested and examined in future research.

Some limitations is also worth mentioning. First of all, as the response rate of 32% in wave one was lower than the average rate established for survey studies (Baruch & Holtom, 2008) one may question the external validity of the findings. However, as response rate and representativity seems to have limited impact on the internal validity of a study (Nielsen & Einarsen, 2008; Schalm & Kelloway, 2001), the response rate in the present study may not be a problem with regard to the actual findings. Because measurement instruments were self-report measures, the study could be influenced by biases such as response set tendencies and social desirability. In addition, there is also the possibility of common method variance, although the use of a time lag between the measurement of the independent and dependent variables in the current study probably have contributed to reduce this risk (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). With regard to time lag, we used a six-month interval. It should be noted that other findings may have been obtained with different time lags (Ford et al., 2014). For instance, and as noted above, there may be important “sleeper effects,” i.e. the effects appear a long time after exposure to the stressor (Zapf et al., 1996). As argued by Taris and Kompier (2014), reporting a non-significant finding based on the use of too short or too long time intervals may conceal the true causal tendency.

Implications and conclusions

This study is among the first to examine time-lagged relationships between leadership styles and subordinate state anxiety. Whereas a time-lagged design does not confirm any form of causality, it does satisfy one essential condition for a cause and effect associations in that the predictor variables are measured before the outcome variable (Shamir, 2011). Contrasting most theoretical models on leadership, as well as some previous research findings, our results suggest that leadership styles does not influence levels of state anxiety among subordinates, at least not over a six-month time-lag. Rather, we found that existing state anxiety predicted a decrease in reported transformational, and an increase in reported laissez-faire leadership over time. A main theoretical implication of the current study is, therefore, that models of leadership and organisational behaviour must consider a “reverse” effect of emotional states on leadership. That is, in line with a follower-centred perspective on leadership (Howell & Shamir, 2005; Shamir, 2007), the leader-subordinate relationship seems to constitute a dynamic exchange process where characteristics of the subordinates also can influence leadership, be it actual behaviour or perceptions of leader behaviour.

As for practical implications, this study points to the importance of addressing emotions in organisations as anxious workers are more likely to experience their immediate leader as being absent, avoidant and non-supportive, be it a true representation of the said leader or merely in the eye of the beholder. Such a negative impression of the leader may be detrimental to other aspects of the working situation in that it can reduce trust, commitment and loyalty, while increasing levels of conflict and role stress (e.g. Kelloway et al., 2012; Skogstad, Hetland, et al., 2014). Adequate measures and interventions to reduce levels of state anxiety will depend on whether the impact of state anxiety on

leadership behaviours is due to the behavioural or perceptual mechanism. If the given association primarily is down to behavioural mechanisms, the leader will be the focal point of measures and interventions. In this regard, an adequate leadership development program should not be limited to developing leaders into being more transformational and less laissez-faire, but rather emphasise teaching leaders to handle subordinates' negative emotions. If the impact of anxiety on leadership primarily is due to a perceptual mechanism, measures and interventions should be aimed at the subordinate, helping him/her to correct and readjust the understanding of work characteristics, including leadership. Leaders and managers should learn that when subordinates experience elevated levels of anxiety, this will be accompanied with an increased need for leadership.

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