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Faculty I – Department of Psychology

Better Safe than Sorry: Spotlighting the *When* and *Why* of Threats

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Index of Publication

This thesis starts with a general introduction, followed by four studies, and closes with a general discussion. In all studies, I developed the concept, conducted the data collection and analyses, wrote the manuscript, and was the corresponding author during review processes. Only the data for Study 3 were collected as part of the project *Part-time Leadership* at the University of Trier, and the data were analysed by H. Peiffer. T. Ellwart gave feedback and was involved in the revision of the articles. All articles are included in this thesis were presented in the published, submitted, or prepared-for-submission form except for changes in format and layout.

Study	*Reference*
1	Rynek, M. & Ellwart, T. (2021). *Threat at Work: A Classification of Triggers and Needs and a Role-related Perspective* [Manuscript submitted for publication]. Department of Psychology, University of Trier.
2	Rynek, M. & Ellwart, T. (2021). *Threat Stresses Everyone: Triggers and Needs in Threatening Events of Different Professions* [Manuscript in preparation]. Department of Psychology, University of Trier.
3	Rynek, M., Ellwart, T., Peiffer, H. M., Endres, E., & Moldzio, T. (2021). Threats to Professional Roles in Part-time Leadership. Effects of Dysfunctional Support on Leader Identification, Rumination, and Job Satisfaction, *Zeitschrift für Arbeits- und Organisationspsychologie, 66*, 1-13. https://doi.org/10.1026/0932-4089/a000362
4	Rynek, M. & Ellwart, T. (2021). *Threats as a Stress in Critical Adversity Situations (CAS)* [Manuscript submitted for publication]. Department of Psychology, University of Trier.

Summary

This thesis focus on threats as an experience of stress. Threats are distinguished from challenges and hindrances as another dimension of stress in *challenge-hindrance models* (*CHM*) of work stress (Tuckey et al., 2015). Multiple disciplines of psychology (e.g. stereotype, Fingerhut & Abdou, 2017; identity, Petriglieri, 2011) provide a variety of possible events that can trigger threats (e.g., failure experiences, social devaluation; Leary et al., 2009). However, systematic consideration of triggers and thus, an overview of *when* does the danger of threats arises, has been lacking to date. The explanation *why* events are appraised as threats is related to frustrated needs (e.g., Quested et al., 2011; Semmer et al., 2007), but empirical evidence is rare and needs can cover a wide range of content (e.g., relatedness, competence, power), depending on need approaches (e.g., Deci & Ryan, 2000; McClelland, 1961). This thesis aims to shed light on triggers (*when)* and the need-based mechanism (*why)* of threats.

In the introduction, I introduce threats as a dimension of stress experience (cf. Tuckey et al., 2015) and give insights into the diverse field of threat triggers (the *when* of threats). Further, I explain threats in terms of a frustrated need for positive self-view, before presenting specific needs as possible determinants in the threat mechanism (the *why* of threats). Study 1 represents a literature review based on 122 papers from interdisciplinary threat research and provides a classification of five triggers and five needs identified in explanations and operationalizations of threats. In Study 2, the five triggers and needs are ecologically validated in interviews with police officers (*n* = 20), paramedics (*n* = 10), teachers (*n* = 10), and employees of the German federal employment agency (*n* = 8). The mediating role of needs in the relationship between triggers and threats is confirmed in a correlative survey design (*N* = 101 Leaders working part-time, Study 3) and in a controlled laboratory experiment (*N* = 60 two-person student teams, Study 4). The thesis ends with a general discussion of the results of the four studies, providing theoretical and practical implications.

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Better Safe than Sorry: Spotlighting the When and Why of Threats

Police officers, nurses, train attendants, and therapists all experience threats in their work environment, even though they are prepared to deal with diverging stressful work events, e.g., facing critical adversity situations that include danger for life and limb (HNA, 2021), dealing with disrespectful patients or customers (Pulz, 2019; Krekel, 2018), or being confronted with high bureaucratic burdens (Rauch, 2019). Individual appraisal processes determine whether individuals perceive stressful work events as *threats* and thus a danger, as a *hindrance* and thus an obstacle to goal attainment, or as a *challenge* and thus a potential for mastery and gain (Tuckey et al., 2015). Since threats entail more serious consequences (e.g., emotional exhaustion) than challenges and hindrances (Searle & Tuckey, 2017), it is important to understand the triggers (*when*) and mechanisms (*why*) of threats in detail to identify approaches for avoiding and dealing with threats.

Threats are distinguished from challenges and hindrances as a new dimension in *challenge-hindrance models* (*CHM*) of work stress (Tuckey et al., 2015). Although threats have been scarcely studied (Horan et al., 2020), they are a topic of interest in multiple disciplines of psychology in addition to CHM (e.g., stereotype, Fingerhut & Abdou, 2017; identity, Petriglieri, 2011; self-regulation vanDellen et al., 2011). Threat research examines threats in various contexts and situations and provides a variety of possible events that can trigger threats (e.g., failure experiences, social devaluation; Leary et al., 2009). However, systematic consideration of possible threat triggers, that is, an overview of *when* the danger of threats arises, has thus far been lacking.

Even though threat research on triggers is diverse, explanations of *why* people perceive threats are common. Threats are often based on a frustrated global need to maintain positive self-views. A positive self-view is a positive standing in front of oneself and others (e.g., Semmer et al., 2019; Tesser, 2000). The frustration (or satisfaction) of this need to maintain a positive self-view depends on how individuals define themselves in terms of what they are striving for (e.g., as a paramedic, I strive to be helpful.; cf. Alicke & Sedikides, 2009). The content of an individual’s striving is fuzzy since it is based on personal goals, expectations, and beliefs that, in turn, are context-dependent and dynamic, of which the individual is not always conscious (Ahsforth & Shinoff, 2016). Due to this fuzzy content of

individual striving, it is equally fuzzy what individuals can do or how others can support them in their striving to contribute to the satisfaction of the need for positive self-views and, thus, to avoid threats. Therefore, using the global need for positive self-views and this fuzzy content as a mechanism to explain the *why* of threats is not a helpful approach for avoiding and dealing with threats. However, needs with a more specific content of individuals' striving, such as a need for competence (i.e., individuals strive to be competent; Deci & Ryan, 2000), might be interesting determinants in the threat process, in addition to the global need for a positive self-view. Specific needs imply approaches for actions to satisfy them (e.g., to satisfy the need for competence, a paramedic may report for duty, help other people and, thus, feel competent). Although we find some evidence for specific needs in threat explanations (e.g., Semmer et al., 2007) as well as for specific needs influencing appraisal processes (e.g., Quested et al., 2011), specific needs, neither as general determinants nor their specific content, have been systematically investigated in threat research.

This thesis's first aim is to systematise events acting as threat triggers across the diverging field of threat research to give an overview of possible threatening events. The second aim is to investigate the role of specific needs (e.g., need for competence) as mechanisms of threats. Since there is a wide range of different needs postulated in the psychological research (e.g., Ashforth & Schinoff, 2016; Deci & Ryan, 2000; McClelland, 1961; Schaller et al., 2017; Stets & Burke, 2014), the third aim is to identify and systematise which specific needs are related to threats. While in the introduction threat as the key construct is presented from different research perspectives (i.e., CHM research, self and identity research, needs research), through four studies, a classification of triggers and needs is developed, and their relationship is investigated using different methodological approaches (i.e., literature review, interview study, survey study, experimental design).

This thesis makes important theoretical and practical contributions: it integrates both different research fields (i.e., CHM, self and identity research, needs research, and interdisciplinary threat research) and different methodological approaches (i.e., literature review, interview study, survey study, laboratory experiment) to contribute to a deeper understanding of the *when* and *why* of threats. First, the classification of triggers in interdisciplinary threat research helps clarify the omnipresent danger of

threats. In this way, this thesis expands the CHM perspective, which originally intended to classify stressful work events according to challenges and hindrances, with an overview of events typically accompanied by threats (i.e., the *when* of threats). Second, analysing self- and identity processes and uncovering needs as important determinants in the threat mechanism helps clarify the meaning of harm to the self. Third, referring to specific needs provides universal but concrete evidence of human striving. This supports the understanding of *why* an event triggers threats.

In this introduction, I first present the construct as a stress dimension in CHM. Subsequently, I provide insights into the diverse field of threat triggers. After introducing the threat mechanism via a frustrated need for a positive self-view, specific needs are presented as possible determinants in the threat mechanism. Finally, I give an overview of specific needs, which might be relevant in the threat mechanism due to their content, by describing which needs have been discovered and researched thus far in the most popular need theories and approaches.

Threats as a Type of Stress Experience

Individuals experience stressful events at work every day (Feltes & Weigert, 2018; Jahn, 2020; Zeinlinger, 2020). The CHM (Cavanaugh et al., 2000) originally intends to categorise such work events as challenge demands (e.g., workload) and hindrance demands (e.g., role conflict). While challenge demands are associated with positive outcomes (e.g., higher job satisfaction), hindrance demands are associated with negative outcomes (e.g., turnover). A more recent approach to CHM (Tuckey et al., 2015; see Figure 1) extended the two categories of demands by threat demands (e.g., bullying), which are also linked to negative consequences such as emotional exhaustion and feelings of anger and anxiety. Due to these serious negative consequences, it is important to avoid threats.[1]

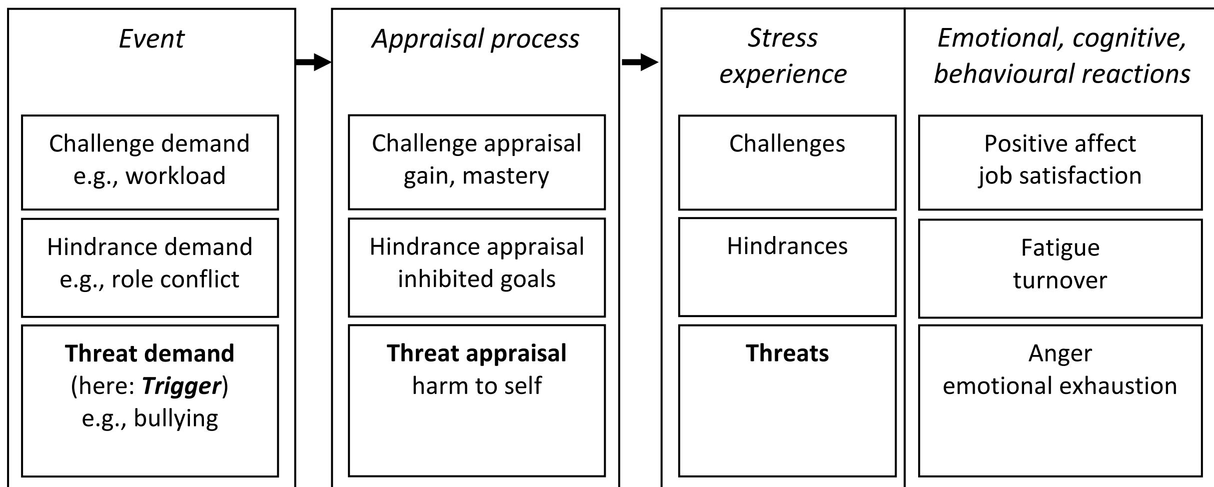
Tuckey et al. (2015) describe events that typically trigger threats, including varying forms of workplace aggression and victimisation, customer-related social stressors, and emotional demands. However, there are few empirical studies that consider bureaucratic constraints (Brady & Cunningham, 2019) or difficult goals (Espedido & Searle, 2018), which are otherwise associated with challenges or

[1] I use the term threats for describing the stress experience as an outcome of threat demands and threats appraisals, which is associated with further emotional, cognitive, and behavioural reactions (see Figure 1).

hindrances as threat triggers. Triggers of threats thus appear to be multifaceted and not explicitly separable from challenge and hindrance demands. Therefore, the question arises of whether events can be assigned to different stress dimensions.

Figure 1

The extended CHM with threats as a third dimension of stress experiences based on Tuckey et al. (2015)



Nevertheless, the idea of different stress dimensions is well established. Lazarus and Folkman (1984), who originated the idea of the appraisal process, distinguish between different dimensions of stress: *challenges*, which are the positive dimension of stress, and *threats* as well as harm and loss, which have negative consequences. Tuckey et al. (2015) differentiate two dimensions of stress with negative consequences (see Figure 1): hindrances and threats. Threats were measured by asking participants if the events they faced "have a negative impact on [them]"or, as hindrances, if they "restrict [their] capabilities" (p. 22, Tuckey et al., 2015). Thus, threats are characterised by strong, negative personal concerns (i.e., a loss of or harm to the self) rather than simply an obstacle to goal attainment. Threats have more serious consequences than hindrances, "because the anticipated negative personal impact is closely aligned the evolutionary basis for stress than anticipated delays to goal accomplishment" (p. 6, Searle & Tuckey, 2017). Therefore, threats are considered as a separate dimension of stress.

Within the framework of CHM research, there is first a lack of a full understanding of the *when* of threats, in the sense of an overview of possible triggers. Second, the understanding of the *why* of threats is also lacking in the sense of explaining the strong personal concerns that are characteristic of

threats to avoid this negative dimension of stress. As threats are a topic of interest outside of CHM in other psychological disciplines, such as stereotype research (Fingerhut & Abdou, 2017), identity research (Petriglieri, 2011), or self-regulation research (vanDellen et al., 2011), these research areas might provide insights into the *when* and *why* of threats. The questions here are, how is the threat mechanism described in threat research, and are there specific events that are typical triggers of threats?

The *When* of Threats: Are Specific Events Typical Triggers of Threats?

Stressful events that individuals experience in their work are diverse (e.g., events characterised by high levels of workload and conflict). CHM research classifies those events according to *when* they are associated with challenges, hindrances, or threats (Tuckey et al., 2015). Events that are often classified as a challenge include job responsibility, time pressure, workload, or skill demands (i.e., the degree to which an individual's job requires complex skills). Events that are often classified as a hindrance include conflict situations, resource inadequacies, organisational politics, or interruptions (LePine et al., 2005; Tuckey et al., 2015). Tuckey et al. (2015), who added threats as a new dimension of stress to the CHM, list emotional demands and customer-related social stressors as typical events associated with threats. However, Smith et al. (2020) show that skill demands (typically classified as a challenge, Tuckey et al., 2015) and interruptions (typically classified as a hindrance, Tuckey et al., 2015) can also be appraised as threats. Therefore, CHM research provides a diverse set of possible threat triggers and a wide range of the *when* of threats.

Similarly, interdisciplinary threat research (stress, Semmer et al., 2019; stereotype, Fingerhut & Abdou, 2017; identity, Petriglieri, 2011; self-regulation, vanDellen et al., 2011) indicates a wide range of threat triggers. Individuals experience threat in individual settings (i.e., acting alone) or in social settings (i.e., acting in front of others) through their own behaviour or the behaviour of others, directly in a situation, postsituational, or while thinking about future situations. (cf. Leary et al., 2009). An empirical examination of threats involves events that range from experiencing failure (Davies et al., 2005), to unequal treatment of individuals (Martiny & Kessler, 2014), to forced change (Kyratsis et al., 2017). Experimental operationalisations of threat triggers include the confrontation of participants with

unsolvable tasks (e.g., Bergeron & Dandeneau, 2016), making individuals read a vignette undermining the historical prestige of an ethnic group (Jung et al., 2019), or giving participants information about a poor evaluation of one's own group (e.g., White et al., 2012). Since threat research takes place in a variety of contexts with different operationalisations, this implies an element of diversity in *when* the danger of threats potentially arises.

In sum, the danger of threats appears to be omnipresent. Nevertheless, an overview of how to avoid or deal with threats is thus far missing. Therefore, I intend to investigate events reported in threat research to identify and systemise the potential triggers of threats.

Research Question 1: Which events can be identified and systematised as triggers of threats?

The *Why* of Threats: How the Threat Mechanism is Described in Threat Research

To understand the threat mechanism in detail, I start with the definition of threats as a harm to the self from CHM research (Tuckey et al., 2015) and compare this to definitions from interdisciplinary threat research (e.g., Petriglieri, 2011; vanDellen et al., 2011). I analyse the target of the threats (i.e., threats mean harm to what) by integrating self- and identity research (e.g., Ashforth & Schinoff, 2016; Stets & Burke, 2014). In addition, I incorporate explanations from interdisciplinary threat research that relate to a frustrated need for a positive self-image. I integrate needs and motivation research (e.g., Deci & Ryan, 2000; McClelland, 1961) not only for a deeper understanding but also to provide starting points for avoiding or dealing with threats.

The Targets of Threats: Threat Means Harm to What?

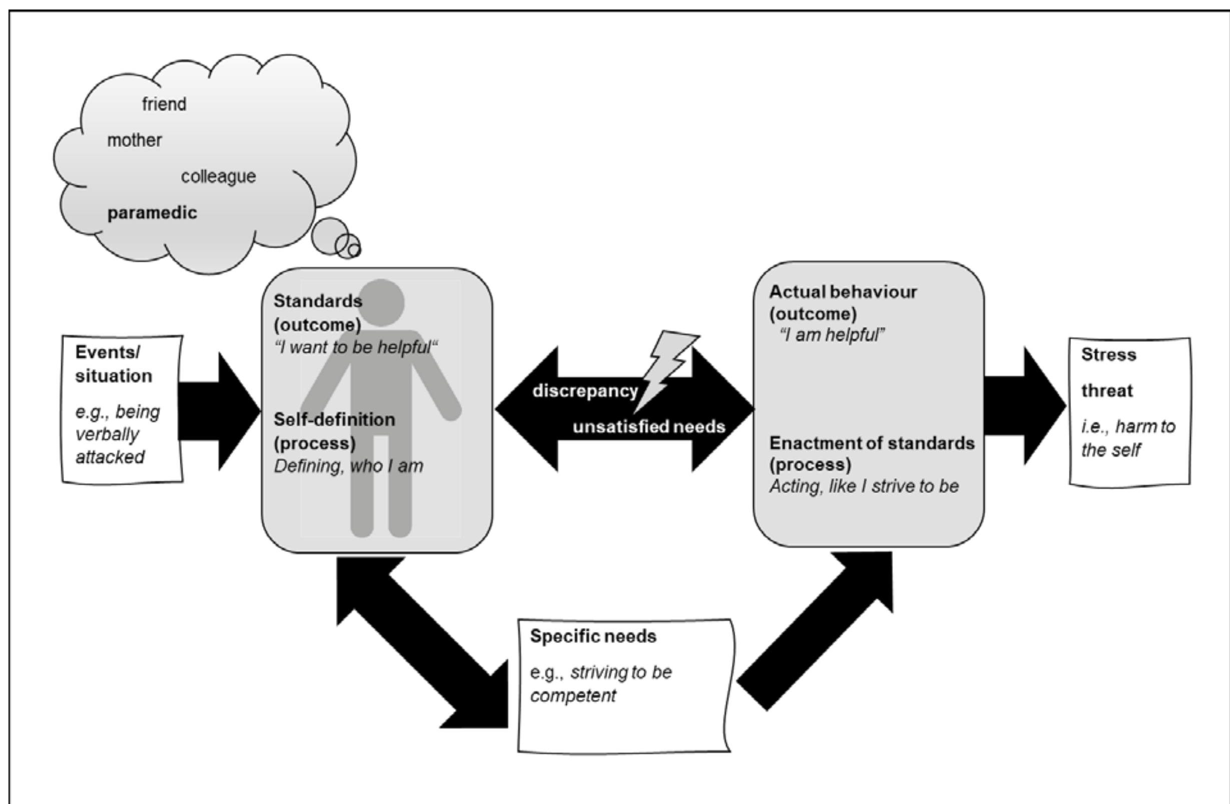
Similar to how Tuckey et al. (2015) define threats as harm to the self, other psychological research fields (e.g., identity research, Petriglieri, 2011; self-regulation research, vanDellen et al., 2011; stereotype research, Fingerhut & Abdou, 2017) also describe threats. Petriglieri (2011) defines threat as harm to identity. In threat research, a variety of self-related labels express personal concern as a characteristic of threats: ego threats, self-threats, threats to self-esteem, and identity threats. Even though these terms stem from different psychological research fields, they represent self-definitions (Leary et al., 2009; Stets & Burke, 2014). Individuals define themselves as who they are (Ashforth &

Schinoff, 2016; Markus & Wurf, 1987). Thus, a threat to the self, to identify, and to ego means that individuals are threatened in who they are.

Self-definition is the process by which individuals answer, more or less explicitly, the question "who am I?" (Ashforth & Schinoff, 2016). Since individuals take on different roles in different professions (e.g., I am a police officer. and social contexts (e.g., I am a mother), and define themselves as unique persons by individual characteristics (e.g., I am an optimistic person), there is not only one single self-definition but also role- and context-specific self-definitions (Stets & Burke, 2014). Thus, a threat does not affect the individual in general but how they define themselves in a specific role and a specific context (e.g., answering the question "who am I" in the specific role as a paramedic in this specific emergency situation).

Figure 2

Overview of Self-related Concepts and Processes



How individuals define themselves in a role is based on a set of meanings and expectations of themselves and others (Sluss et al., 2011). The outcome of this self-defining process is personal standards that individuals strive for in their roles and try to enact (Stets & Burke, 2014). Thus, threats

would not offend individuals in general but rather their role-specific standards. For example, a woman in her professional role as a paramedic defines herself by having her own expectation of being helpful and knowing that others expect from her that she helps others when they are in need. The outcome of this self-defining process is the personal standard of being helpful in her role as a paramedic. By driving the ambulance fast, making clear announcements to gawkers to get out of the way, or by using calming words with the patient, the woman tries to behave according to her standard of being helpful (see Figure 2).

However, the content of such standards is vague. What meaning individuals ascribe to themselves in their different roles, what expectations they have for themselves, and what they think others expect from them is a multifactorial, dynamic, and not necessarily conscious process (Ashforth & Schinoff, 2016). The answer to the question, “what am I striving for in my role”, is not always answerable for the individuals themselves and may be even less for others. Therefore, fuzzy standards do not provide a content-specific approach to understanding why individuals appraise events as threatening and, in turn, seek to avoid threats.

Threat Research Explanations of Threats: An Unsatisfied Need for Positive Self-views

Threat research draws on a wide variety of theories to understand and explain threats (e.g., social identity theory, e.g., Petriglieri, 2011; self-affirmation, e.g., Legault et al., 2012; identity process theory, e.g., Murtagh et al., 2012). These theories have one thing in common: they are all based on the idea that people have a basic need to maintain positive self-views (Tesser, 2000). Maintaining positive self-views boosts the self, while an unmet need for positive self-views acts as a threat (Semmer et al., 2019).

The need to maintain positive self-views expresses individuals' striving to present themselves in a positive light (Alicke & Sedikides, 2009). Stets and Burke (2014) explain that individuals feel positive if they succeed in behaving according to their goals, expectations, or, more generally, their self-defined standards. They feel negative if they fail to behave according to their standards. Based on such a comparison between behaviour and standards, a match means needs have been satisfied and there is no threat, and a mismatch means needs have been frustrated and a threat is present.

However, again, we relate to standards that are fuzzy descriptions of what individuals strive for. In the case of an unsatisfied need for positive self-views, the standards act as the basis for evaluation with which an individual's behaviour is compared. Even if we know that a mismatch between behaviour and standards is the basis of threats, we still lack a specific content of standards, meaning we do not know what an individual is striving for, and thus, we are not able to determine or even predict when individuals perceive a mismatch between behaviour and standards. Accordingly, even knowledge of an unsatisfied need for positive self-views does not help predict or avoid threats.

Specific Needs as a Practical Approach to Explain Threats

Although in their *stress-as-offence-to-self theory* (*SOS*; i.e., a theory that links threat to stress in an approach other than that of CHM research), Semmer et al. (2019) focus on a need for positive self-views, they point out that the frustration of needs behind personal goals can be threatening. They consider that future threat research should focus "on the content of peoples goals, needs, or motives" (p. 24, Semmer et al., 2019). In one of the first descriptions of SOS theory, Semmer et al. (2007) already referred to needs with more specific content than a global need for positive self-views to explain threats. While the experience of insufficiency is threatening because of an offended sense of competence, the experience of disrespect is threatening because of an individuals' need for relatedness (Semmer et al., 2007). Needs such as competence and relatedness are characterised by defining a universal and more specific content of individuals' striving (Deci & Ryan, 2000) than considering a global need to maintain positive self-views.

Specific needs such as competence and relatedness not only express human strivings in general but also provide specific content, namely, to be competent and to belong to someone (Deci & Ryan, 2000). Based on this content, actions can be derived to satisfy needs. For example, if employees perceive a lack of relatedness, the manager can integrate more sharing sessions into the daily work routine to contribute to the satisfaction of the employees' need for relatedness. If there is a lack of competence, the manager can facilitate resources and training or give employees challenging tasks to contribute to satisfying the employees' need for competence (Manganelli et al., 2018; Van Quakebeke et al., De

Bloom et al., 2020). The specific content needs of *self-determination theory (SDT*, Deci & Ryan, 2000) imply approaches for possible actions to satisfy the needs.

Specific Needs as a Theoretical Approach to Explain Threats

Needs are not only a potential fruitful determinant in the threat mechanism because of their specific content and thus the viability of finding approaches to deal with threats but they are also a potential determinant because of the close relationship between needs and the self, which is harmed by threats. Needs are more than goals (e.g., "as a paramedic, I want to be helpful") that individuals try to reach (Deci & Ryan, 2000). Rather, needs are internal forces that are essential for supporting life and growth. If they are unmet, they create tension and, in turn, stimulate drives within the individual (Kanfer et al., 2017). Even though motivational processes are mainly explained via needs, they also influence processes of self-definition and enactment of self-defined standards (see Figure 2).

Needs guide self-definition. What roles individuals assume and, accordingly, how they define themselves are guided by specific needs (Ashforth & Schinoff, 2016). For example, individuals may have the impression of a police institution as being important to make the world safe. Guided by their need to relate to others, individuals become attached to this institution, wish to be part of the police team, and as a result, take on the role as a police officer.

Needs guide individuals in the enactment of self-defined standards (Easterbrook & Vignoles, 2012). Even if individuals generally try to behave according to their standards (Stets & Burke, 2014), their behaviour is guided by specific needs (Easterbrook & Vignoles, 2012). For example, a police officer puts extra effort into an emergency situation, using problem-solving skills to meet the need for competence. Easterbrook and Vignoles (2012) found that the enactment of standards is guided especially by the need to be competent, to have control, and to belong to others.

In sum, needs are closely related to both self-definition and the enactment of standards. Needs not only operate at the content level by the self-definition of standards but also operate at the behavioural level by enacting the standards (Ashforth & Schinoff, 2016; Easterbrook & Vignoles, 2012); in other words, needs explain not only the what of an individual's striving but also the *why* (Deci & Ryan, 2000). Therefore, needs are content-based standards such as "as a paramedic, I like to be helpful", and they

are powerful, internal forces that are deeply rooted in the individual. Through this deep rooting, frustrated needs might be responsible for personal concerns that are expressed, for example, through offences to the self, harms to the self, and personal loss, which are used to define threats (e.g., Petriglieri, 2011; Semmer et al., 2019; Tuckey et al., 2015).

This theoretical line of reasoning that frustrated specific needs are related to threats is confirmed on an empirical level by Quested et al. (2011). They show that the satisfaction of the need for competence, relatedness, and autonomy negatively predicted threats ("I view the upcoming performance as a threat.") and positively predicted challenges ("I look forward to being challenged."). However, Quested et al. (2011) consider a threat only as a stress dimension with negative consequences and do not explicate more specifically on the meaning of threats as harm to the self. Therefore, they do not explain their results in terms of why frustrated needs might be a harm to the self and do not discuss frustrated needs as a specific mechanism of threats. In this thesis, I investigate whether interdisciplinary threat research refers to needs to explain threats as harm to the self and, thus, if needs are seen as important determinants in the threat mechanism.

Research question 2: Are frustrated specific needs part of the threat mechanism?

The Content of Needs in the Diversity of Need Approaches

To examine which needs are relevant in the threat mechanism, first, I discuss the most popular need theories and describe which needs have been discovered and researched thus far. Semmer et al. (2007) refer to needs for competence and relatedness to explain threats. In addition to these two needs, different theories, models, and approaches address numerous needs with specific content, also covered by related terms such as drive, instinct, motive, or concern[2] (Ellsworth & Scherer, 2003). The derivation of the needs categories for this dissertation is based on this needs research.

SDT (Deci & Ryan, 1985) is one of the most popular theories that considers the satisfaction of human needs as essential for optimal functioning and growth (Manganelli et al., 2018). The needs in this theory are relatedness (i.e., desire to feel socially connected), competence (i.e., desire to be

[2] In this thesis, I use the terms needs and motives as synonyms.

effective in the achievement of desired outcomes), and autonomy (i.e., desire to be fully willing and volitional when carrying out an activity). These three needs are related not only to motivational outcomes but also to stress and coping (e.g., Olafsen et al., 2017; Quested et al., 2011). SDT supposes that every human being acquires the three needs via the genome. Needs are universally required experiences that individuals need to function optimally (needs as requirements; Prentice et al., 2014). Need satisfaction or frustration is experienced by individuals from context, i.e., from what the environment provides (e.g., by acting in an emergency, the police officer's need for competence is satisfied). Differences exist in how individuals experience need satisfaction in different contexts (Schüler et al., 2019).

Another popular theory of human needs is *motive-disposition theory* (*MDT*; McClelland, 1985). McClelland (1961) postulated that an individuals' action is energised by a striving for achievement (i.e., the desire to be effective and accomplish something difficult), affiliation (i.e., the desire to be connected to others), and power (i.e., the desire to have an impact on other people). Again, research has found associations with various aspects of health and life satisfaction in general (e.g., Hofer et al., 2008). In MDT, individuals differ in the strength of needs due to learning history (i.e., needs as motives; Prentice et al., 2014). People, therefore, have different motivational profiles (e.g., one individual has a high power motive, a low affiliation and achievement motive, while another individual has the opposite profile). Based on MDT, individuals actively seek out situations that satisfy their needs (e.g., a police officer seeks to be sent into the emergency to satisfy his need for competence). Within the framework of MDT, researchers assume that, in addition to explicit, i.e., consciously accessible, needs, there are motives, traits, and orientations that operate outside awareness. These implicit needs guide human behaviour and do not necessarily correspond with explicit motives (McClelland, 1985; Schüler et al., 2019).

Although there are differences between SDT and MDT (Schüler et al., 2019), in this thesis, I am mainly interested in what the theories have in common (see Table 1). While need satisfaction is the targeted state of individuals, nonsatisfaction is associated with negative arousal (Tesser, 2000). In addition, I am interested in the content of specific needs that are related to threats. There is a strong

content overlap between the two theories (Schüler et al., 2019). Describing the striving for achievement (MDT, McClelland, 1961) and competence (SDT, Deci & Ryan, 2000), both theories involve the human striving for success and to avoid failure. Strivings for affiliation (MDT, McCelland, 1961) and relatedness (SDT, Deci & Ryan, 2000) are also similar in content. Both needs express that people strive to be socially related and restore positive relationships with others. If we understand the striving for power (MDT, McClelland, 1961) in the sense of "having control over oneself and others", power fits the need for autonomy, i.e., the striving to have control over oneself and the environment (SDT, Deci & Ryan, 2000). Thus, based on motivational research, SDT and MDT, three human needs with specific content drive humans' experiences and behaviour.

Table 1

Similarities between human needs from SDT and MDT

SDT	MDT	Definition
Need for relatedness	Need for affiliation	Striving for success, avoiding failure
Need for competence	Need for achievement	Striving for social belonging, restoring relationships with others
Need for autonomy	Need for power	Striving for having control over oneself and the environment

In addition to these approaches from motivation research, needs were also a topic in approaches using an evolutionary perspective (Schaller et al., 2017). Since threats are associated with negative personal impact that is closely aligned with the evolutionary basis for stress (Searle & Tuckey, 2017), needs that are postulated in evolutionary approaches might be related to threats. The *fundamental motive framework (FMF*, Schaller et al., 2017) is based on the idea that an individual's main goal is to reproduce (Griskevicius & Kenrick, 2013). This goal stimulates several motives: evading physical harm, avoiding disease, making friends, attaining status, acquiring a mate, keeping that mate, and caring for family (Schaller et al., 2017). In addition to the striving to have social connections already discussed in SDT (relatedness, Deci & Ryan, 2000) and MDT (affiliation, McClelland, 1961), in FMF, the striving for security (i.e., avoidance of physical integrity) and, as social animals, a striving for status are the themes of an individuals' striving (Schaller et al., 2017).

Furthermore, self and identity construction approaches (e.g., Ashforth & Schinoff, 2016; Stets & Burke, 2014), which are relevant to this thesis by the link between threat and self-related concepts (e.g., identity threat, self threat), also postulate a variety of needs. Stets and Burke (2014) divide three dimensions of an individual's self and relate them to three needs: worth (i.e., to feel worthwhile and accepted), efficacy (i.e., to feel efficacious and agentic), and authenticity (i.e., to find meaning, validity, and coherence in one's life). The need for worth is similar to striving for status in FMF (Schaller et al., 2017). The need for efficacy is similar to the striving for competence in SDT (Deci & Ryan, 2000) and achievement in MDT (McClelland, 1961). Striving for coherence in one's life, which is part of the need for authenticity, can be interpreted as a desire for control and, thus, is linked to the need for autonomy in SDT (Deci & Ryan, 2000) and power in MDT (McClelland, 1961), which capture the striving to control the environment and one's actions.

Ashforth and Schinoff (2016), dealing with how people define who they are, postulate 14 needs (e.g., need for belonging, identification, self-enhancement, self-expression, self-coherence, meaningfulness, self-efficacy, control). According to Ashforth and Schinoff (2016), needs can differ in strength and salience, depending on context and individual predispositions. For example, one individual strives more for belonging than another and therefore defines him- or herself more strongly by belonging to the work team. Another individual strives especially for efficacy and therefore defines him- or herself more strongly by performing well. In addition, needs for esteem (i.e., striving for general value), belonging (i.e., striving to feel close to others), and efficacy (i.e., striving for a sense of capability and competence) are needs that are especially addressed in processes of enactment of self-defined standards instead of through processes of self-definition (Easterbrook & Vignoles, 2012). Ashforth and Schinoff's (2016) need for belonging has similarities to the striving for relatedness in SDT (Deci & Ryan, 2000) and affiliation in MDT (McClelland, 1961). Efficacy is similar to the striving for competence in SDT (Deci & Ryan, 2000) and achievement in MDT (McClelland, 1961).

In sum, needs are diverse. Approaches, models, and theories addressing needs differ in the number and terminology of the postulated needs. In this thesis, I am interested in which needs are associated with threats to explain the *why* of threats. The most studied approaches SDT (Deci & Ryan, 2000) and

MDT (McClelland, 1961) focus on a set of three needs, although human behaviour might be driven by further needs. However, these fruitful theories show that even a small number of needs can already explain a huge range of human behaviour (Schüler et al., 2019). I am interested not only in the content of specific needs associated with threats but also in taking a limited number of needs into account to explain threats.

Research Question 3: Needs with which content can be identified and systematised in the context of threat?

Research Goals and Outline

Based on the research questions raised in the previous sections, this thesis pursues three main research goals. The first goal is a classification of triggers to provide an overview of events that accompany threats. The second goal is to provide a classification of needs that are associated with threats. The third goal is the investigation of the trigger-need interplay as a mechanism of threat, i.e., to examine whether frustrated needs mediate the relation between triggers and threats. Four studies are conducted to achieve these research goals. I use different methods to gain a comprehensive perspective on triggers and needs and their interplay. In addition to a literature review (Study 1), qualitative data were collected in the field during interviews (Study 2). Quantitative data were gathered both during the survey study in the field (Study 3) and a laboratory experiment (Study 4). Figure 3 represents how the four studies contribute to the research goals of this thesis and which method was used in each study.

In *Study 1*, we provide a systematic literature review of diverging threat research. In a literature review, we analysed 122 papers and identified and classified triggers and needs theoretically mentioned or empirically investigated in threat research. The trigger-need classification provides a consistent framework of threat concepts across different research disciplines and contributes to goals 1 and 2 on a theoretical level.

Study 2 provides anecdotal evidence for the developed trigger-need classification of Study 1. In an interview study with police officers (n = 20), paramedics (n = 10), teachers (n = 10), and employees of the German Federal Employment Agency (n = 8), we investigated whether the triggers and needs

identified in the literature can be generalised to the everyday work of different professional groups. The professional groups studied differ significantly in the work events they face. For example, while paramedics and police officers face critical adverse situations that pose a risk to life and limbs, teachers and employees of the Federal Employment Agency work in supposedly safe places, such as the office or the classroom. Study 2 contributes to the achievement of goals 1 and 2 by intending to confirm the relevance of triggers and needs in the field.

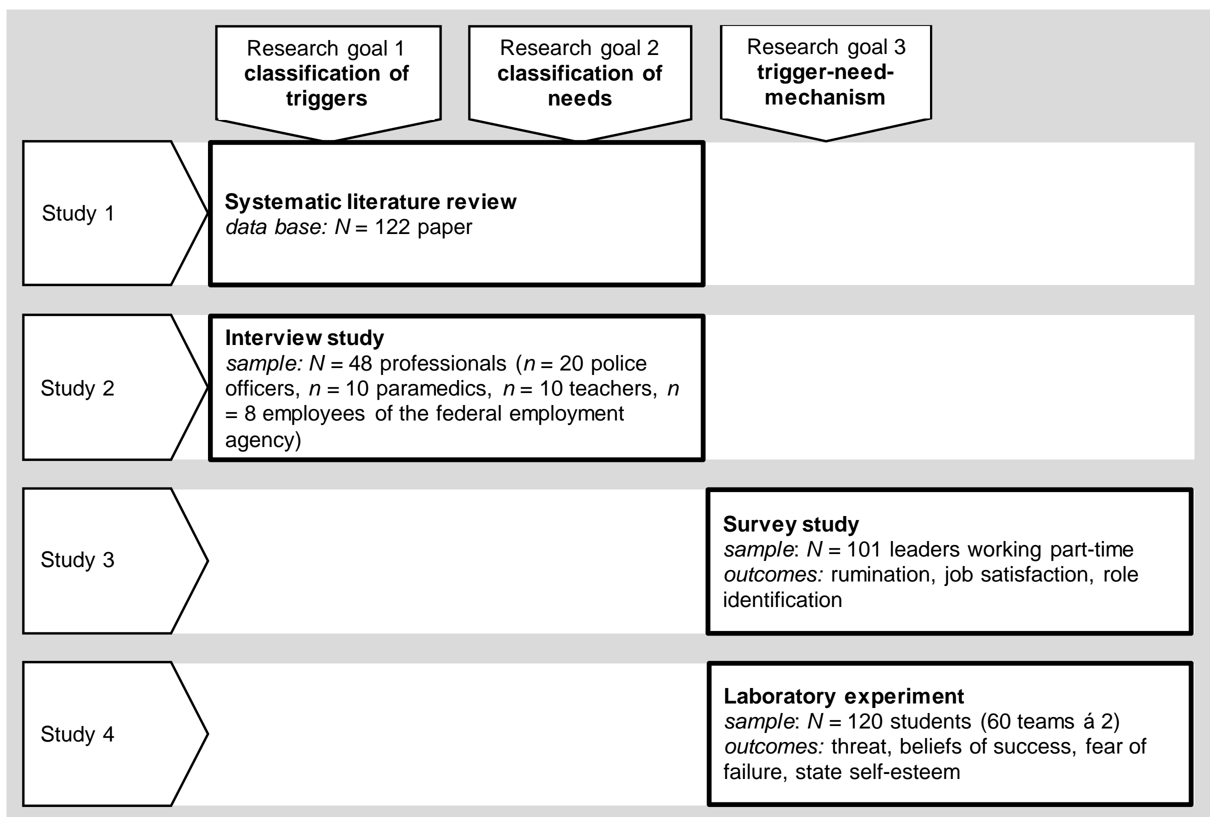
In *Study 3*, we investigated the interplay between a specific trigger and need by using a survey design. Leaders working part-time (LPT) often have to struggle with disrespect from their subordinates and leadership colleagues because they do not meet the traditional expectation of leaders always being present and responsive. We investigate whether disrespect as a trigger offends the need for belonging and leads to negative outcomes such as rumination, problems with role identification, and job satisfaction in LPTs (N = 101). Study 3 contributes to the achievement of goal 3 by testing the trigger-need mechanism for the specific combination of disrespect and belonging in a correlative survey design.

Study 4 presents a laboratory experiment. The interplay of four triggers and four needs was investigated in the context of a firefighting PC simulation task in a student sample (N = 60 teams of 2). Threats were triggered both by manipulating situational characteristics (controllable vs. uncontrollable mission) and by providing different feedback styles (situation-specific vs. situation-unspecific vs. no feedback). In addition to threat, other consequences, such as belief in success, fear of failure, and self-esteem, were measured. We investigated needs as mediators between triggers and outcomes and thus contributed to the fulfilment of goal 3. In addition to the correlative confirmation of the trigger-need mechanism from Study 3, we were able to draw causal conclusions by using the experimental setting.

Drawing on the insights of previous research threats are a topic of interest not only in CHM research but also in a wide range of interdisciplinary research fields. Nevertheless, the threat construct is very fuzzy. Four studies were conducted to address the research goals of (1) ctriggers, (2) systematising needs, and (3) analysing the trigger-need mechanism. The results of the four studies are then addressed in a general discussion.

Figure 3

Overview of research goals and studies of the thesis



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Study 1

Threat at Work: A Classification of Triggers and Needs and a Role-related Perspective

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Threats at Work: A Classification of Triggers and Needs and A Role-related Perspective

Abstract

While some individuals experience physical threats during their work, others face threats from verbal attacks, disrespectful behavior by others, or from their own wrongdoing. Threats are a fairly new dimension of stress in Challenge-Hindrance-Models (CHM) and are scarcely studied. However, threats are diversely studied in different psychological research fields. In a systematic review of 122 studies, we systematize possible events triggering threats to indicate *when* threats potentially arise. To explain the *why* of threats, we analyze how threat research refers to needs in conceptualizations and operationalization of threats. We classify five triggers (e.g., experience of failure, relationship-related disrespect) and five needs (e.g., frustrated need for competence or inclusion) and show that needs with specific content (e.g., need for competence, relatedness) are helpful to provide the understanding of when an event exactly triggers threats. By discussing the concept of roles concerning the need-based threat mechanism, we take on a person- and situation-specific perspective on threats. On a practical level, the classification offers approaches for systematically describing, explaining, and reflecting threat situations and, thus, provides approaches for interventions.

Keywords: threats, stress appraisal processes, basic human needs

Threats at Work: A Classification of Triggers and Needs and A Role-related Perspective

Threats at work are prevalent. Numerous media reports show that many people, such as firefighters (Feltes & Weigert, 2018), train attendants (Krekel, 2018), and Ph.D. students (Steemit, n.d.) appraise many stressful events during their working life as threatening. While some people appraise exposure to the disrespectful behaviour of others (e.g., being ignored) as threatening, others appraise their own wrongdoing or feeling hindered by bureaucratic constraints as threats (Smith, 2020). According to *challenge-hindrance models (CHMs)* of work stress (Horan et al., 2020), events appraised as threats represent harm to the self and have more serious consequences on health and well-being than challenge (i.e., a potential for mastery) or hindrance appraisals (i.e., an obstacle for goal attainment; Searle & Tuckey, 2017). Therefore, we have to understand the *when* (triggers) and the *why* (mechanisms) of threats in detail to find approaches for avoiding or dealing with threats.

In CHM, threat triggers and mechanisms represent a fairly new and, thus, scarcely studied dimension of stress (other than the dimensions of challenges and hindrances, Tuckey et al., 2015; Horan et al., 2020). However, threat concepts are intensively examined in other psychological disciplines (e.g., stereotype research, Fingerhut & Abdou, 2017; identity research, Petriglieri, 2011). Interdisciplinary threat research considers a wide range of threat triggering events (Leary et al., 2009). Nevertheless, a systematic overview of possible triggers and thus knowledge of *when* threats potentially arise is missing. To explain the *why* of threats, interdisciplinary threat researchers often refer to an individual's striving for positive self-views that have failed (Semmer et al., 2019; Tesser, 2000; vanDellen et al., 2011). However, the content of individuals' striving and, thus, what a positive self-view means to the individual is fuzzy since it is based on personal, context-dependent, dynamic, and not necessarily conscious goals and expectations (Ashforth & Schinoff, 2016; Sluss et al., 2002). Equally fuzzy is finding approaches to support the individual in maintaining positive self-views for avoiding or dealing with threats. Motivation research describes needs as a type of individuals' striving, which is characterized by specific content (e.g., need for competence; "I strive to be competent."; Deci & Ryan, 2000). Since needs take part in how individuals appraise and cope with stressful

events (Ntoumanis et al., 2009; Quested et al., 2011), they may also be essential determinants in the threat mechanism. However, the role of needs in threats has not been the focus of threat research thus far.

In this literature review, we first identify and systematize possible threatened events as triggers of threats from a diverse body of interdisciplinary psychological literature. Second, we analyse whether threat research refers to specific needs, such as the need for competence, to investigate whether needs are possible determinants in the mechanism of threats. We use several rounds of inductive and deductive coding for literature categorization (Mayring, 2003) to develop a classification of triggers and needs. Finally, we discuss the underlying threat mechanism of multiple triggers and needs and reflect the idea that individuals take on different roles depending on the situation.

With this literature review and the development of trigger-need classification, we make important theoretical and practical contributions: by integrating different research disciplines (i.e., self-regulation or identity construction, and motivation research, stress research) we draw parallels to understand triggers and mechanism of the stress dimension in CHM in more detail. The illustration of multifaceted triggers exaggerates the danger of threats everywhere. However, the classification of triggers reduces the wide range of potential triggering events to the essence and enables an economic description, explanation, and reflection of the *when* of threats. By integrating needs representing a universal but specific content of human striving in the mechanism of the stress dimension, we provide an understanding of *when* an event exactly triggers threats. The understanding of the when and why helps us to identify approaches for dealing with threats.

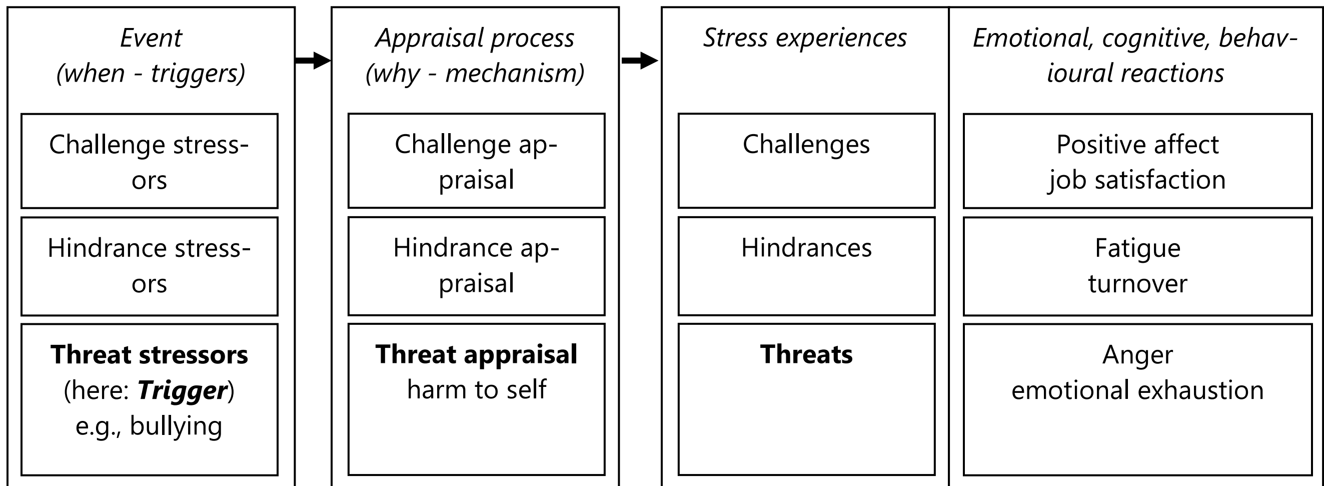
Threats as a Kind of Stress Experience

According to the recent theoretical approach of CHM (Tuckey et al., 2015), individuals appraise stressful work events not only as a *challenge* (i.e., potential for mastery and gain) or as a *hindrance* (i.e., an obstacle to goal achievement) but also as *threats* indicating harm to the self. In the case of threat appraisals, individuals experience threats, a specific dimension of stress experience that is characterized by different emotional, cognitive, behavioural responses than in the case of challenges and hindrances (see Figure 1).

For example, Tuckey et al. (2015) show that challenges are accompanied by positive affect, hindrances by fatigue, and threats by anger and anxiety.

Figure 1

The extended CHM with threats as a third dimension of stress based on Tuckey et al. (2015)



Events that CHM research has linked to the dimension of threat include emotional demands, customer-related social stressors, and workplace aggression (Searle & Tuckey, 2017). However, Brady and Cunningham (2019) also show that work stressors such as bureaucratic and technological constraints, job insecurity, or work overload, previously associated with challenge and hindrance appraisals, could be appraised as threats. Therefore, events that are associated with threats in CHM research are diverse, but it remains unclear *when* an event exactly triggers threats as a kind of stress experience.

Tuckey et al. (2015) define threat appraisals as harm to the self rather than simply an obstacle for goal attainment. This means that stressful work events are required to affect the self to be appraised as threatening. However, the mechanism generating these threats to the self and an explanation of *why* the self is affected has not been elaborated in CHM research.

In sum, threat appraisals have more serious consequences (e.g., psychological distress, emotional exhaustion) than challenge (e.g., job satisfaction, commitment) and hindrance appraisals (e.g., turnover, fatigue; Tuckey et al., 2015). Therefore, it is important to understand threats in detail to find approaches for avoiding and dealing with threats. Since triggering events and mechanisms of threats are still scarcely

studied in CHM research (Horan et al., 2020), this paper integrates the existing perspective of interdisciplinary, psychological threat research in CHM research.

Threats in Interdisciplinary Threat Research

Threats are a topic of interest in multiple disciplines of psychology, such as stress (Semmer et al., 2019), stereotype (Fingerhut & Abdou, 2017), identity (Petriglieri, 2011), and self-regulation research (vanDellen et al., 2011). A wide range of consequences of threats (e.g., performance, Goldschmied & Vira, 2019 on motivation, Fogliati & Bussey, 2013), moderators (e.g., high vs. low self-esteem, Hoefler et al., 2015), and possible interventions to cope with threats (e.g., self-affirmation strategies, Voisin et al., 2019) are examined. Conceptualizations and definitions of threats are likely diverse (Leary et al., 2009) and are linked to consequences of threats (e.g., "[threat as] a state of acute stress, in which heightened physiological arousal decreased cognitive functioning, and reduced self-control work collectively or independently to impair performance", Flores et al., 2019) or triggering events (e.g., "threat as a concern that people are being evaluated through the lens of negative gender stereotype", Hippel et al., 2017). In sum, threats are diversely studied.

Diversity of Threat Triggering Events

Events associated with threats in different psychological research disciplines are multifaceted (Leary et al., 2009). On a theoretical level, *stress-as-offense-to-self (SOS)* theory (Semmer et al., 2007; 2019), a popular theory that links threats to stress, as in CHM, distinguishes two types of events triggering threat: the experience of insufficiency deriving from an individual's self-evaluation and the experience of disrespect deriving from other people's behaviour. Likewise, Petriglieri (2011), in her review taking on an identity research perspective to threats, posits that threats can be triggered by one's own behaviour (e.g., inconsistent behaviour with one's own beliefs and values) or the behaviour of others (e.g., judgements devaluing the worth of a specific person). Additionally, according to Petriglieri (2011), external events that are generally traumatic occur randomly and are unique in nature (e.g., a storm that damages the house) can also trigger threats.

On an empirical level, events that trigger threats manifest in operationalizations inducing threats. These are diverse, as well (cf. Leary et al., 2009). Many experimental studies present participants with an unsolvable task in which they fail (Florack et al., 2005) or are provided feedback indicating failure (Lämmle et al., 2014). Other experimental threat inductions take on a social perspective and provide negative feedback in front of a group (Lilly & Wipawayangkool, 2018), provide negative information about a group to which individuals belong (Pasek & Cook, 2019), make group differences salient (Watson et al., 2017), or make individuals think about situations in which they have been rejected by others (Dommer & Swaminathan, 2013). Furthermore, there are studies in which participants are asked to think about physically threatening situations, such as going to a dentist (Krohne et al., 2001), or in which participants are physically threatened with mild electric shocks in the experimental setting (Beckes et al., 2013).

Interdisciplinary threat research highlights a large number of events as triggers of threats. The first goal of this paper is to systematize the events mentioned in threat research. This offers a consistent overview of possible threat triggers across interdisciplinary threat research disciplines and provides a more concise description of the threat dimension in CHM in terms of triggers. Furthermore, the reduction to essential triggers enables a systematic description, explanation, and reflection of stressful work events and provides approaches for avoiding or dealing with threats.

A Need-based Mechanism of Threats?

While in CHM research threats are defined as harm to the self, interdisciplinary threat research uses further terms such as threats to ego (Leary et al., 2009) or identity (Petriglieri, 2011). Nevertheless, all of the terms describe concepts of how individuals define themselves. Thus, while the first glance in different research fields conveys great diversity, ultimately, research disciplines refer to a similar basis of individuals' striving for positive self-views. Although interdisciplinary threat research is based on different theories (e.g., social identity theory, e.g., Petriglieri, 2011; self-affirmation, e.g., Legault et al., 2012; identity process theory, e.g., Murtagh et al., 2012), all these theories rely on striving for positive self-views (Tesser, 2000). Through evaluation and comparison processes, which are often poorly detailed in threat research (cf. Leary

et al., 2009), individuals realize their failure to maintain positive self-views as having a threatening effect. An evaluation process means that individuals evaluate their self-view negatively rather than positively (Semmer et al., 2007), and a comparison process means that individuals compare their actual experiences with a strived-for self-view and perceive a discrepancy between the two (Tesser, 2000). However, regardless of which cognitive process is used to explain threats, both evaluation and comparison are based on individuals' self-views. According to interdisciplinary threat research, a need for a positive self-view is an essential determinant in describing and explaining threats such as those postulated in CHM.

However, the content of individuals' self-view is fuzzy. Based on the goals, expectations, and expectations of others, individuals develop a self-view of what they strive for (e.g., in a leadership role: to be a respectful and fair leader; Stets & Burke, 2014; Sluss et al., 2002). The content of this striving varies depending on the context (e.g., presenting a project to colleagues and the management board vs. discussing the project with colleagues in the coffee kitchen) and roles individuals assume (e.g., being an engineer in the project team but also a leader, a parent, etc.; Sluss et al., 2002). It is dynamic and not always conscious to the individual (Ashforth & Schinoff, 2016). If we do not know what an individual is striving for, we cannot find an approach to support the individual in maintaining positive self-views for avoiding or dealing with threats.

Motivation research indicates that individuals strive for more than a global positive self-view, for example, by defining the need to be competent (Kanfer et al., 2017). Needs provide a specific content of human striving. For example, *self-determination theory (SDT*; Deci & Ryan, 2000), one of the leading motivation theories used in organizational research, postulates three content-specific needs: the need for competence describing the desire to be effective in the achievement of desired outcomes, the need for relatedness describing the desire to have close relationships, and the need for autonomy describing the desire to have the full willingness and volition when carrying out an activity. The specific content provides a specific approach to support need satisfaction, which is the desired state of individuals. For example, a leader can

provide employees more opportunities to interact with colleagues to support them in satisfying their need for relatedness, i.e., reaching their striving to be related to others (cf., Deci et al., 2017).

Even though needs describe a specific type of human striving, they evoke an (un-)satisfied mode similar to experiential states as (non-)successful global striving for positive self-views. If successful striving for positive self-views is associated with positive feelings, failure to reach positive self-views is associated with negative feelings (Stets & Burke, 2014). Similarly, satisfied needs (i.e., feeling competent, autonomous, related) are linked to positive feelings, whereas unsatisfied needs (i.e., failing to strive for competence, autonomous, or relatedness) are associated with negative feelings (Kanfer et al., 2017). Since the experience of failure in a global striving for positive self-views is a threat (cf., Semmer et al., 2007), the failure to reach specific contents of individuals striving, as is the case by frustrated needs, might also lead to threats.

A few studies from stress research already link frustrated needs to threat appraisals. For example, Quested et al. (2011) found that dancers' threat appraisals mediated the relation between the extent of needs satisfaction and anxiety for upcoming performance and that challenge appraisal mediated the association between the extent of needs satisfaction and cortisol. Bartholomew et al. (2017) show that athletes' threat appraisals predict perceptions of need frustration, whereas challenge appraisals predict perceptions of need satisfaction. Hence, frustrated needs are related to the appraisal of threats. However, these studies do not analyse the role of needs for threats but rather focus on outcomes and discuss satisfied needs as a general resource for coping and dealing with stress.

We find indications of needs in threat research in Semmer et al. (2007). Semmer et al. (2019), also taking a stress perspective, concentrate their research on the construct of threats in their SOS theory. In one of the early papers on this theory (Semmer et al., 2007), they integrated the need for competence and relatedness in their explanation of threats concerning the specific triggers, insufficiency and disrespect. The experience of insufficiency is accompanied by an offended sense of competence (Semmer et al., 2007). Individuals perceive that they do not meet their personal standards or ideals. As a result, they cannot think of themselves as capable and effective individuals; instead, they experience feelings of failure and doubts

about their efficacy so that their need for competence is frustrated. The other trigger in SOS theory, the experience of disrespect, offends an individual's need for relatedness (Semmer et al., 2007). Hence, individuals perceive themselves as treated poorly, ignored, or excluded instead of experiencing intimacy and genuine connection to others, which frustrates their need for relatedness. Thus, in threat research, we find the first indications that needs take part in the mechanism of threats.

In sum, the integration of specific needs as determinants in the threat mechanism might provide a fruitful perspective for understanding the threat dimension in CHM. Needs provide a specific content of an individuals' striving and, thus, offer a more specific approach for avoiding or dealing with threats than a global striving for positive self-views characterized by fuzzy content. Similar experiential states between frustrated needs and failure to strive for positive self-views, links between needs and threat appraisals, and needs in explaining threat provide evidence that needs are an important determinant in the threat mechanism. Therefore, the second goal of the paper is to examine the extent to which interdisciplinary threat research refers to specific needs defined in SDT (Deci & Ryan, 2000) by the conceptualization, explanation, and investigation of threats and confirm a need-based mechanism of threats, which might help to understand the threat dimension in CHM in more detail.

Method

To obtain a comprehensive overview of published studies in the domain of threats, we conducted an extensive search, following the recommendations for writing a systematic review from Shamseer and colleagues (2015). For our search, we used the Google Scholar, PSYNDEX, and PsycInfo databases. Before the search, we identified a list of keywords. We combined the word "threat" with each of the words "self", "identity", "ego", and "role" to express the self-concerns that are characteristic of threats (cf. Tuckey et al., 2015). The research selection followed three steps (see Figure 2): First, due to a large number of search results, we narrowed our search to journal articles published from 2000 to January 2020. Additionally, we scanned the search suggestions up to the fifth page because the redundancy of threat information in-

creased with the increasing number of side search suggestions. We selected research that has a psychological focus. No limits on study design, setting, or participants were imposed on this search. Second, we selected all studies of the type 'journal article'. Dissertations and book chapters were excluded. Third, we selected all journal articles using the term threat to explain their research results or refer to this concept in their research questions.

Figure 2

Number of journal articles listed by selection phase and keywords

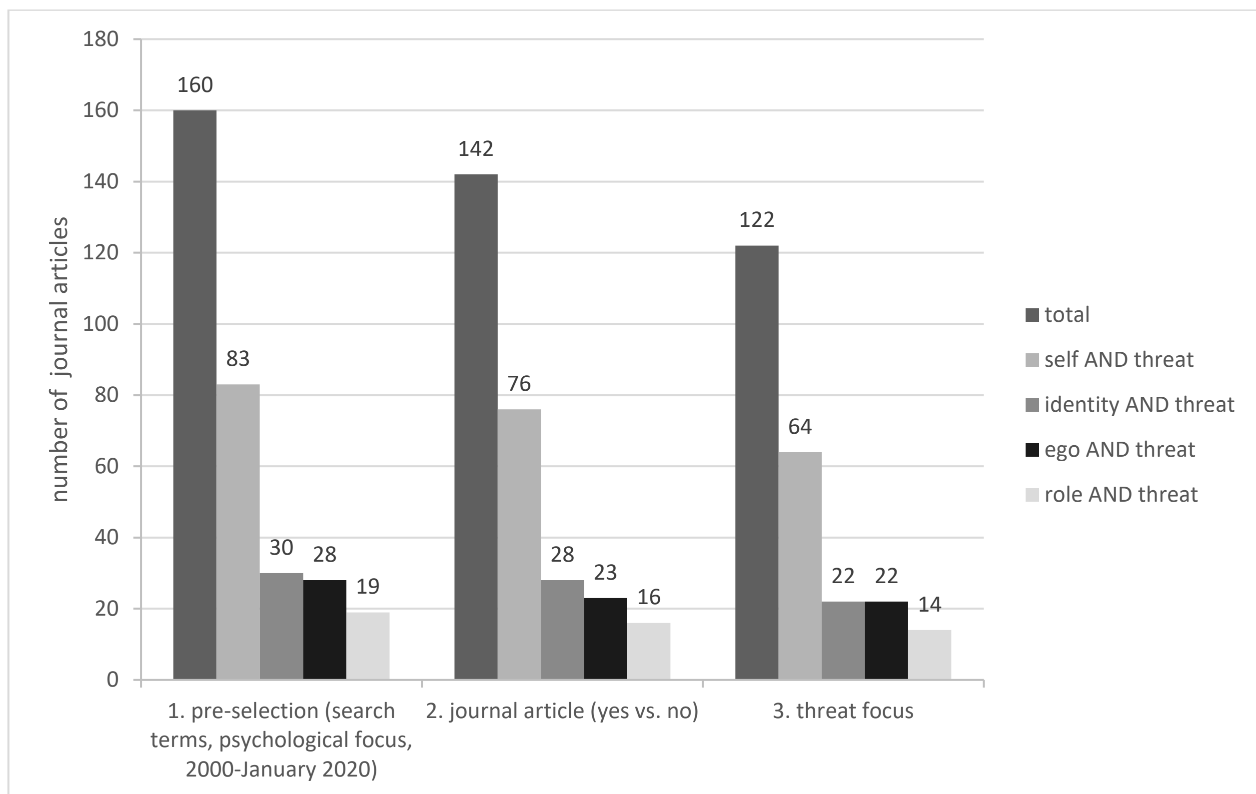


Figure 3 graphically presents an overview of methods used in the included journal articles and figure 4 an overview of the contexts indicating the initially reported topic by describing the relevance of the article. 22% of the included studies have a relation to the work context (e.g., investigating stereotyped women in leadership positions).

Figure 3

Number of journal articles listed by method types

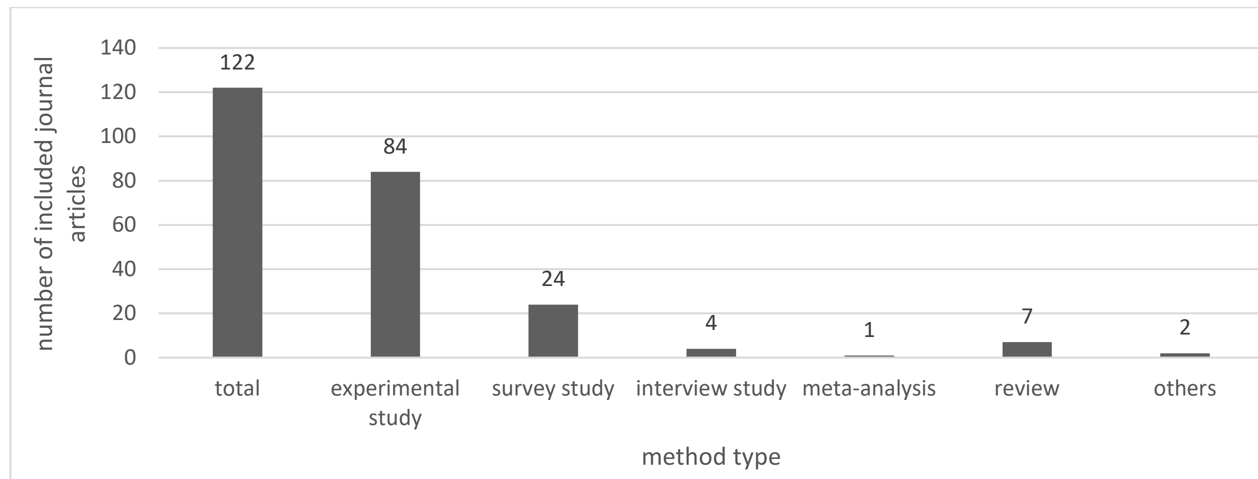
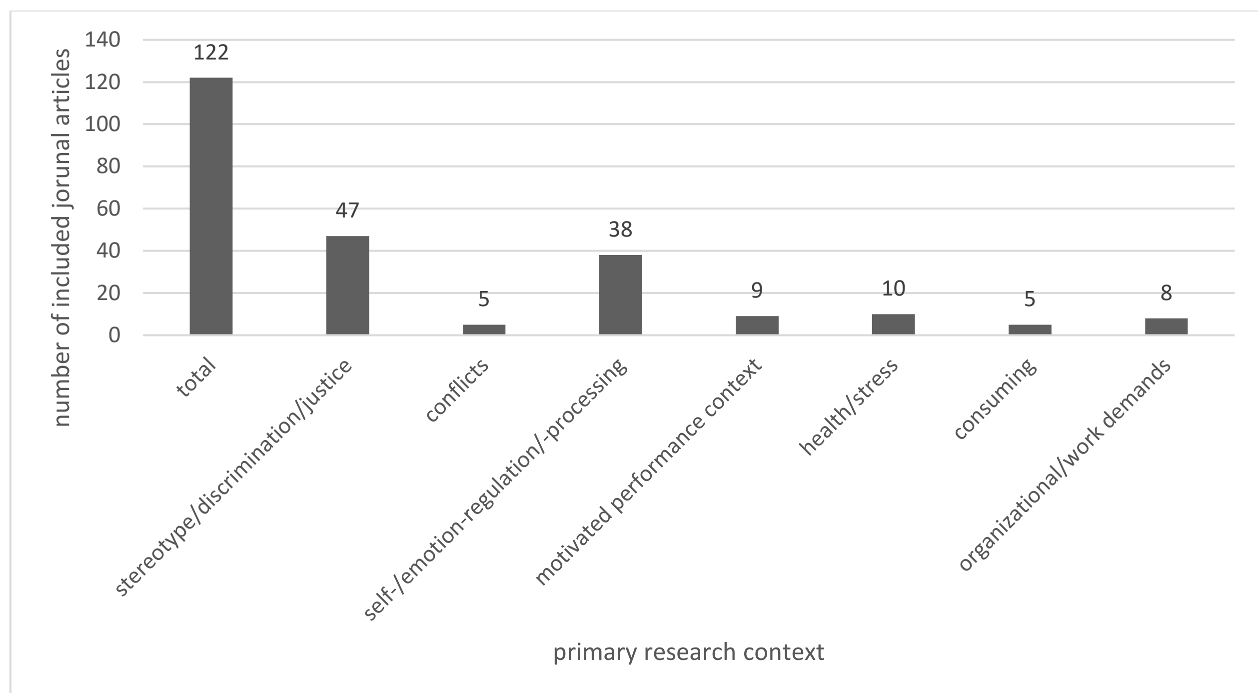


Figure 4

Number of journal articles differentiated according to the primary research context



To systematize triggers and needs, we screened the articles for text passages with the above-mentioned keywords. We listed articles concerning terms, context (i.e., from the authors first mentioned topic),

method, key question and message, and, in the case of empirical studies, the operationalization of findings. After that, we started the coding of triggers. First, we derived categories of triggers from the listed articles and attempted to code listed articles according to these inductive categories. Second, we revised the categories and coded the listed articles again. Third, we defined the revised categories of triggers and engaged in the third round of coding. In the case of needs, we based the derivation of needs categories on the above-mentioned SDT (Deci & Ryan, 2000), which is one of the leading needs theories in work-related research (Deci et al., 2017): the need for competence, autonomy, relatedness. We started the first coding round according to these three need-categories. Then, we specified the need-categories by defining the categories. We added a fourth need-category of need for status. Humans are social individuals, which do not only have the striving to belong to others but also to be an important person for others (Fundamental motives framework, Griskevicius & Kenrick, 2013). Furthermore, we added a fifth need-category of physical integrity to include the basal physiological drive humans have (Maslow, 1943). Since we defined the need-category of autonomy as “to be in control of one's actions and the happening in the environment”, we named this category need for control. Subsequently, we coded the listed articles again. For an overview of the codings concerning evidence level (empirical vs. theoretical article) and research context for each trigger and need see table 1. To provide insight into the coding of triggers and needs, sample studies are listed in table 2.

Table 1

Overview of coding frequencies of the five triggers and five needs according to evidence level- and context-categories

	Evidence level		Context							
	Empirical	**Theoretical**	**Stereotypes/ discrimination/ justice**	**Conflicts**	**Self-/emotion regulation/ processing**	**Motivated performance context**	**Health / stress**	**Consuming**	**Organizational/ work demands**	**Example**
T1	71	7	35	0	25	7	6	2	3	Perceiving incongruence with their professional ideals (van Os et al., 2015)
T2	18	7	5	5	4	2	3	2	4	Limited resources in a computer simulation task (Niessen & Jimmieson, 2016)
T3	11	4	5	0	5	0	3	1	1	Verbal attacks of customers (Tuckey et al., 2015)
T4	8	3	1	0	3	0	2	1	4	"Some of my colleagues feel I'm not committed to my career because I'm a woman." (Hippel et al., 2017)
T5	7	3	1	0	3	0	5	0	1	Being afraid to experience a reduced oxygen level in an experimental setting
N1	4	11	4	1	6	0	1	1	2	"I feel incompetent." (Glaser & Hecht, 2013)
N2	7	14	5	4	7	0	2	1	2	"I focus on ensuring that I will avoid potential mishaps or negative events." (Stroessner et al., 2015)
N3	6	13	6	0	6	0	3	2	2	"It is important for me that the Acehnese are willing to open their door for other Indonesians to make friends with them" (Mashuri et al., 2016)
N4	7	24	15	0	10	1	1	1	3	"...concerns for the values and culture or our country." (Pereira et al., 2018)
N5	0	2	1	0	1	0	0	0	0	" danger to economic power or material wellbeing, or way of life..." (Pereira et al., 2018)

Note: T1 = experience of failure, T2 = hindered-action regulation, T3 = relationship-related disrespect, T4 = performance-related disrespect, T5 = physical danger, N1 = need for competence, N2 = need for control, N3 = need for status, N4 = need for relatedness, N5 = need for physical integrity. Multiple coding of triggers and needs per paper was possible. For a detailed overview of coding in all studies, see appendix.

Table 2

Sample studies including codings of triggers and needs

Reference	Term	Context	Method	Key question/message	Trigger	Need
Armenta & Hunt (2009)	Threats to personal or social identity	Discrimination of ethnic minorities	Experimental study	Perceived group discrimination was related to higher personal self-esteem, while perceived personal discrimination was associated with lower personal self-esteem of Latino/Latina adolescents.	T3: being discriminated as an ethnic minority group	*N3: make active attempts to maintain feelings of belongings*
Brown et al. (2019)	Threat	Stress experiences due to health promotion messages	Experimental study	The study aims to examine the effectiveness of other-affirmation inductions in reducing defensiveness to a potentially threatening health promotion message. Self- and other-affirmation increased viewing time of a distressing health message and other-affirmation increased self-reported outcomes such as risk perceptions after viewing the message.	T5: presentation of a distressing health message suggesting that alcohol drinking is the worst thing for health	*N4: sense of shared value*
Burnette et al. (2010)	Stereotype threat	Gender stereotypes and leadership	Experimental study	Women reported lower self-evaluation after a stereotype threat when they had low self-efficacy and believed leadership ability to be fixed (entity theory) rather than malleable (incremental theory).	T1: presenting statistics indicating gender differences in leadership positions	*N1: perception of being less competent* *N4: perception of being less worthy*
De Lemus et al. (2015)	Group identity threat	Gender-stereotypes and reactance	Experimental study	When group identity is threatened, group members can show signs of group reactance, to resist these threats, especially when the group norms being threatened.	T1: presenting gender stereotypes showing women in lower jobs, men in higher jobs	*N2: threats to control motives*
Dommer & Swaminathan (2013)	Social self-threat	Possession of an object and willingness to pay/Pricing	Experimental study	The price people are willing to pay for a good is often less than the price they are willing to accept to give up the same good, a phenomenon called the endowment effect. After a social self-threat, the endowment effect is strengthened for in-group goods among both men and women but is eliminated for out-group goods among men (but not women).	T3: the imagination of a previous relationship in which they felt unloved and rejected	N3: (Study 3) asking to unscramble a series of sentences, which were related to social fears (I often feel alone, people are often unsupportive)

Reference	Term	Context	Method	Key question/message	Trigger	Need
Dunn & Dahl (2012)	Self threat	Failure experience in motivating performance context	Experimental study	Self-threat from a product failure is shown to motivate defensive processing in both the content of complaints and the subsequent downstream product evaluations.	T1: information that the participants failed at product task and that's the product company's fault T4: information that the participants failed at product task and that's the explicit consumers' fault	*N1: sense of competence is threatened*
Hawk et al. (2019)	Ego threat	Self-regulation of narcist's adolescents (12-15)	Survey study (2 waves)	The study examines whether experiences of social rejection and related needs for self-validation might promote both youth's social media disclosures and problematic use of both social media and smartphones, particularly among youth with narcissistic tendencies.	T3: asking for being social rejected (I have no friends)	*N3: feeling of isolation/lacking support* *N4: need for validation, social acceptance/attention from others*
Hippel et al. (2017)	Stereotype threat	Stereotyped female managers	Field study	The study investigates if stereotype threat is associated with perceptions that using family-friendly policies has negative career consequences. Female employees are susceptible to stereotype threat, which in turn is associated with more negative views of family-friendly policies.	T3: perceptions of being underrepresented as female (pilot study) T4: some of my colleagues feel I am not committed to my career because I'm a woman.	*N3: lack of belonging*
Hoefler et al. (2015)	Self-threat	Positive self-view as a self-regulation strategy	Experimental study	The study Investigates the behavioural and neural consequences of self-protective strategies under threat. High self-esteem individuals engage more in self-enhancing strategies after a threat by inhibiting negative self-related information more successfully than low self-esteem individuals.	T4: presenting negative feedback in the performance test, which is not consistent with the academic self-concept of the participant	*N1: concerning academic competence, social skills,* *N3: concerning interpersonal relationships*
Kamphuis et al. (2011)	Physical threat	Dangerous and complex	Experimental study	The study measured the effects of an uncontrollable, physical threat on five critical team processes: information processing,	T5: being afraid to experience a reduced oxygen level	N2: degree of control was measured by deliberation

Reference	Term	Context	Method	Key question/message	Trigger	Need
		work demands/students		leadership, communication, coordination, and supporting behaviour. Teams in the threat condition showed a restriction in information processing compared to teams working in the no-threat condition.		
Miller et al. (2014)	Threat	Intimate partner violence of parents and children's self-regulation/children 4 to 6 years	Longitudinal survey/interview study	The present study proposes to expand current knowledge on the development of cognitive appraisals (threat and self-blame appraisal) in the early childhood years by examining 4- to 6-year-old children who have been recently exposed to intimate partner violence (IPV). Longitudinal data on preschooler's cognitive appraisals of threat and self-blame indicate a generally static or worsening of cognitions about Intimate partner violence for 6 to 8 months.	T2: intimate partner violence	N2: sense of insecurity
Murtagh et al. (2012)	Self-identity threat	Intention to change behaviour and self-regulation	Vignette study	The study draws on Identity Process Theory (Breakwell, 1986) to propose that threat to self-identity contributes to resistance to change, over and above the influence of past behaviour. Using travel-related vignettes to trigger threat, a study with 295 working parents in England found evidence supporting the relationship between self-identity threat and resistance to change travel behaviour, controlling for past behaviour.	T1: information that motorcyclists think they are alone on the road or that parents are jeopardizing their child's academic performance by taking them to school by car	N1: "It makes me feel less competent." N4: "It makes me feel less unique as a person"

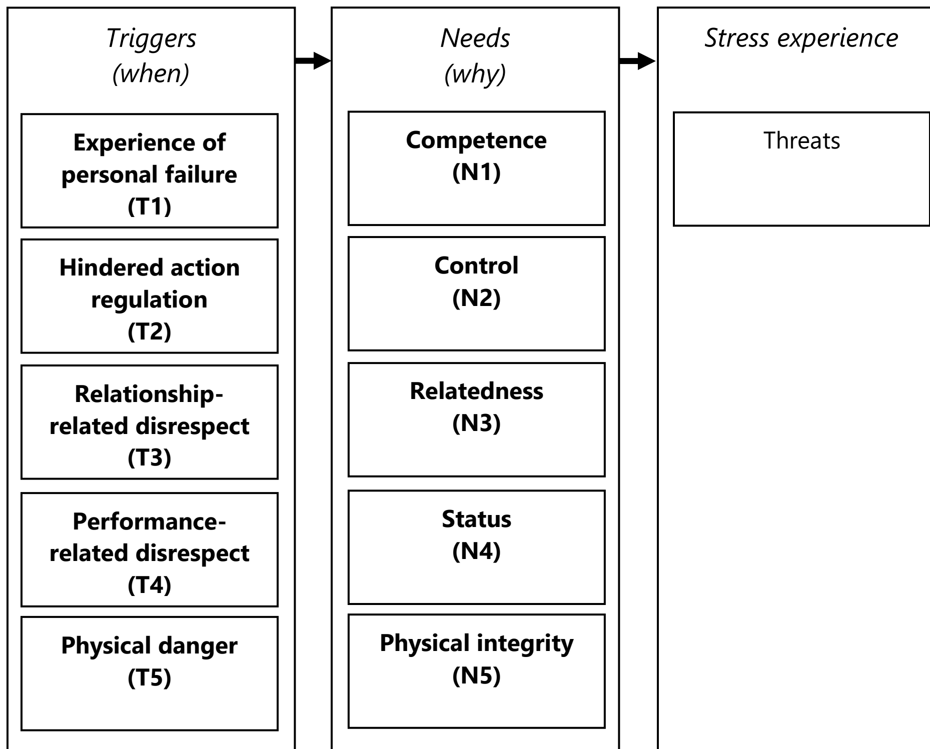
Note. T1 = experience of failure, T2 = hindered-action regulation, T3 = relationship-related disrespect, T4 = performance-related disrespect, T5 = physical danger, N1 = need for competence, N2 = need for control, N3 = need for relatedness, N4 = need for status, N5 = need for physical integrity. Italics indicate that threat research refers to these triggers and needs on a theoretical, not an empirical, level.

A Classification of Triggers

We identified five categories of triggers: experiences of personal failure, hindered action regulation, relationship-related disrespect, performance-related disrespect, and physical danger. For an overview see Figure 5. In the following, we introduce these five triggers via definition and present examples of previous research, which we categorized to these triggers.

Figure 5

Classification of triggers and needs explaining the when and why of threats



Experience of personal failure. We defined this trigger as the following: Individuals perform actions and realize that they engage in wrongdoing due to internal aspects such as a lack of ability. As a result, they recognize that they have failed to live up to their expectations or expectations of others.

Evidence for this trigger exists both in theoretical explanations and in numerous experimental operationalizations. On a theoretical level, McConkie-Rosell and DeVellis (2000) assume that the diagnosis of a genetic disorder is a trigger of threat. They argue that carrier testing challenges a "wished-for" parental

role in terms that learning carrier status for a genetic disorder may alter how an individual defines himself or herself concerning reproductive expectations and future roles as a parent, grandparent, or great-grand-parent. A woman who may have planned on being and defined herself as a mother may find these plans and dreams of parenting threatened by the outcome of a carrier test. We identify the experience of personal failure as the triggering event, because being the carrier of the gene or transferring this gene to a child (internal aspects), means, even if indirectly, to have personally failed to live up to the own expectations or those of others.

On an empirical level, a lot of studies induced threat by confronting participants with their own failure and, thus, use the experience of failure as threat trigger. Operationalizations were more or less direct in that concern that some studies used priming paradigms (Davies et al., 2005) or an unsolvable task (Bergeron & Dandeneau, 2016), while others provided participants with negative performance feedback (e.g., a sign on the computer screen “wrong”) indicating personal failure. Goldschmied and Vira (2019) examine performance after a threat to the self in the case of basketball players and operationalizes threats as a shot that completely missed the basket in a basketball game. In the discussion, Goldschmied and Vira (2019) explain that basketball players experience threats because they become aware of discrepancies between ideal performance standards and attained performance. We identify the trigger experience of personal failure because these discrepancies of ideal and attained performance are due to the basketball players' own behavior they have shown (internal aspects).

We find some studies that indicated also the potential experience of personal failure as threat trigger. For example, Fingerhut and Abdou (2017), in their review, striving to distinguish between healthcare stereotype threat and social identity threat of sexual minority individuals, defined stereotype threat as concerns of being judged through the lens of specific negative stereotypes and of potentially confirming those stereotypes. With the expression "potentially confirming", they pointed out that already the fear of performing a wrong action triggers threats.

Hindered action regulation. This trigger indicates an experience of insufficiency, as well. Individuals fail to live up to their own expectations or those of others because of external factors such as situation characteristics (e.g., complexity, dynamics, uncertainty, time pressure) or task characteristics (e.g., undefined goals, lack of resources) hindering their action. The experience of insufficiency is not self-inflicted here, but neither is the intentional action of a person seen as the cause. It is an obstacle in achieving the goal[1].

We found some evidence confirming hindered action regulation as a trigger of threats. For example in an interview study, Kyratsis et al. (2017) investigated how established physicians manage their identities in the face of threat. The threatening event in their study was a forced change physicians faced in their professional identities due to a shift in the logic of healthcare from a logic of "narrow specialism" to a new logic of "generalism". Kyratsis et al. (2017) argued that the forced change provoked a mismatch of the preexisting value system of physicians, which they based their work on, and the new system. We identified the trigger hindered action regulation, because the forced change and the mismatch of the value system hindered the physicians in their actions.

On an experimental level, we found evidence for the trigger hindered action regulation, for example in the study of Kessels et al. (2008). In their first study, they provided adolescents with positive feedback with or without the addition that the teachers were proud of the pupil and their performance. Students being told that teachers were proud of them reported less effort (time spent on homework) than the control group. Kessels et al. (2008) argued that for adolescents, positive performance feedback in school is associated with peer insinuation of having great closeness to the teacher does not have such beneficial effects on interest development and achievement behavior, but on the contrary, is experienced as a threat to important aspects of identity. On the one hand, adolescents know that a good performance is important for their career. On the other hand, good performance and a great closeness to the teacher risks adolescents'

[1] Hindered action regulation shows a large overlap to the hindrance dimension of CHM. The differentiation between the hindrance and threat dimensions will be discussed in the summary below.

reputation among peers. We identified the trigger hindered action regulation, because adolescents experience a role conflict (career options vs. reputation among peers), which hinders their actions.

Performance-related disrespect. We define this trigger as the following: Individuals expect a reward (e.g., money, recognition) for their performance or effort they have put in. If there is a discrepancy between the internal performance/effort evaluation (an individuals' view of the performance/effort) and the external performance/effort evaluation (an external view of the performance/effort), individuals perceive an imbalance of their performance/effort and reward (i.e., an individual him- or herself is satisfied with the performance, but receives feedback from others that the performance was poor). An individuals' merits are not genuinely honored. The individual sees another person as the cause for the disrespect perception, even if this person is not aware of his/her disrespectful effect.

This discrepancy between effort and reward, or between evaluation by oneself and by others, is also evident in threat operationalizations and thus confirms the performance-related disrespect trigger. For example, Hippel et al. (2017) investigated if stereotype threat is associated with perceptions that using family-friendly policies has negative career consequences in women. They operationalized stereotype threat by the item "some of my colleagues feel I am not committed to my career because I am a woman." (study 1). We coded the trigger performance-related disrespect because of the items implying an insinuation that women were not committed to their careers despite their effort. This reflects a discrepancy between self-perceived effort and evaluation from others and is used as an indicator to measure threat. Furthermore, Hoefler et al. (2015) investigating the behavioral and neural consequences of self-protective strategies under threat and operationalize threats in terms of giving negative performance feedback, which is inconsistent with the participant's academic self-concept. They mention explicitly the inconsistency of feedback and participants self-view. Therefore, in this study, we coded the trigger performance-related disrespect because of the discrepancy between participants' performance evaluations and evaluations expressed by the feedback.

Relationship-related disrespect. Disrespectful behaviors of others such as obscene gestures, tactless verbal expressions, or ignorance relate to another kind of disrespect trigger. This kind of disrespect refers to the individual as a human being and is independent of any performance. Individuals are not treated equally or with dignity. Again, the individual identifies the cause of his or her own disrespect perceptions of another person.

For example, Pasek and Cook (2019) provide evidence that relationship-related disrespect is a threat trigger. They consider religion as a source of threats and argue that individuals who feel stereotyped, discriminated against, or devalued because of their membership to the religion as well as because of their strength of religious beliefs experience threat. We identified the trigger relationship-related disrespect, because being discriminated against or devalued means, people are not treated equally. This trigger is also evident at the level of operationalizations of threats. Martiny and Kessler (2014) operationalize threats in terms of unequal treatment of individuals. Exploring how threats elicit emotions and motivate identity management processes, they asked participants to read a fictitious newspaper article. They induce threats via an article indicating that employers in Germany prefer graduates of West German universities compared with graduates of East German universities. Because of the unequal treatment of students from West and East German universities, we identified the trigger relationship-related disrespect as a threat trigger in this study. Furthermore, Tuckey et al. (2015), who differentiate between different stressors within the framework of challenge-threat-hindrance approaches and examine effects on health and affect, include "extreme customer-related social stressors" as threat stressors ("I have to deal with customers who personally attack us verbally."). We coded the trigger relationship-related disrespect, because "customer-related social stressors" are disrespectful behaviors of others that do not meet the standards of interpersonal interaction.

Physical danger. As physical danger, we define events that set the life and health endanger, for example by a knife attack.

We find some evidence for this trigger for example by Beckes et al. (2013). They investigate brain region activity concerning threat experiences and use mild electric shocks to induce threats. We identified physical danger as a threat trigger because mild electric shocks are themselves physical in nature. Furthermore, Kamphuis et al. (2011) threaten their participants by sending participants to a climate chamber, in which they performed an experimental team task. Experimenters let participants believe that they were possibly (going to be) subjected to reduced oxygen levels during task execution. Since the climate chamber and the possibly reduced oxygen level challenge participants (potential) physically, we identified the trigger physical danger. Krohne et al. (2001) used a vignette design investigating coping under threat. The asked participants to imagine situations that refer to physical pain or danger to life and limb (z.B. „imagine that you haven't been to the dentist for quite a long time" or „Imagine that you are a front seat passenger next to an obviously inexperienced driver. Road conditions are poor due to snow and ice."). We identified physical danger as the trigger because of the, even if imagined, danger for life and limb. Further studies used health-threatening messages for the induction of threat. For example, in the study of Zhang et al. (2014), participants viewed a public service announcement indicating the seriousness of HIV/AIDS and the likelihood of contracting the disease. Here, we identified the trigger physical danger, because of the messages that affect health and thus one's own life and limb.

Interim Summary 1. The Classification of Threat Triggers

We systematized threat triggers across different threat research disciplines (e.g., stereotype, self-regulation, stress research) and identified five triggers. In addition to the trigger physical threat, including events in the meaning of physical threats such as a knife attack, the triggers can be classified as subcategories of triggers postulated in SOS theory (i.e., the experience of insufficiency and disrespect, Semmer et al., 2007; 2019). The two subcategories of experiences of insufficiency include the triggers *experience of personal failure* and *hindered action regulation.* Here, we include the idea raised by Petriglieri (2011) that in addition to the behaviour of individuals themselves (internal), environmental and situational factors (external) potentially cause threats. Individuals experience insufficiency based on internal factors, for instance,

because of a lack of abilities or skills. Moreover, they experience insufficiency if they are hindered by external factors, such as limited resources (e.g., time pressure) or situational characteristics (e.g., complexity, dynamic).

In contrast to externally triggered interactions, both categories are based on interpersonal interactions. We differentiate two categories of disrespect: *relationship-* and *performance-related disrespect*. This differentiation is similar to concepts of respect research that suggests two types of respect. The first type of respect, horizontal respect, is characterized as "unconditionally guaranteed to every human being, i.e., treating others as equals" (Decker & van Quaquebeke, 2015), corresponding to our category of relationship-related disrespect. The second type of respect, vertical respect, is paid to people for reasons such as their expertise or excellence (Decker & van Quaquebeke, 2015) and, thus, bears similarities to our category of performance-related disrespect.

Since physical danger (e.g., a knife attack) addresses the classical notion of threats, we included this as an extra category. Studies dealing with the experience of threats among emergency personnel referred to this trigger (Anshel, 2000).

These categories of triggers we identified are all known as stressors from classical stress and health theories. While the trigger experience of personal failure addresses stressors that have their origin in the individual, such as a lack of abilities, skills, or work experience, the trigger hindered action regulation addresses stressors that have their origins in the environment with which the individual interacts, such as workload or task demands. If people are hindered in their goals by themselves, others, or the environment, this is a stressor in the sense of CHM (e.g., O'Brien & Beehr, 2019), which is accompanied by negative consequences such as turnover (Tuckey et al., 2015). In CHM research, hindrances as an obstacle for goal attainment are distinguished from threats as a separate stress dimension. However, Brady and Cunningham (2019) show that feeling hindered by bureaucratic and technological constraints can be appraised as

threats, hindrances, or challenges. This supports our finding that hindrances in people's actions can be appraised just as an obstacle for goal attainment and thus become a trigger of the hindrance dimension in CHM or be appraised as harm to the self and thus act as a trigger of threats.

Disrespect triggers correspond to stressors that affect an individual's social system, such as lack of recognition or support, in terms of the McGrath framework (1983). The experience of (dis)respect is also related to justice and fairness perceptions, as discussed in the effort-reward imbalance model (Siegrist, 2002). If individuals do not receive the rewards (e.g., in the sense of recognition or money) that they believe they deserve, then this discrepancy between effort and reward acts as a stressor.

In summary, the identified triggers of our classification match classic stressors, which confirms the suggestions of Tuckey et al.'s (2015) extension of CHM that threat is a kind of stress. How people react to these triggers or stressors varies. While one person may react to an imbalance between effort and reward by investing more effort and trying to remove the imbalance, the other may react by quitting the job (cf. Bruggemann, 1974). To be able to predict or react to such consequences, it is important to take a closer look at the mechanism, the *why*, of threats.

How individuals react to threat triggers (or other stressors) and what consequences follow depend on appraisal processes (Horan et al., 2020). Potential triggering events have to be appraised as relevant for the individual to become threat triggers (or other stressors). That such an appraisal process can be influenced by needs has already been shown. However, the significance of needs and their content concerning threat has still been considered in the centre. We classified the variety of needs that have been used in threat research as determinants in explanations, conceptualizations, and operationalizations. This classification of needs is presented in the following section.

A Classification of Needs

Besides the need for competence, relatedness, and control, we find evidence for the needs for status and physical integrity. In the following, we introduce the definition of needs and give evidence from previous research. For an overview see Figure 5 or for the theoretical basis see Table 1.

Needs for competence. We define the need for competence as a craving for accomplishing desired outcomes, for feeling challenged, and for being able to act effectively. If people are not able to behave in such a way, they feel offended in their need for competence.

We find some evidence for the need for competence in threat research. Dunn and Dahl (2012) defined their concept of self threat as a sense of competence is threatened. Thus, they refer to the feeling to be competent in their definition of threat, so that we conclude the need for competence is related to threat experiences. Furthermore, Burnette et al. (2010) integrate the need for competence in their theoretical explanation of study results. They examined how individual differences in belief about the malleability of leadership ability influenced responses to stereotype threat. They explain that threats may emerge in a leadership context because of the perception that women are less competent and less worthy of leadership positions than men. We conclude, that women who were confronted with leadership stereotypes do not feel capable and competent indicating a frustrated need for competence that is followed by threat experiences. In a survey study, Glaser and Hecht (2013) examined associations between work-family conflicts, threat appraisals, self-efficacy, and emotional exhaustion. They referred to concerns of competence in their operationalization of threat ("If my work and my home life conflict with one another, I think it is possible that I will appear to be incompetent") and, thus, relates threat experiences to the need for competence.

Need for control. We define the need for control as a desire to have a way of determining what and how something is done and how resources are allocated and used. If individuals are confronted with vague and ambiguous environments, experience uncertainty, or believe that they do not have control of the results of events in their lives, their need for control is offended.

We find some empirical and theoretical evidence for including the need for control in the threat mechanism. Stroessner et al. (2015) investigating explicitly threat to safety in the domain of stereotyping and defined this kind of threat as the sense of security is threatened. Thus, in their definition, they set the connection between control experience and threat. De Lemus et al. (2015) investigated mortality salience as a kind of threat trigger. To explain the threatening potential of mortality salience, they argue that becoming

aware of inevitable mortality the need to have faith in stable cultural worldviews is affected. So they include the idea of control for threat experiences in their theoretical explanations.

Need for relatedness. The need for relatedness, we define as a desire for connectedness to other people, or in other words, an individual's sense of belonging with other people and with one's community. If individuals feel disliked, rejected, or excluded (i.e., not be part of the group), their need for relatedness is offended.

In their challenge-hindrance-threat framework explaining stress, Tuckey et al. (2015) define threat stressors as varying forms of workplace aggression and victimization, which thwart employees' psychological need for belonging, beyond others. Thus, in their definition of threat, they include the idea that threat is related to concerns for being connected to others, indicating a frustrated need for relatedness. Furthermore, as mentioned above, Hippel et al. (2017) showed that stereotype threat is associated with the perception that taking advantage of family-friendly policies would have negative career consequences. In their discussion, they explain that an unwelcoming climate (induced by confronting participants with stereotypes) leads to feelings of stereotype threat because it suggests to women that they have "poor prospects" to advance their career and causes women to feel a "lack of belonging". Therefore, they used the need for belonging to explain their results. Pasek and Cook (2019), provide direct empirical evidence that experiences of stereotype threat are associated with a lack of belonging. They investigate religion (i.e. being stigmatized because of the membership to a religious group) as a source of threat and show that threat predicted lower belonging, next to other outcomes (e.g., propensity to conceal one's religion).

Need for status. We define the need for status as an individuals' perception of their standing and worth in a group or in general for other people. If individuals experience a lack of respect, feel less accepted, devalued, and unworthy, their need for status is offended.

We find some theoretical and empirical evidence confirming our idea of connecting threat and a frustrated need for status. For example, Blincoe and Harris (2011) refer explicitly to a threat to status defined as a harmed desire for higher status. Therefore, they connected status' concerns and threat experiences.

Furthermore, in two survey studies, Falomir-Pichastor and colleagues (2009) investigated the impact of national Swiss identification, perceived threat to ingroup identity, and discrimination behavior against foreigners. They relate threat to the need of status by measuring threat in terms of the standing and worth of Swiss people (e.g., "Foreigners contribute to the depreciation of the image of the Swiss people", "Foreigners contribute to the preservation of national values and customs"). Furthermore, across three studies, Pareira et al. (2018) show that participants who were led to believe that they had acted in a discriminatory way towards a minority group experienced a decrease in their self-esteem and public image. With the operationalization of public image in terms of concerns of the social standing (e.g., "I am worried about what other people think of me.") they provide empirical evidence for the connection of a threat trigger and need for status.

Need for physical integrity. With the need for physical integrity, we refer to the fundamental human need for safety and security at a physical level. If people worry about their health or suffer from physical damage, their need for physical integrity is offended.

We find less evidence of the need for integrity in previous threat research. Jones and Paulhus (2010) investigating differences in responsivity towards different types of threat inductions refer theoretical to a need for safety and health. They argue that gratuitous painful blasts during a computer game (termed as a physical threat) produce the potential to undermined health and safety and activate fight or flight reactions based on an evolutionary perspective.

Interim Summary 2. The Classification of threat-related Needs

Needs have rarely been considered empirically. In the theoretical explanations and discussion of previous studies, threat research refers indirectly to needs, for example, by talking about feelings of uncertainty (e.g., Jung et al., 2019) in terms of the need for control or perceptions of being less worthy (e.g., Burnette et al., 2010) in terms of status. We find evidence in threat research that confirms the need-based threat mechanism used to explain threats.

We subsume under the term need for control the SDT's need for control, but we also include the idea of feeling safe and being in control of one's actions. "To having control over oneself and others" is integrated into the power motive of *motive-disposition theory* (*MDT*, another similar popular theory of human needs to SDT, McClelland, 1961). Furthermore, concerns of control are also associated with threat experience with regard to evolutionary functions (cf. Shepperd, 2017). In the past, if individuals were able to monitor their environment, in terms of having control, they experienced no threats to life or limbs. Moreover, we added this notion of being in danger of life and limb by adding a need for physical integrity.

In addition to the needs addressed in SDT (Deci & Ryan, 2000) and the need for physical integrity, we added the need for status. Understanding this need as a striving to be an important person for others is similar to the power motive in MDT that describes an individual's striving to have an impact on other people. In addition, a need for status is a topic in the *fundamental motive framework* (*FMF;* Schaller et al., 2017), taking on an evolutionary perspective on individuals' strivings. FMF is based on the idea that an individual's main goal is to achieve reproductivity, which in turn stimulates several motives, such as attaining status (Griskeviesius & Kenrick, 2013; Schaller et al., 2017). Furthermore, in their *dual pathway model of respect*, Huo et al. (2010) draw on a need for relatedness and status by describing two pathways through which respect shapes attitudes and behaviour. Therefore, the need for status is a beneficial extension of the need categories in our classification, especially concerning the disrespect triggers.

In sum, our classification of needs implies that five needs, defining the content of an individuals' striving, are used to explain threats in interdisciplinary threat research. Knowing what individuals are striving for is the basis for developing approaches to avoiding and dealing with threats.

However, threats are not only determined by needs but ultimately by an interplay of triggers and needs. For example, Blincoe and Harris (2011) show that men and women differ in emotional responses to disrespect, with men responding to disrespect with more anger based on a frustrated need for status, whereas women were more likely to be sad based on a frustrated need for relatedness. s. Results such as

these show that the same trigger can be associated with different needs and different reactions. This implies that individual differences in the experience of threat are possible.

If we focus on the work context, differences in the experience of threats between individuals as well as between situations are realistic. For example, while a paramedic feels threatened by verbal attacks, a police officer does not, or while one police officer feels threatened by a disrespectful supervisors' feedback, the other does not, or a police officer feels threatened by disrespectful supervisors' feedback but not by the same disrespectful feedback of an apprentice. Even though we know which triggers and needs act as threats and thus better understand the when and why of the threat dimension in CHM, we do not understand why individuals might differ in their appraisals of the same triggers. According to SDT (Deci & Ryan, 2000), needs are fundamentally the same for all individuals, which implies that all individuals respond in the same way to an event. Nevertheless, we find approaches to explain interindividual and intraindividual differences in threats at the workplace.

Inter- and Intraindividual Differences in Threats at Work

The classification of targets and needs described above represents a generalizable universal threat mechanism, especially if it is assumed that needs are stable across individuals (cf. SDT). However, research and practice show that triggers are evaluated differently in terms of their threat potential. Different from SDT, MDT (McClelland, 1961) focuses on individual differences in needs by addressing needs-as-motives guiding an individual's motivation (Prentice et al., 2014). According to McClelland (1961), individuals differ in their needs *strength*, which guides their perception of situational cues (cf. Jenkins, 1994). For example, if two police officers receive the same supervisor feedback, they may react differently (i.e., feeling threatened or not) due to the difference in needs strength (e.g., one has a higher need for status than the other) because their perceptions of the situation differ (e.g., while one pays attention to statements of the supervisors that demean status, the other pays attention to statements that question competence). Need strength and the needs-guided perception of the situation can be strengthened by repeated needs satisfaction (Jenkins, 1994). Thus, needs are changeable over time, which explains interindividual as well as, at least

longitudinally, intraindividual differences in needs. The MDT approach of differences in need strength (e.g., one person has a high competence, low relatedness, control, and status need, another person has a high relatedness, low competence, control, and status need) provides a basis for explaining differences in threat experiences.

Although SDT (Deci & Ryan, 2000) postulates that needs are universal, they discuss individual differences in needs or, more specifically, in needs satisfaction and thus provide an explanation for differences in threats. Similar to plants, which all need the same nutrients but do not always get an adequate amount, all people need the same needs fulfilled for optimal functioning, but the extent to which these are satisfied varies by the context (Prentice et al., 2014). Context, or more specifically, how individuals perceive context, determines the extent to which needs are satisfied. According to SDT, individual differences in context-dependent needs satisfaction are the basis to explain differences in threat experiences.

However, how need-satisfying individuals perceive context is unspecified by Deci and Ryan (2000), who mention general learning and developmental processes (Schüler et al., 2019). To explain these differences in context perception, we refer to the concept of roles (see Roles-as-perspective theory, Meier & Semmer, 2018). Individuals define themselves not by who they are in general (i.e., defining the self), but many more individuals take on different roles depending on the context. For example, at work, they are colleagues, supervisors, or firefighters; at home, they are parents, spouses, or friends (Sluss et al., 2002). Every individual takes on multiple roles. Roles represent a set of behavioral expectations attached to a social or professional position and define who one is in this position in a specific context (Sluss et al., 2002). What individuals attach to the role, what they strive for in the role, shapes their perception of reality (Meier & Semmer, 2018). Therefore, whether individuals perceive their needs as satisfied in a given context depends on how they define themselves in their roles. Thus, taking on the role perspective, we can explain the individual differences in need satisfaction postulated by SDT and, in turn, differences in the experience of threats.

In sum, the suggestion of differences in needs strength (MDT) and the integration of the role concept in differences in context-based needs satisfaction (SDT) enables the explanation of person- (interindividual) and situation-specific (intraindividual) differences in threats. This is also useful in explaining individual differences in the threat dimension of CHM.

General Discussion

In the literature review, we classified five triggers and five needs of threats within different research fields to support the understanding of the *when* and *why* of threats as a specific stress dimension in CHM. While triggers describe *when* events initiate threats, frustrated needs make these events important for individuals and explain *why* individuals feel threatened. We subdivided both triggers postulated in the SOS theory (Semmer et al., 2007; 2019) into two subcategories: the experience of insufficiency is separated into the two categories experience of failure and hindered action regulation and experience of disrespect in a relationship- and a performance-related category. Furthermore, we added physical danger as another trigger. In addition to the need for competence, relatedness, and autonomy (i.e., we termed need for control), we identified the need for status and physical integrity as relevant for threat experiences.

This study benefits the understanding of threats as a specific stress dimension in three ways.

First, the classification of triggers across different research disciplines offers a consistent overview of possible threat triggers and provides a more concise description and explanation of the threat dimension in CHM. Typical stressors that CHM research uses as examples for the dimension of threats are emotional demands, customer-related social stressors, or workplace aggression (Searle & Tuckey, 2017). These stressors are key topics in the broad research area of workplace aggression, also indicating strong negative effects for the individuals who have to deal with this aggression (Hershcovis, 2011). Constructs such as mobbing, bullying, harassment, and victimization also investigate threats by describing the systematic mistreatment of others (e.g., Einarsen et al., 2000), which fit our trigger category of person-related disrespect. For example, experiences of social exclusion (Bartlett & Bartlett, 2011) might trigger relationship-related disrespect. Furthermore, interdisciplinary psychological threat research considers many more events as

triggers for threats, such as feeling hindered or experiencing failure (cf. Leary et al., 2009). The integration of the existing perspective of interdisciplinary psychological threat research in CHM research exaggerates that the danger of threats is prevalent. A systematic classification and overview of the events associated with threats extend the differentiation of stressors by challenges and hindrances, which had been the origin of CHM (Horan et al., 2020), to threat stressors. However, our classification implies that other stressors that are normally associated with the challenges or hindrances dimension in CHM (Smith, 2020) can also be considered threat triggers.

Second, by linking needs to threat and CHM research, we represent a universal but also specific content of humans' striving and enrich the understanding of when an event exactly triggers threats. This helps to specify predictions concerning short- and long-term consequences and to identify protective factors and resources dealing with threats. The more specific the understanding of the threat mechanism is, the more specific the interventions can be to address it. For example, if individuals become aware that their need for competence is threatened by supervisors' feedback, they could explicitly visit contexts in which they experience competence instead of generally reinforcing themselves by self-affirmation interventions to cope with threats (cf. Brown et al., 2019).

Third, by referring to roles, we enable the explanation of person- (interindividual) and situation-specific (intraindividual) differences in threats. The integration of the role concept into threat research and the idea of multiple roles that are salient in different situations is beneficial for dealing with threats. For example, if an individual is threatened in his or her professional role as a teacher, he or she can focus on further roles such as the role as a parent and thus give less value to the threat to the teacher role. Here, we find strong similarities to the stress research of McGrath (1983), who already indicated roles as possible stressors.

Limitations of the Current Classification of Triggers and Needs

Admittedly, there are limitations to our classification. First, the categorization of triggers and needs is based on diverse evidence. We did not impose limits on the study design, methods used, setting, or participants in our search. Therefore, we included studies in which threat is the topic in theoretical explanations of hypotheses or study results (e.g., Armenta & Hunt, 2009) as well as studies in which threats are explicitly empirically considered in operationalizations (e.g., Baysu & Phalet, 2019). Moreover, we recognized a broad range of operationalizations. While some studies manipulated threats as an independent variable or moderator (e.g., Beer et al., 2013), others investigated threats as a dependent variable (Chemers et al., 2001). While some studies used questionnaires to measure threats (Cortland & Kinias, 2019), others interviewed (Kyratsis et al., 2017) or observed participants (Goldschmied & Vira, 2019). Whereas some studies investigated threats in an experimental setting and induced threats via manipulation (e.g., Hoefler et al., 2015), others investigated threats in the field (e.g., Cohen et al., 2006). Whereas some studies focus on one trigger or one outcome of threats explicitly (e.g., Lee-Won et al., 2017), others have a broader view, for example, asking participants for threatening events in general (McCaslin et al., 2006). While some studies have investigated the cognitive and emotional processes of threats (Johns et al., 2008), others focus on interventions or strategies dealing with threats (Geisler & Weber, 2010). The wide field of research on threats means that our classification covers a very diverse representation of triggers and needs and calls into question their comparability. However, across this interdisciplinary research field, we find evidence of similar triggers and needs, which highlights them as powerful determinants in the threat mechanism.

Second, although CHM typically mentions emotional demands and customer-related stressors as examples of threat stressors, we did not include the research strand of workplace aggression in this study. In this study, the intent was to identify threat triggers that were not commonly included as threats in CHM. While threats such as harm to the self are very obvious in these stressors related to workplace aggression, we intended to identify other possible events as threat triggers. Nevertheless, mobbing-related concepts

can be integrated into our classification, and this is not only in our category of relationship-related disrespect. For example, physical harm (Maidaniuc-Chirila & Ticu, 2013) can be categorized as a trigger of physical danger, and delegation of menial tasks (Bartlett & Bartlett, 2011) can trigger performance-related disrespect. Our study highlights that threats can be triggered by events that are associated with workplace aggression but also a large number of other events that are investigated in interdisciplinary research fields.

Third, our classification offers the possibility of systematically recording multiple threats in the workplace to investigate mechanisms and predictions in future research. It does not provide information on causal trigger-need relationships. Research indicates some distinct trigger-need relationships. For example, a life-threatening attack inevitably offends the need for physical integrity (e.g., Hagemann et al., 2012), the experience of exclusion offends an individual's need for relatedness (e.g., Armenta & Hunt, 2009), and the experience of failure offends the need for competence (e.g., Burnette et al., 2010). However, especially regarding work situations, there are often multiple triggers and needs involved in one threat situation. For example, the aforementioned study by Anshel (2000) shows that all five triggers are relevant for threat experiences to police officers in their professional roles. Overall, an interplay of multiple triggers and needs determines threats. Predictions are difficult. Thus, it is conceivable that certain triggers have stronger effects than others and that the combination of many triggers increases threat experiences. However, with this trigger-need classification, we provide a basis to test explicit hypotheses differentiating between interactions and effects in further research.

Directions for Future Research

Our classification yields some questions for future research. The interplay of triggers and needs mentioned in the previous section is an issue that should be investigated in future research. Studies in the field can empirically support our theoretically postulated classification shown here and determine its relevance for real working life. Second, in controlled laboratory studies, triggers can be systematically manipulated to examine causal effects on needs and negative consequences (Podsakoff & Podsakoff, 2019). For example,

Rynek and Ellwart (2020) show that performance-related disrespect manipulated by feedback from the experimenter and hindered action regulation manipulated by situational characteristics (e.g., time pressure) threaten people in their role as firefighters in the experiment. Performance-related disrespect proves to be a trigger for threats. Future research should focus on similar experimental investigations that, in addition to the manipulation of triggers, should include the determination of participants' needs.

Although this paper indicates that a needs-based mechanism is a promising way to describe, explain, and reflect on threats, the role of needs should be further investigated. To date, there are studies showing that frustrated needs are related to threat appraisals (e.g., Quested et al., 2011). However, they only consider two dimensions of stress, challenge and threats. Further research should examine all three dimensions, i.e., challenge, hindrance, and threat (Tuckey et al., 2015), to examine whether frustrated needs are specific to threat appraisals or if frustrated needs are simply associated with negative consequences, as is the case with both hindrance and threat appraisals.

Another issue for future research, which also concerns the role of needs in the appraisal process, is whether needs are the only determinant in the threat mechanism. If we follow the CHM, stress arises through an appraisal process in which events are evaluated as harm to the self (Tuckey et al., 2015). Appraisal processes are a widely studied and discussed topic. In addition to needs, values, goals and beliefs are also mentioned as motivational states that influence appraisal. In addition, a variety of personal characteristics and characteristics of the stimulus (trigger) are discussed as factors influencing appraisals (Moors et al., 2013). For example, the different roles individuals assume might have an effect on the appraisal process (e.g., while a man in his role as a father perceives a knife attack as extremely threatening, he perceives it as less threatening in his role as a police officer). Further research is needed to elaborate the position of needs over other variables in the process of threat appraisals.

Furthermore, the role perspective and its impact on appraisal processes should be addressed as a resource in future research. Roles and expectations are variable and can be redefined and reconstructed (Sluss et al., 2002). A reconstruction of the role can lead to a changed perception and appraisal of potential

triggers and associated need frustration. For example, paramedics’ role of “being helpful” can be threatened by a law that prohibits a paramedic from giving a patient an injection for pain. Until the emergency doctor arrives, paramedics are not allowed to do anything except provide emotional support to the patient. Over time, paramedics may reconstruct their role and redefine it as a "master in ambulance loading". This reconstruction may help paramedics fulfil their own role expectations and thus satisfy their need for competence. Therefore, the consideration of appraisal processes shaped by role expectations could be an interesting perspective for future research.

Finally, personality psychology explains inter- and intraindividual differences in needs by distinguishing explicit and implicit motives and their congruence or incongruence in different situations (Hofer & Busch, 2011; 2017). In the work context, the focus is primarily on the explicit measurement of needs. Incongruencies between implicit and strongly role-related explicit motives (e.g., through strong occupational mission statements) could provide situation- and person-specific approaches for explaining and predicting threat.

Practical Implications

The proposed classification offers access to the description and reflection of threat situations and thus provides three practical implications. First, the identification and elimination of triggers is the most effective way to avoid threats and associated negative consequences. Triggers such as performance-related disrespect, for example, can be eliminated if people are made aware of these triggers (cf. Anshel, 2000). If supervisors know that their behaviour has such a negative influence, they can interact more attentively with their staff.

Second, becoming aware of threat situations and being supported in cognitive processing in the post-processing phase can reduce the threat on the part of the threatened individual. We know from consulting and therapy that such approaches are beneficial in supporting people by coping with stressful events. For example, rational-emotional-behavioural therapy (Ellis, 1962) represents such an approach. Along with an

ABC model (A - activating event, B - beliefs, C - consequences), the functionality of an individuals' thought patterns and explanatory styles are revised and modified as necessary.

Third, becoming aware of multiple roles and situation-specific activated needs can be a resource for dealing better with threats. If an individual feels threatened the role of a Ph.D. student, accompanied by feelings of stress and negative affect, reflecting on having multiple roles (e.g., I am also a lecturer) may minimize threat experiences. Furthermore, our classification shows a complex network of relationships between triggers and needs, indicating that multiple triggers and needs can be activated simultaneously in a single situation. However, it is important not only to focus on which needs are activated by the triggers but also to recognize that the other classified needs could serve as a resource by consciously controlling them. For example, if the need for status in a paramedic operation is not satisfied by the gratitude of a patient, the paramedic, who is aware of this need, could seek out colleagues to satisfy this need. Thus, our classification serves as an approach to minimize the negative consequences of threats by broadening one's view to other needs.

Conclusion

We offer a systematic classification of triggers and needs that explain threats. By integrating different disciplines of threat research, we provide a more consistent and structured understanding of the threat concept and understand the triggers (*when*) and mechanism (*why)* of the threat dimension in CHM in more detail. The reduction of the wide range of possible triggering events of threats enables an economic description, explanation, and reflection of the when of threats. Becoming aware of possible triggers can help to avoid or deal with threats. Even if individuals strive for positive self-views and this is a key motive of individuals striving, we show that needs with specific content are helpful to provide the understanding of when an event exactly triggers threats. Reflecting on the specific content of need is an approach for coping with threats as well. By referring to roles, we enable the explanation of person- and situation-specific differences in threats and offer the possibility of systematically describing and explaining threats as a specific dimension of stress.

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Study 2

Threat Stresses Everyone: Triggers and Needs in Threatening Events of Different Professions

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Threat Stresses Everyone: Triggers and Needs in Threatening Events of Different Professions

Abstract

Threats are a new and scarcely studied stress dimension in research of *Challenge-hindrance models (CHM*, Tuckey et al., 2015). However, while it is quite evident that threats are the stress dimension with the most serious consequences compared to challenges and hindrances, an overview of triggers (*when*) and an understanding of the mechanism (*why*) of threats is lacking. Two theoretical threat approaches perceive threats as a type of stress, as well: *Stress-as-offence-to-self theory (SOS)* and *Model of threat response (MTR).* In this study, we compare and integrate insights of SOS and MTR and generalize theoretical postulates regarding threats across different professional groups facing diverse work events. In an interview study with police officers (*N* = 20), paramedics (*N* = 10), teachers (*N* = 10), and employees of the German federal employment agency (*N* = 8), we confirm, in SOS and MTR identified, triggers and needs as relevant for threats. The identification of triggers and needs enables a differentiated and systematized description, explanation of threatening situations.

Keywords: threat, need frustration, triggers, professional roles

Threat Stresses Everyone: Triggers and Needs in Threatening Events of Different Professions

Paramedics, police officers, firefighters, teachers, administrative employees – as different as these professions seem to be, they have something in common: employees in all of those professions experience threats at their work (e.g., Feltes & Weigert, 2018; Jahn, 2020; Zeinlinger, 2020). Individuals do not only experience threats in events in which they are exposed to physical danger (e.g., spitting or biting attacks, Schmoll, 2018) but also as a result of disrespectful interactions with other people (e.g., being insulted, being ignored, being hindered in their course of action, Duran et al., 2018), or due to their own wrongdoing (e.g., insufficient skills, Jacobsson et al., 2015). Regardless of how different professions and threat-triggering events are, threats are accompanied by a wide range of negative consequences for health, motivation, and performance (Petriglieri, 2011; Semmer et al., 2019). To identify approaches for preventing and dealing with threats, it is important to understand *when* and *why* individuals of different professions experience threats.

Threats are distinguished from challenges and hindrances as a new dimension in *Challenge-Hindrance Models (CHM)* of stress (Tuckey et al., 2015). Even though threats have more serious consequences (e.g., emotional exhaustion) than challenges and hindrances (e.g., Searle & Tuckey, 2017), triggers and mechanisms of threats are scarcely studied in CHM research (Horan et al., 2020) However, threats are a topic of interest in multiple disciplines of psychology besides CHM (e.g. stereotype, Fingerhut & Abdou, 2017; identity, Petriglieri, 2011; self-regulation vanDellen et al., 2011). Approaches that consider threat as a type of stress, similar to CHM, are *Stress-as-Offence-to-Self theory (SOS*, Semmer et al., 2019) and *Model of Threat Responses (MTR,* Petriglieri, 2011). Both approaches, SOS and MTR, postulate different events as potential threat triggers. For example, while Semmer et al. (2019) postulate perceptions of insufficiency and disrespect as triggers of threats, Petriglieri (2011) reports threats posed by devaluating judgments or traumatic environmental factors. Why such events are appraised as threats is explained by referring to frustrated needs (e.g., Ntoumanis et al., 2009). For example, Semmer et al. (2007) explain that disrespectful behavior of others acts as a threat via a frustrated need for relatedness, or even Petriglieri (2011) refers to a frustrated need for relatedness by

explaining threats based on interactions that question the allegiance in a group. Therefore, SOS and MTR both provide insights into possible triggers (*when*) as well as indications of needs as mechanisms (*why*) of threats, which is a new stress dimension in CHM.

In this study, we first compare the two approaches and systematize triggers and needs. Furthermore, we integrate findings from associated research areas such as needs research to understand the *when* and *why* of threats in more detail, which can be transferred to threats as a stress dimension in CHM. We investigate in an interview approach, whether theoretically described triggers and needs can be generalized across work situations of different professions. We interviewed police officers, paramedics, teachers, and employees of the German federal employment agency to compare threats in professional groups with contrasting work environments (e.g. emergency teams face critical adversity situations often putting life and limb in danger, Semling & Ellwart, 2016; other professionals dealing with the public, such as teachers or service employees, perform their work from the office, the classroom, or behind the counter, Chebat & Kollias, 2000).

This study extends previous research of *when* and *why* individuals experience threats in several ways: First, by comparing SOS and MTR and integrating insights of further associated research areas (e.g., need research), we provide a systematized overview of possible threat triggers. Thus, we contribute to CHM research by understanding the *when* of threats as a new stress dimension. Second, by taking needs in the threat mechanism into account, we do not only specify the explanation of the *why* of threats but also provide action points for needs satisfaction and thus for preventing or coping with threats. Third, by providing field observation data, we generalize the relevance of triggers and needs across different professional groups and ecologically validate the theoretical claims in the field.

Threats as a New Dimension of Stress in CHM

In CHM research, Tuckey et al. (2015) introduced threats as a new stress dimension, in addition to challenges and hindrances. According to this, individuals can appraise events not only as challenges (i.e., the potential for mastery) or hindrances (i.e., hindered goal attainment) but also as threats (i.e., harm to the self). Tuckey et al. (2015) refer to emotional demands or customer-related demands as

triggers of threats. However, some studies in CHM research indicate demands such as goal difficulty, which are otherwise associated with challenges or hindrances, are also appraised as threats (e.g., Espedido & Searle, 2018). While it is quite evident that threats are the stress dimension with the most serious consequences (Searle & Tuckey, 2017), an overview of triggers (*when*) and an understanding of the mechanism (*why*) of threats, the new stress dimension in CHM, is lacking.

While threats are a topic of interest in many psychological research areas (e.g. stereotype, Fingerhut & Abdou, 2017; identity, Petriglieri, 2011; self-regulation vanDellen et al., 2011), two theoretical threat approaches perceive threats as a type of stress: SOS (Semmer et al., 2007; 2019) and MTR (Petriglieri, 2011). On the one hand, SOS (Semmer et al., 2007; 2019) is one of the most established stress theories in modern organizational life and describes stress as a threat to the self. On the other hand, MTR (Petriglieri, 2011) takes on an identity perspective and specifies how individuals respond to threats to their identity. Nevertheless, Petriglieri (2011) frames threat as a type of stress by describing triggers and stress appraisal processes. To understand the *when* and *why* of threats as a stress dimension in CHM and thus, to get insights for dealing with and preventing threats, we compare these two approaches in this study, first.

The *When* of Threat Experiences – Triggers of Threat

Both SOS and MTR distinguish triggers of threats (see Table 1). The SOS theory (Semmer et al., 2007; 2019) differentiates perceptions of *insufficiency* and *disrespect* as triggers. The perception of insufficiency results from the fact that individuals fail due to a lack of their own abilities and skills. That means triggers are seen internally (i.e. in the individual himself). The perception of disrespect originates from events with social interactions. These interactions can manifest in a wide range of behaviors, for example, rude feedback, making someone lose face in the presence of others, ignoring someone, lacking social support, or in a more indirect way for example by the assignment of unnecessary tasks or by providing inadequate technology (Semmer et al., 2007). Within the framework of the SOS (Semmer et al., 2007; 2019), there are internal triggers, in which individuals perceive

personal failure due to their own skills, and external triggers, in which individuals perceive disrespect due to interpersonal behavior signaling a lack of appreciation.

Table 1

Comparison of triggers of threats in SOS and MTR

	SOS (Semmer et al., 2007; 2019)	**MTR** (Petriglieri, 2011)
Internal	Insufficiency due to - inadequate performance and internal attribution - inadequate moral behavior	An individual's actions that are inconsistent with the meanings that the individual associated with a specific identity
External – interpersonal behavior	Disrespect due to evaluations by others that are contained in - interpersonal behavior - work design - task assignments - stressful conditions	Interpersonal behavior - that questions the individual's allegiance to the group - that express devaluation
External – contextual factors		External events - that are generally traumatic, - that occur randomly - that are unique in that they are independent of specific individuals or groups

Similar triggers of threats are also presented by Petriglieri (2011) in MTR. Even though it focuses on the responses of threats, Petriglieri (2011) describes triggers as well as appraisal processes of threats. Threats also stem from internal factors, such as the individual's own actions, and from external factors in terms of social interactions that question the allegiance to a given group or express devaluation. Unlike SOS theory, however, Petriglieri (2011) also postulates the *material world* such as a disabling car accident that cuts a career as a trigger of threats. This kind of trigger "occur[s] randomly, and [is] unique as threat sources in that [it is] independent of specific individuals or groups." So the trigger material world is external, without relating the cause to another person's actions. Instead, the threat originates from contextual factors itself.

According to SOS (Semmer et al., 2019), threats can also arise from contextual factors such as work or task design, but only if "they are appraised as being caused by others who could, and should have prevented them" (p. 2, Semmer et al., 2020) so that they are perceived as disrespectfully. For example, police officers reporting problems with poor-quality equipment (Violanti et al., 2017) may see the cause of this, in the failure of the police organization to take care of adequate equipment. This is perceived as disrespectful because police organizations could prevent the problems resulting from poor-quality equipment (cf., Semmer et al., 2020). Petriglieris' (2011) category of the material world does not cause threats on the fault of another person. Rather, as postulated in general stress research, the failure to perform effectively is the cause of threats (cf. Pindek & Spector, 2016). Thus, in the example from above, police officers might not attribute poor-quality equipment to organizational incompetence, but rather perceive an obstacle to performing effectively. This idea of insufficient performance fits with the SOS trigger insufficiency (Semmer et al., 2019). However, in Petriglieris' (2011) trigger material world, the cause of insufficiency is not attributed internally to an individual's own skills, but externally to contextual factors. Therefore, in this paper, we distinguish two forms of insufficiency: *experience of personal failure*, describing the own wrongdoing because of a lack of skills or abilities, and *hindered action regulation,* describing the wrongdoing because of being externally hindered by contextual factors.

Both SOS (Semmer et al., 2019) and MTR (Petrglieri, 2011) agree that threats can emerge from interpersonal behavior. However, behaviors of others signaling disrespect are multifaceted and reach from making someone lose face in the presence of others, ignoring someone, lacking social support, to providing inadequate technology (e.g., Semmer et al., 2007). For example, Semmer et al. (2007) distinguish direct (e.g., rude feedback) and indirect behaviors (e.g., assignment of unnecessary tasks). Petriglieri (2011) attempts to subdivide interpersonal behaviors whether they come from the individual's ingroup (group members) or an outgroup (intergroup conflicts). Even though both approaches sensitize to the fact that disrespect can be found in a variety of behaviors, this classification lacks a basic understanding of when a behavior appears disrespectful.

Respect research provides a classification of respectful behavior in terms of content. It examines the quality of interpersonal behavior and divides respect into horizontal and vertical dimensions (Decker & Van Quakebeke, 2015; Grover et al., 2013[1]). The vertical dimension of respect describes an unconditional guaranteed and dignified treatment of the counterpart (e.g., talking to each other politely, no insults). We call this relationship-related disrespect, as it concerns behavior in the interpersonal relationship following human rights (Grover, 2021). The horizontal dimension of respect refers to a treatment that is related to the counterparts' expertise and excellence in terms of the performance or effort (e.g., being assigned tasks by the boss that are inappropriate to the professional role), termed performance-related disrespect. Therefore, in this paper, we distinguish two forms of disrespect: relationship- and performance-related disrespect. This content-based subdivision helps not only to localize the source of (dis)respect but also provides an approach for preventing and dealing with threats.

In addition to these four trigger categories, Petriglieri's (2011) "material world" category, which can also include factors such as experiencing cold or heat, raises another specific trigger: physical danger. This seems to be an important category in the daily work of emergency teams. For example, police officers are spat on or bitten while on duty (e.g., Schmoll, 2018).

Thus, after integrating SOS and MTR, we can distinguish five triggers of threats (see Figure 1). Even if the everyday work of occupational groups differs significantly (e.g., while emergency professionals encounter critical adversity situations dealing with dynamic, complex, ambiguous, and uncontrollable situational characteristics, other professionals sit in their office, classroom, or behind the service counter while dealing with the public such as teachers or service employees), we found

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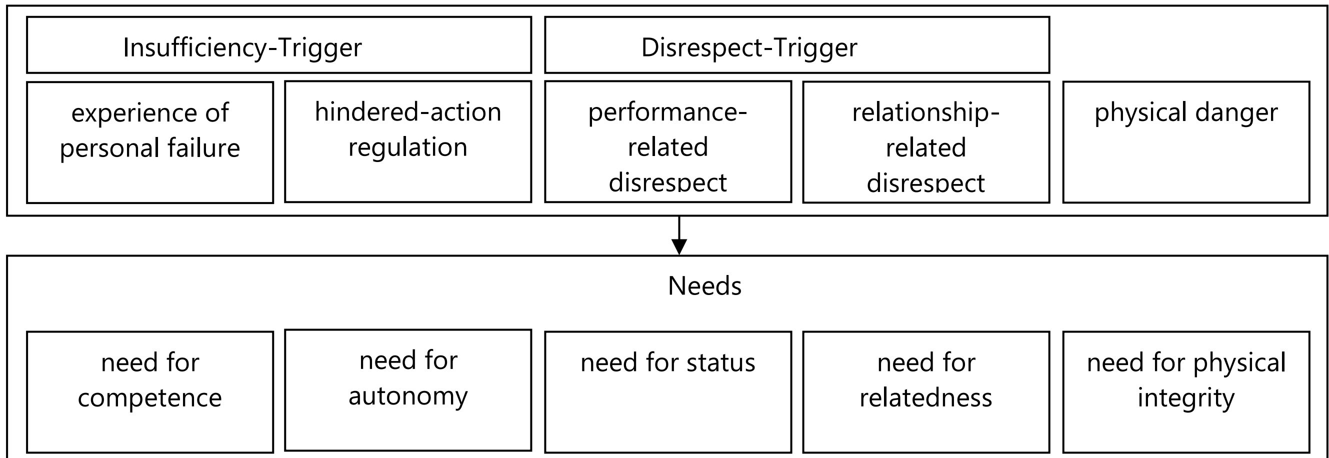
[1] Respect research uses different terms to describe both dimensions of resepect. For example, while Decker and Van Quakebeke (2015) talk about horizontal and vertical respect, Grover et al. (2021) use appraisal and recognition respect.

evidence that different professional groups face stressful events that relate to the postulated trigger categories.

Figure 1

Classification of triggers and needs



Experience of personal failure. Research indicates that emergency professionals experience personal failure in or after their emergency missions in critical adversity situations. Critical adversity situations are characterized by complexity, dynamics, and time pressure, and pose undefined and complex demands on teams (i.e., ill-defined problems, Wildman et al. 2012). These situations pose special challenges to teams. Jacobsson et al. (2015) report firefighters perceiving "insufficient skills" in these situations, which in turn result in an inefficient rescue operation. Other studies report that handling critical adversity situations is often associated with doubts about performance and feelings of failure (Gudjonsson, 1984; Nedzinskas et al., 2020). Moreover, other professional groups dealing with the public experience failure. Employees who take on a role between organization and customer have to fulfill organizational and customer expectations (e.g., service employees). Not unusually, these expectations are contradictory, so employees cannot meet either (Chebat & Kollias, 2000) and thus experience failure.

Hindered action regulation. For insufficiency by feeling hindered in their action and goal accomplishment, we found also some evidence. For example, firefighters report they feel hindered in

their rescue operations because "Technical problems … in the rescue vehicles delayed starting the water pump which in turn delayed the rescue." (p., 102, Jacobsson et al., 2015). In addition, other professional groups apart from the emergency sector are also hindered during their work due to a lack of resources and limitations. For example, employees in psychiatry feel hindered by the increased documentation effort, which is prescribed by the government, and experience fear of poorer patient care (Rauch, 2019). Employees feel hindered in carrying out their profession-related activities, such as taking care of the patients' needs as a psychotherapist. They are hindered in their actions but do not explicitly perceive the responsibility of others as the cause of this situation.

Relationship-related disrespect. Numerous media report disrespectful remarks and behavior, such as insults or obscene gestures, towards emergency professionals (Feltes & Weigert, 2018) that represent relationship-related disrespect. Moreover, other professionals also experience an unworthy treatment of themselves, i.e., a treatment that violates social norms of mutual respect (Sommovigo et al., 2019) that also fits the relationship-related disrespect trigger. For example, train conductors (Siegert, 2017), teachers (Jahn, 2020), employees of the public order office (Zeinlinger, 2020), and many more professional groups are verbally attacked, insulted, and ridiculed during their work (e.g., Jaremka et al., 2020; Pulz, 2019; Schmidt, 2019).

Performance-related disrespect. We find evidence for performance-related disrespect in different professional groups. For example, police officers complain of reprimands or lack of support from supervisors after their mission (Anshel, 2000). They feel that they performed well at high risk and danger but do not receive the recognition they expect from their supervisors concerning this effort. Furthermore, there are also examples of other professional groups not seeing their performance valued. For example, prison officers perform a job that has a high social benefit but is poorly paid and has little chance of advancement (Hombach, 2019). Scientists who put much effort into their research work have to contend with a high rejection rate of their research (Jaremka, 2020). The laboriously prepared lessons of teachers receive no attention; instead, they struggle to establish teaching discipline (Berthaler, 2018).

Physical danger. While emergency response teams face threats to life and limb daily (e.g., Duran et al., 2018), other professionals such as train conductors and teachers increasingly face physical attacks (e.g., Jahn, 2020; Siegert, 2017).

As different as the work contexts of these professional groups are, there is evidence that they all struggle with insufficiency based on the experience of personal failure and hindered action regulation, as well as with performance- and relationship-related disrespect, or physical danger. However, the research presented here illustrates only that various occupational groups experience events that fall into our trigger categories. It is uncertain whether these also act as threat triggers. Therefore, we examine the ecological validity of triggers in real-life settings.

Research Question 1: Are the experience of personal failure, hindered action regulation, relationship- and performance-related disrespect, and physical danger threat triggers across different professional groups?

The Why of Threat Experiences – Basic Human Needs

Why individuals feel threatened in the face of these triggers is due to appraisal processes, following CHM research as well as Semmer et al. (2007) and Petriglieri (2011). Individuals appraise triggers as threatening. While a variety of determinants of appraisal processes are discussed in general (e.g., attachment, beliefs, values; Ellsworth & Scherer, 2003), frustrated needs (e.g., for competence, relatedness, or autonomy) are cited as important determinants concerning threats (Ntoumanis et al., 2009). For example, Quested et al. (2011) show that frustration of the needs for competence, relatedness, and autonomy (i.e., needs that are postulated within the framework of *self-determination theory, SDT*, Deci & Ryan, 2000) is associated with threat appraisals in dancers before a solo performance, and satisfaction is associated with challenge appraisals.

In the context of SOS, frustrated needs are also used to explain threats. While Semmer et al (2019) refer to a global need for positive self-view, Semmer et al (2007) include needs for competence and relatedness, both postulated as needs in SDT (Deci & Ryan, 2000), to explain threats. The *need for competence* describes an individual striving to be effective in the achievement of desired outcomes

(e.g., to have moral strength, to be competent, to fulfill ideal self-representations). For example, if a paramedic is unable to help the patient, he may perceive himself as incompetent, and thus his need for competence is not satisfied. Second, the *need for relatedness* describes an individual striving to belong to a given group (i.e., to have close relationships with others). For example, a manager who works part-time might not be invited to a colleague's birthday and feels excluded; thus, the need for relatedness is not satisfied. If individuals are not able to satisfy these specific human needs, for example, by the perception of their own wrongdoing or being excluded by others, they experience threats (Semmer et al., 2007).

Also in the MTR (Petriglieri, 2011), we find the explanation of threats in terms of needs such as relatedness. For example, Petriglieri (2011) describes that social interactions trigger threats if they "question the individuals' allegiance to the group and, hence, limit his or her ability to be a group member in the future" (p. 647, Petriglieri, 2011). The striving to belong to a group, as described by the need for relatedness, is thus addressed in MTR. Furthermore, Petriglieri (2011) mentions that the worth and standing of a person in a given group or the worth of a group compared to other groups is crucial for threat experiences. This striving for worth reflects a *need for status*, which is a social need in addition to the need for relatedness (Griskevicius & Kenrick, 2013). In the *Dual pathway model of respect*, Huo et al. (2010) differentiate both social needs by describing two pathways through which respect shapes attitudes and behavior: Whereas the need for status describes the degree to which others value and appreciate them resulting in social engagement, the need for relatedness describes the degree to which others like them resulting in personal well-being. Especially concerning the two forms of disrespect as triggers, the need for status could be a fruitful extension of the needs categories as determinants in the threat mechanism.

For the *need for autonomy*, which SDT postulates besides competence and relatedness (Deci & Ryan, 2000), we find no reference in SOS (Semmer et al., 2007) and MTR (Petriglieri, 2011). The need for autonomy describes an individuals' striving to have control of what happens to them and how to allocate resources. However, the fact that this need is related to threats is shown at least by the study

of Quested et al. (2011), who related the frustration of the three SDT needs relatedness, competence, and autonomy (Deci & Ryan, 2000) to threat appraisals, and their satisfaction to challenge appraisals.

Even though we find evidence of needs as important determinants in the threat mechanism, there is a lack of systematic investigation. Semmer et al. (2007) and Petriglieri only draw on needs at a theoretical level to explain threats, and studies such as Quested et al. (2011) do not analyze the role of needs for threats, but rather focus on outcomes and discuss satisfying needs as a general resource for coping and dealing with stress, rather than specifically on threats. In this study, we investigate if these four needs for competence, relatedness, autonomy, and status are key determinants in the threat mechanism in real-life settings. Therefore, we do not only specify the explanation of why threats occur but also ecologically validate theoretical claims.

Research Question 2: Do professionals refer to basic human needs such as competence, relatedness, and autonomy to explain their threat experiences?

Methods

Participants

The sample included 20 police officers, 10 paramedics, 10 teachers, and 8 people working in the German federal agency for employment. All participants were contacted through personal contacts and voluntarily registered for participation. Police officers from four different police stations with five different ranks (e.g., police commissioner, detective commissioner) took part in the interviews. The 4 women and 16 men were between 23 and 61 years old (M = 38.50, SD = 12.70). Their professional experience was between 2 and 40 years (M = 18.27, SD = 13.90). Six women and four men from paramedic services participated in the interviews. They were between 21 and 31 years old (M = 25.70, SD = 2.50) and had a professional experience of 0.5 to 10 years (M = 4.80, SD = 2.50). While four of the paramedics worked full-time, six worked part-time. The participating teachers taught students at four types of schools (grammar school, secondary school, comprehensive school, vocational college). The eight women and two men were between 30 and 61 years old (M = 46.10, SD = 13.30). They worked as teachers for between 3 and 30 years (M = 17.10, SD = 11.70). Six participants working at the federal

employment agency were female and two were male. They were between 31 and 53 years old (*M* = 9.50, *SD* = 5.30) and worked in their current position between 5 and 19 years (*M* = 43.60, *SD* = 9.10).

Data collection

Data were gathered using the critical incident technique (Flanagan, 1954), in which participants reported a threatening event they had experienced. Every participant was asked the same standardized, structured questions (German language). In the initial part of the interview, we asked the participant to think of an event in which they felt questioned during their work. Then, they were asked to describe the event in more detail, referring to situation characteristics and the presence of other people. The description was intended to help the participant recall the event as vividly as possible.

In the main part of the interview, first, we asked the participant to identify triggers of threats in the event described. This was an open-ended question asking participants to reflect on triggers for their threat experiences. This open-ended question was followed by the specific interrogation of our five identified triggers (e.g., Participants were asked “To what extent do you perceive lack of appreciation of your performance as a trigger?”). We include this specific interrogation to provide a separable interview section by allowing interviewers to consciously insert their knowledge of the deductive categories and therefore reduce the influence of the interviewer in other sections of the interview. Second, we asked about the participants' assumptions as to why exactly they felt threatened in the situation. Here there was again an open-ended question in which the participants reflect on why they felt threatened. This was followed by the specific interrogation of the identified needs (e.g., to what extent did the feeling of not being competent play a role in the situation?).

In the final part of the interview, we asked questions about direct reactions (behavioral, cognitive, and affective), longer-term consequences of the threats as well as resources that helped participants to deal with the threats. Interviews lasted approximately 30 to 45 minutes and were recorded to allow transcription later.

Data analysis

The analysis of the data started with the transcription of the interviews. Two graduate research assistants did the coding. They were familiar with the basic theoretical approaches (CHM, SOS, and MTR). Before coding, they were given a list of triggers and needs (see Figure 1) and corresponding descriptions similar to those presented in the theoretical section of this paper. In addition to the four needs presented above, we added a fifth need category, the *need for physical integrity,* to include the basal physiological drive humans have (Maslow, 1943). Thus, we integrate the physical level not only in the trigger categories but also in the needs categories (see Figure 1). Both coders were advised that situational perceptions and evaluations can vary from individual to individual and were instructed to focus on what is given in the statements instead of interpreting.

Table 2

Interrater reliability (Cohen's Kappa, κ) of two raters in the coding of triggers and needs in the interviews

Trigger/Need		EOF	HAR	PRD	RRD	PHY	COM	AUT	STA	REL	PHI
Paramedic	κ	1.00	.83	.75	1.00	1.00	1.00	.71	1.00	1.00	1.00
Police officer	κ	.75	.91	.86	.73	1.00	1.00	1.00	.89	1.00	1.00
Teacher	κ	1.00	.67	.75	.89	1.00	.83	1.00	.89	.80	1.00
Employee of federal employment agency	κ	1.00	.83	.75	1.00	1.00	1.00	.71	1.00	1.00	1.00

Note: EOF = experience of failure, HAR = hindered action regulation, PRD = performance-related disrespect, RRD = relationship-related disrespect, PHD = physical danger, COM = need for competence, AUT = need for autonomy, STA = need for status, REL = need for relatedness, PHI = need for physical integrity.

Both coders independently started a first coding round of the reported threatening events according to the five triggers and five needs. MAXQDA was used for coding. The interview sections in which the given trigger and need categories were specifically asked were masked out and only the interview sections with the open-ended questions were coded. As coding units, coders could code entire sentences or individual phrases. After an initial round of coding, each coder offered an example of each trigger and need category and explained their categorization to ensure a common understanding of the trigger and need categories. Uncertainties and discrepancies were discussed.

Both coders then started the second round of coding. To determine interrater reliability between coders, the overlap between coded triggers and needs in the threat situations, not units were calculated (see Table 2).

Results

In 48 interviews with police officers, paramedics, teachers, and employees of the federal employment agency, we categorized five triggers and five needs (see Table 3). Professionals refer to needs for competence, autonomy, status, relatedness, and physical integrity to explain their threat experiences. Experience of personal failure, hindered action regulation, performance- and relationship-related disrespect, and physical danger were triggers of professionals' threat experiences. Every described event contained triggers and needs in more than one trigger or need category.

Reported Triggers in Threatening Events of Different Professional Groups

As assumed, hindered action regulation and experience of personal failure as forms of insufficiency as well as relationship- and performance-related disrespect were coded as threat triggers across different professional groups in the interviews. Furthermore, the physical danger was another trigger that we coded as a threatening event across all professional groups.

Relationship-related disrespect was the most frequently coded trigger. Statements in which interviewees talked about not being met with standards of interpersonal interaction were assigned to this trigger. Across interviews with all professional groups, this trigger was coded. For example, professionals expressed that someone "got very loud and almost yelled" at them, "said things that were not nice" or "totally ran their mouths".

Performance-related disrespect was coded for statements that referred to a lack of respect for an individuals' performance, excellence, or expertise. For example, a federal agency employee complained, "My performance was not seen, not even after the fact." A paramedic reported, "We want to help and we are attacked." The performance and effort of helping were not valued here. Police officers also expressed that their performance and effort were not valued or respected, for example, "... that he completely questioned my action, even though his client admitted that he jaywalked and I was

right and he kept delaying action." or "What does he want from me? I haven't done anything wrong." In interviews with police officers, performance-related disrespect was coded less frequently than in the interviews with other professions.

Hindered action regulation was coded trigger for statements that express an individual experiencing threat due to contextual factors. Individuals of all professions refer to complex, dynamic, ambiguous situations, in which they did not know how to at. For example, police officers and paramedics felt hindered in their actions by situational characteristics of the emergency situations they face in their daily work (e.g., "However, the situation was just, you are just two, outnumbered, aggressive drunk people around you, where you never know what will happen in the next moment. In addition, verbal pressure was always applied."). Federal agency employees feel threatened, for example, "because we fail due to bureaucratic obstacles." Teachers are hindered in their work by being confronted with complex situations, in which they do not know what is the right action to take (e.g., " But it was not so easy to leave the class alone, because there were also difficult children in there and because I didn't know them that long. But I thought if something happens out there and you think you can't leave a 10th-grade class alone, that can't be, I have to trust them that far.").

Experience of failure was coded when interviewees expressed that they had exhibited wrongdoing based on their skills and abilities. For example, one paramedic expressed, "I failed to do that at all, somehow, in hindsight, and I felt that I had approached the mission well. We had come in well and then it escalated." In the case of employees of the federal employment agency, there was also the admission of having made mistakes, which triggered the threat "That was, unfortunately, the completely wrong procedure because then she got foxy." In the interviews with teachers, the experience of failure was more frequently coded as a trigger than in the interviews with other professions. One teacher reported a situation in which he failed: "I got stuck, so to speak, in the attempt to include this student in the lesson and to carry out the lesson anyway." Or "That was also truly a super start, first day in the course, first day in the teacher training and that is how it started. I explicitly resolved before the lesson not to appear so authoritarian and to present myself slightly more

Table 3

Sample statements (translated from German) and frequency of trigger/target coding in interviews (in %) from a sample of N = 48 (n = 10 paramedics, n = 20 police officers, n = 10 teachers, n = 8 employee of the federal agency for employment)

	Paramedics (n = 10)		Police officers (*n* = 20)		Teachers (*n* = 10)		Employee of federal employment agency (*n* = 8)		Total (*N* = 48)
Trigger	Sample statement	%	Sample statement	%	Sample statement	%	Sample statement	%	%
EOF	"I failed to do that afterward, and I thought I'd handled the mission well."	20	"Then, we kept our distance instead of providing safety... that is getting information would have been the right thing to do."	20	"However, what truly burdened me was that we always have to lock and unlock all the doors and when I went after the boy I noticed that I had left my key on the desk."	30	"Unfortunately, that was the completely wrong thing to do, because then she got truly furious."	38	25
HAR	"There is so little room in the car, there is hardly anything you can do."	40	"Sure, we have the gun, but we cannot use it at first because it is illegal."	55	"I thought: are you going back to get your key, so that it doesn't get left there alone, or are you going after the boy?"	20	"The situation was right after my parental leave. I had been out for 5 years and the technology had changed so from paper to digitalization. For me, the training period was a tough one."	75	48
PRD	"He disregarded and ignored the qualification, which is there with two trained rescue professionals"	50	"He does not see my performance."	35	"I would not fulfill the role of a class teacher well because I would probably forget an appointment once."	40	"They did not see my performance, not even in the aftermath."	50	42
RRD	"As a reaction, she became louder and louder and insulted us with the worst expressions."	40	"Be careful, little doll, you do not have to act like that; you are not allowed to tell me anything."	40	"The student not only exposed me but also insulted me."	100	"It was the way she talked to me. It was truly peasant."	88	60
PHD	"Anyway, he was furious and sprinted towards me, his shoe in his hand."	60	"Then, one of them resisted and bit my colleague."	65	"Eventually, the student took a knife out of his pocket."	30	"...and was about to smack me when my colleague came through the inter-door."	25	50

Needs									
COM	"The competence was completely undermined."	20	"...that I'm not good enough."	40	"I was afraid to risk my position as a class teacher, that it would be revoked due to lack of competence that was truly difficult."	60	"I want to be good in my role."	50	42
AUT	"...that you have a more controlled situation."	40	"...you always want to be in control."	60	"I did not want to let them take over control of the class without realizing that I did not have the upper hand at all."	50	"I feel threatened in my role because I can no longer live it the way I would like to."	88	58
STA	"...this hierarchical thinking and he's just the doctor."	50	"...but it would be nice if my work were appreciated."	45	"I was also insulted in my honor, I truly must say."	90	"There was no appreciation at that moment."	100	65
REL	"...that they always express that you're a volunteer, you're not part of us."	20	"I'm not the kind of person who needs to be the center of attention but wants to be liked."	15	"I think school works through harmony."	40	"...because I always try to be transparent and do right to everyone."	13	21
PIN	"The first concern is whether the safety of myself and my colleague can be guaranteed."	30	"...to resolve the situation without causing any physical harm anywhere."	30	"I was afraid that something negative could happen to me."	10	"As for choleric personalities, especially if they are men, they are a threat to me."	25	25

Note: EOF = experience of failure, HAR = hindered action regulation, PRD = performance-related disrespect, RRD = relationship-related disrespect, PHD = physical danger, COM = need for competence, AUT = need for autonomy, STA = need for status, REL = need for relatedness, PIN= need for physical integrity.

friendly. Then, the first thing I did in that class sent a student out instantly, so much for good intentions."

Every professional group interviewed reported *physical danger* as a trigger. For example, one teacher reported "I was shocked that young adults with a high potential for aggression dared to get involved in the school setting, which is supposed to guarantee safety for all children. It is supposed to be a safe space for kids and that was extremely disturbed that day." or "as soon as he came in, he threw his backpack against the window, kicked the chair over." Police officers and paramedics dealing with emergencies experienced physical danger more often than the other two professions working from the office. They are frequently threatened with knives, spit on, bitten, put in headlocks, etc.

Reported Needs in Threatening Events of Different Professional Groups

By reporting threatening events, the interviewees referred to frustrated needs in different ways. While some described what they would have liked (e.g., "Everybody wants to be valued, after all"), others reported their negative feelings (e.g., "I just felt inferior.") in the situation.

The *need for status* was the most often coded need across all interviews. The frustrated need for status was coded in statements describing a low standing or worth in front of others (i.e., an individual feels less appreciated by others). For example, a police officer reported "There is human dignity offended, the value of the person, the police officer becomes the defendant. Your dignity is trampled with feet. I do not even wish to be respected, but at least an appreciation and acknowledgment, for what I do." A paramedic expressed himself with the words, "I felt belittled, degraded... Just when being confronted with the statement 'you are only the drivers. I am the doctor'." Similar statements depicting the lack of status of a person are also found in the interviews with teachers and employees of the federal employment agency. One employee of the federal employment agency remarked, "You think that you are the last Harry here at the Job Centre... You are worth nothing." Overall, a frustrated need for status was more often coded in the interviews with teachers and employees of a federal employment agency than in interviews with paramedics and police officers.

The *need for autonomy* was another often coded need. Statements that described a failed striving to have control of what happens to them and how to allocate resources were coded as frustrated need for autonomy. Employees of the federal employment agency, teachers, paramedics, and police officers all expressed feelings of "helplessness" or lamented that they could not be "in control." The need for autonomy was coded particularly frequently in the reported events of a federal employment agency employee (more often than in the other professional groups).

Statements describing feelings of ineffectiveness in achieving personal goals were mapped to the *need for competence*. For example, a teacher reported, "I did not feel very competent, and I blamed myself for a long time there." Federal agency employees also reported failed goals; for example, "I want to be good at my role, but in this situation, it does not work." A paramedic reported, "I think it is important to me, not only in *my* work but also that other people believe in my abilities." In the interviews with paramedics, a frustrated need for competence was less often coded than in interviews with other professional groups.

The frustrated *need for relatedness* was coded when individuals failed to have close relationships with others. Paramedics reported feelings of "just not feeling like you belong...that you're always shown, you're volunteers, you do not belong to us." Similar comments are found among the other professional groups. A police officer lamented "Actually, we're a team, but that was more of an ‘us’- and ‘you’-thing that she conveyed to us in the situation.” In the interviews, the need for relatedness was coded as lesser than the other needs.

Every professional group interviewed reported a frustrated *need for physical integrity*, that is, a desire to get out of the situation without physical harm. For example, a teacher reported "I was afraid that something negative could happen to me" or paramedics expressed "So the first thought as soon as you realize something like that is to ensure the safety of myself and my colleague."

Discussion

Today in our modern world, we are not confronted with the saber-toothed tiger, yet individuals from a wide range of professions report threats during their work (e.g., Feltes & Weigert, 2018; Jahn, 2020; Zeinlinger, 2020). We identified the experience of personal failure, hindered action regulation as insufficiency trigger, performance-related and relationship-related disrespect as disrespect trigger, as well as physical danger as another trigger of threats by comparing SOS (Semmer et al., 2007; 2019) and MTR (Petriglieri, 2011). Furthermore, we found evidence for five needs as potential determinants in the threats mechanism: the need for competence, autonomy, relatedness, status, and physical integrity. The results of our interview study confirm these five triggers and needs in threat situations of different professional groups. Therefore, we provide an overview of triggers (*when*) and an understanding of the mechanism (*why*) of threats, which can also be used to understand threats as the stress dimension in CHM in more detail.

By comparing SOS (Semmer et al., 2007; 2019) and MTR (Petriglieri, 2011), a new systematization of triggers resulted, which can be implemented as an overview of the *when* of threats in CHM. We differentiate between an internal and an external form of insufficiency triggers. Experience of failure is the internal form, in which the wrongdoing is attributed to a lack of skills and abilities. In hindered action regulation as an external form, the wrongdoing is attributed to contextual factors (e.g. limited resources). Our identified disrespect triggers are likewise external ones, but their origin is not in contextual factors but specifically in interpersonal behaviors. A similar differentiation already exists in the systematization of stressors in stress research. For example, McGrath (1983) distinguishes person-related stressors (e.g., inefficient action styles, lack of work experience, fear of failure) from material-technical (e.g., disruptions due to machine failure, noise, and heat) and social stressors (e.g., social conflicts with colleagues and superiors). Experience of failure fits into the category of person-related stressors, hindered action regulation to material-technical stressors, and both disrespect triggers to social stressors. Such a

systematization facilitates the description, explanation, and reflection of stressful or, specifically, threatening events and represents an approach for dealing with those events (Rynek & Ellwart, 2020).

We integrated findings from respect research and subdivided the range of possible disrespectful interpersonal behavior according to content distinguishing a performance- and a relationship-related form of disrespect. Relationship-related (dis-)respect refers to a (dis-)respect dimension that is normatively called for all interactions humans have with others (Grover, 2013) and refers to treating people following human rights (Grover, 2021). Performance-related disrespect is expressed by assessments of an individual's abilities and efforts. Differentiating these two respect dimensions indicate that threat potential does not only exists in commonly understood disrespectful behavior such as obscene gestures or bullying, but also in a lack of appreciation of the performance, excellence, and competencies. This fits the idea of the *Effort Reward Imbalance Model* (Siegrist, 1996), which emphasizes the balance between the effort that an individual invests and the rewards an individual gains. Appropriate appreciation of performance and effort is important for well-being and health.

Furthermore, we identified five frustrated needs as possible determinants in the threat mechanism on a theoretical level in SOS (Semmer et al., 2007) and MTR (Petriglieri, 2011). Empirically, we confirm that professionals refer to these five needs for competence, autonomy, status, relatedness, and physical integrity to explain their threat experiences. That needs have a significant impact on individual experience and action is also evident in motivation research (Deci et al., 2017) or earlier stress research (Rohmert, 1983), which postulate needs as mediating determinants in appraisal processes. Although SDT needs (i.e., need for competence, relatedness, autonomy, Deci & Ryan, 2000) are used to explain work-related behavior in occupational and organizational psychological research, in this study, we include further needs in the context of threats. In addition to the three SDT needs (Deci & Ryan, 2000), we identified the need for status and physical integrity as possible determinants in the threat mechanism, first on a theoretical

level (i.e., integrating insights from Dual Process Modell of Respect, Huo et al. [2010]), second in the interviews.

Theoretical Implications

Some implications can be derived from our study. First, by integrating the insights of SOS (Semmer et al., 2007; 2019) and MTR (Petriglieri, 2011) and relating them to other associated research fields (e.g. respect research) we strengthen the postulates of both approaches. Furthermore, we provide a systematized overview of possible threat triggers and thus contribute to a concise description and explanation of the threat dimension in CHM. Typical stressors that CHM research use as examples for the stress dimension of threats, are emotional demands, customer-related social stressors, or workplace aggression (Searle & Tuckey, 2017). Based on SOS (Semmer et al., 2007; 2009) and MTR (Petriglieri, 2011), we know that the risk for threats is rooted in more triggers. Furthermore, the diversity of triggers indicates that stressors, normally associated with challenges or hindrances dimension in CHM (Espedido & Searle, 2018), can also be appraised as threats. This is consistent with our finding that hindered action regulation is a separate trigger for threats.

Second, by linking needs to threat and CHM research and addressing the content of needs, we specify the understanding of the *why* of threats. So far, the content of needs has not been at the focus of threat research. By comparing insights from SOS (Semmer et al., 2007) and MTR (Petriglieri, 2011) and taking the insights of associated research such as the Dual process model of respect (Huo et al., 2010) into account, we strengthen the assumption of the needs-based mechanism as an explanatory approach to threat. Based on this finding, further studies can focus on the content of needs to improve the understanding of threats.

Third, by examining threat events among different professional groups, we highlight the relevance of the five triggers and five needs theoretically postulated by SOS (Semmer et al., 2007) and MTR (Petriglieri, 2011) to a wide variety of work contexts. Not only emergency workers but also teachers and employees of

the federal employment agency experience physical danger triggering threats. Likewise, emergency workers also experience threats triggered by disrespect and insufficiency experiences. Needs also have relevance across diverse professional groups underlying ecological validity in practical settings. The interview statements allow a behavior-based description of the theoretical postulated triggers and needs. This can be used to familiarise individuals with the triggers and needs, which is the basis for avoiding threats or ensuring better management. More practically, the interview statements could be used, for example, to develop a checklist that individuals can use to identify and reflect on triggers and needs in threat situations (see Practical Implications).

Practical Implications

The triggers and events that activate triggers are diverse across different professional groups, indicating that threat is a danger for everyone. The systematization of triggers and needs offers an approach for the systematic description, explanation, and reflection of threatening events and contains three important implications.

First, awareness of triggers helps to avoid threats. For example, triggers such as performance-related disrespect can be eliminated if individuals are made aware of these triggers (cf., Anshel, 2000). If supervisors know that their behavior has such a negative influence, they can interact more attentively with their staff. Respectful interaction is an approach to avoid disrespect as a trigger, e.g. internally in the team through a situation-appropriate, task-oriented feedback culture (Ellwart et al., 2016; Van Quakebeke & Felps, 2018). Our subdivision of disrespect triggers sensitizes that (dis-)respect do not only affects the equal treatment of individuals in terms of human dignity but also specifically affects the evaluation of performance (Grover, 2021). The danger for threat is therefore also in the assessment of performance, which is an important element in everyday working life.

Second, awareness of needs can help to deal with threats. We know from consulting and therapy approaches that a systematic description of a situation, rethinking the functionality of thinking patterns

and explanatory styles, helps to deal with stressful situations (Ellis, 1962). So self-reflection of one's own needs and goals and the self-critical comparison with the fit to the environment in specific situations (person-environment-fit) can be a promising approach for dealing with threats as well. For example, a Ph.D. student may feel threatened (i.e. have his role as a researcher questioned) if his conference paper is rejected. He might feel threatened because he feels incompetent (i.e., frustrated need for competence) or because he feels excluded from the research community (i.e., frustrated need for relatedness). Next, he realizes that the threat is because he feels excluded (i.e. frustrated need for relatedness). This offers an approach to reflect on possible reactions. Let us assume that the Ph.D. student's feeling of exclusion would normally lead him to avoid further contact with colleagues whose contribution to the conference is accepted. If the student becomes aware of this reaction based on the needs analysis (i.e., becoming aware that his need for relatedness is frustrated), he can specifically counteract the personal tendency of avoidance and seek social contact.

Third, the knowledge of multiple triggers and needs can also serve as a resource. If an individual feels threatened by the role of a Ph.D. student, accompanied by feelings of stress and negative affect, reflecting on having multiple roles (e.g., I am also a lecturer) may minimize threat experiences. Furthermore, our classification indicates that multiple triggers and needs can be activated simultaneously in a single situation. However, it is important not only to focus on which needs triggers to activate but also to recognize that the other classified needs could serve as a resource by consciously controlling them. For example, if the need for status in a paramedic operation is not satisfied by the gratitude of a patient, the paramedic, who is aware of this need, could seek out colleagues to satisfy this need. Thus, our classification serves as an approach to minimize the negative consequences of threats by broadening one’s view to other needs.

Limitations

The findings of the present study need to be considered in the context of the study's limitations. First, find limitations of the interview approach on the part of the participants. Interviews are self-reports that reflect on past events. In particular, this retrospection of past events can cause biases between emotions and thoughts experienced and reproduced (Coughlin, 1990). Furthermore, we interviewed a self-selected sample, limiting the applicability of findings to wider contexts (Heckman, 1990). The events reported were both situation- and person-specific. Personal characteristics (e.g., low self-esteem), attitudes (e.g., pessimistic mood), or states that were unrelated to the reported work events (e.g., having family conflicts) were not considered alternative triggers or moderators.

Second, we find limitations through our theory-guided approach. The interviewer was familiar with the categories in advance, so we cannot exclude the fact that the interviewer may lead interviewees into offering specific answers that correspond with the theoretical expectations. However, we included an explicit interview section in which the trigger and need categories were presented and interviewees were asked to assess the extent they think these categories have been part of their threat situations. With this section, we intended to allow the interviewer to reveal his or her knowledge of the categories in a guided way. These sections were excluded from the coding.

Thirdly, there is the question of how separable and distinct the need and trigger categories are. Even though we were able to achieve good interrater reliability in our study, it is certainly controversial whether the interview statements can be assigned unambiguously to the categories. Situational perceptions and evaluations are person-specific, which surely influences the category assignments. Nevertheless, our study provides empirical hints for the theoretically postulated trigger and need categories and gives an overview of possible determinants in the threat mechanism, which are in any case used for individual reflection on threat situations (see Practical Implications).

Fourth, the exhaustiveness of our categories can be put into question. Not only the interdisciplinary threat research, which examines threats in various events and contexts (Leary et al., 2009) but also the diversity in needs research suggest that further trigger and need categories for threats are conceivable. For example, Ashforth and Schinoff (2016) postulate 14 different motives that influence human action. Based on CHM, we have used threats as a stress dimension and thus refer to stress-related approaches. With this approach, we provide several triggers and needs that are manageable and, similar to existing needs approaches (e.g. SDT), can be used to explain a variety of individuals' experiences and behaviors (cf. Schüler et al., 2019).

Future Directions

Our results yield some implications for future research. In controlled laboratory studies, triggers and needs should be operationalized to make causal statements of the trigger-need-interplay. For example, Rynek and Ellwart (2019) show that performance-related disrespect manipulated by feedback from the experimenter and hindered action regulation manipulated by situational characteristics (e.g., time pressure) threaten people in their role as firefighters in the experiment. Performance-related disrespect proves to be a trigger for threats. Future research should focus on similar experimental investigations that, in addition to the manipulation of triggers, should include the determination of participants' needs investigating the mediating role of needs in the threat mechanism.

In addition, we differentiate between different needs at the content level and argue that needs help to explain why triggers are perceived as threatening. Blincoe and Harris (2011) confirm that reactions to disrespect perceptions are determined by needs. They investigated the affective responses of men and women after experiencing respect and disrespect and the role of needs for status and relatedness in this relationship. They show that men and women differ in emotional responses to disrespect. Men responded to disrespect with more anger based on a frustrated need for status, whereas women were more likely to be sad based on a frustrated need for relatedness. The results such as these show that the same trigger

can be associated with different needs and different responses to (dis-)respect. In future studies, the relationship between triggers, needs, and outcomes should be investigated to specify prediction concerning short- and long-term consequences.

Furthermore, our interview results indicate that it is not only a single trigger and a single need determining threat experiences but also often several triggers and several needs are identified in one threat situation. For example, research suggests that for professions in which people risk their lives, especially due to the threat of physical danger (Hagemann et al., 2012), further triggers such as a lack of respect affect these people more strongly than people in professions without physical risk (e.g., Burnette et al., 2010). Future research should investigate the importance of certain triggers and needs above others.

Further research should take the situation- and person-specificity of threat experiences into account. Even if needs are considered universal, occurring in the same way in all people, identity- and self-construction approaches (Ashforth & Schinoff, 2016; Cooper & Thatcher, 2010) suggest that motives can vary in their strength and salience, which is determined by individual dispositions but also by context features. Thus, needs can vary depending on the person and the situation and enable the explanation of person- and situation-specific differences in threat experiences. For example, while one paramedic may perceive the task of cleaning the car assigned by a colleague as status offending, another individual may feel more restricted in belonging to colleagues. The individual may react with sadness and withdrawal, the other individual with anger. Person- and situation-specific differences should be a topic in future research.

Conclusion

Threats are a new and scarcely studied stress dimension in research of CHM (Tuckey et al., 2015). On a theoretical level, we compare insights of SOS (Semmer et al., 2007; 2019) and MTR (Petriglieri, 2011), systematize triggers and needs as threat mechanisms, and integrate findings from associated research areas such as needs research. On an empirical level, we provide evidence for the theoretical identified triggers and needs for a wide variety of work contexts. Despite diverse work characteristics, different

professions experience threats due to the same five triggers and frustrated needs. We differentiate triggers and needs, enable a detailed and systematic description, explanation, and examination of threats, and provide approaches for the development of reflection and intervention strategies. Becoming aware of triggers and needs helps to avoid or deal with threats.

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Study 3

Threats to Professional Roles in Part-time Leadership. Effects of Dysfunctional Support on Leader Identification, Rumination, and Job Satisfaction

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Threats to Professional Roles in Part-time Leadership. Effects of Dysfunctional Support on Leader identification, Rumination, and Job satisfaction

Zusammenfassung

Führungskräfte, die reduziert arbeiten erfahren häufig wenig Respekt und Akzeptanz durch Mitarbeiter und Kollegen. In reduzierter Arbeitszeit zu Führen entspricht nicht dem traditionellen Rollenbild einer Führungskraft, die als Erste das Büro betritt und als Letzte verlässt (Jochmann-Döhl, 2017). Obwohl reduziert arbeitende Führungskräfte von ihren Mitarbeitern und Kollegen unterstützt werden, ist deren Unterstützungsverhalten oft mit dem Vorwurf verbunden, dass arbeitsbezogene Probleme nur deshalb auftreten, weil die Führungskraft reduziert arbeitet. Nach der *Stress-as-offence-to-self Theorie* (*SOS,* Semmer, Jacobshagen, Meier, & Elfering, 2007; Semmer, Tschan, Jacobshagen, Beehr, Elfering, Kälin & Meier, 2019) löst ein solch dysfunktionales Unterstützungsverhalten Bedrohungen aus, indem es das Bedürfnis nach Zugehörigkeit verletzt. Ziel der Studie ist es zum einen, die Bedeutung der SOS Theorie hervorzuheben und ihre Anwendung über die Stressforschung hinaus zu verdeutlichen, indem die Auswirkungen von Bedrohungserfahrungen auf Rumination, Arbeitszufriedenheit und Rollenidentifikation bei reduziert arbeitenden Führungskräften untersucht werden. Zum anderen zielt die Studie darauf ab, den bedürfnisbasierten Bedrohungsmechanismus empirisch zu bestätigen. Ergebnisse, die auf einer Online-Befragung von N = 101 reduziert arbeitenden Führungskräften basieren, zeigen, dass dysfunktionale Unterstützung durch Mitarbeiter und Kollegen mit einem Gefühl der Ausgrenzung durch bedeutende Andere als Indikator für ein frustriertes Bedürfnis nach Zugehörigkeit zusammenhängt. Darüber hinaus zeigen die Ergebnisse, dass das Gefühl der Ausgrenzung die Beziehung zwischen dysfunktionaler Unterstützung und Rollenidentifikation sowie zwischen dysfunktionaler Unterstützung und Arbeitszufriedenheit vermittelt. Für Rumination wurde kein Mediationseffekt gefunden. Neben einem theoretisch differenzierten Verständnis und der Vorhersage von Bedrohungen liefert die Studie wichtige praktische Ansatzpunkte für das Risikomanagement von Führung in reduzierter Arbeitszeit.

Schlüsselwörter: Führung in reduzierter Arbeitszeit, Bedrohung, berufliche Rollen

Abstract

Leaders working part time have to struggle with a lack of respect and acceptance from their followers and leadership colleagues. Leadership as a part time role does not match the traditional expectation for leaders to be omnipresent and always responsive (Jochmann-Döhl, 2017). Although *leaders working part time (LPT)* are supported by followers and colleagues, their supportive behaviour is often coupled with accusations that work-related problems occur only because the leader is working part time. According to the *stress-as-offense-to-self theory* (*SOS,* Semmer, Jacobshagen, Meier, & Elfering, 2007; Semmer et al., 2019), such dysfunctional supportive behavior triggers threats by offending the need for belonging. The first aim of this study is to strengthen SOS theory and extend its application beyond stress research by investigating the effects of LPT threat experiences on rumination, LPT job satisfaction, and role identification. The second aim is empirically to confirm the need-based threat mechanism. Results based on an online questionnaire (*N* = 101 LPT) show that dysfunctional support by followers and leadership colleagues relates to a feeling of exclusion by significant others as an indicator of an offended need for belonging. Furthermore, the results indicate that the feeling of exclusion mediates the relationship between dysfunctional support and role identification and between dysfunctional support and LPT job satisfaction. No mediation effect was found for rumination. In addition to providing a theoretical differentiated understanding and prediction of threats, the study provides important practical starting points for the risk management of LPT.

Keywords: part-time leadership, threat, stress-as-offense-to-self, professional roles

Threats to Professional Roles in Part-time Leadership. Effects of Dysfunctional Support on Leader identification, Rumination, and Job satisfaction

"It is all or nothing. Part-time leadership is half leadership" (statement by the human resources director of an international bank). Leaders who work part time (*LPT*) may have to deal with such attitudes, which indicate disrespect for LPT, thus resulting in negative emotional and cognitive states (Jochmann-Döll, 2017). Disrespectful statements are due to beliefs that leaders have to be omnipresent and always responsive – an expectation that is not fulfilled by LPT. Moreover, empirical evidence shows that followers and full-time leaders believe that being LPT results in more strain on followers, vague decision-making processes, and ambiguous responsibilities (Moldzio et al., 2016). Unsurprisingly, some leadership colleagues and followers do not take LPT seriously, associate problems and mistakes to LPT (Moldzio & Ellwart, 2017), or exclude LPT (Jochmann-Döll, 2017). These negative associations, rejections, and other disrespectful behaviors towards LPT in the workplace trigger feelings of being questioned in the role as a leader; consequently, these LPT experience threats (cf., Sam, 2012).

According to proponents of the *stress-as-offense-to-self theory* (*SOS,* Semmer, Jacobshagen, Meier, & Elfering, 2007), these negative associations, rejections, and disrespectful behaviors towards LPT may threaten these individuals' leadership. Studies based on SOS postulate dysfunctional support – a kind of disrespectful behavior – as a *trigger* of threat (e.g., Semmer et al., 2007, 2019; Semmer, Elfering, Jacobshagen, Perrot, Beehr, & Boos, 2008) and report stress-related consequences. Dysfunctional support may also be a specific trigger in the context of LPT, for example, when followers mention that work-related problems occur only because the leader is working part time (cf., Jochmann-Döll, 2017). So far, there is no research on threats to LPT as leaders. However, there are studies on threats to leaders in general; these studies show that in addition to causing stress, a leader's feeling threatened by followers or colleagues may negatively affect the leader's motivation, affect, and performance (e.g., Burnette, Pollack, & Hoyt, 2010). To go beyond traditional stress research in strengthening support for SOS, the first goal of this study is to investigate dysfunctional support (trigger) by followers or colleagues for LPT and the threatening effect of dysfunctional

support on stress-related and other outcomes, such as leadership identification, job satisfaction, and rumination.

The second goal of this study addresses the threat mechanism that explains the underlying effect of triggers on outcomes. SOS (Semmer et al., 2007, 2019) explains this mechanism by referring to a frustrated need for belonging – to belong to a group and to be respected by significant others (Leary & Baumeister, 2000). To our knowledge, so far, only a few studies have investigated the mechanisms of (frustrated) needs in the relationship between triggers and outcomes (e.g., Stocker, Jacobshagen, Semmer, & Annen, 2010). Therefore, we investigate the threat mechanism and whether the effect of triggers on outcomes is mediated by frustrated needs (i.e., the need for belonging).

To achieve our two goals, this study makes three important contributions: First, we extend the current research to include threats to LPT. Second, our investigation of the mediating role of frustrated needs provides evidence for the need-based threat mechanism postulated by SOS and, thus, enables a more differentiated understanding and prediction of threat experiences. Third, in addition to these theoretical contributions, we can derive conclusions for the practical risk management of LPT.

The Professional Role as an LPT. Half the Time - Half the Value?

In a representative survey of 500 leaders from Germany, 75% of the sample reported a preference for working part time in certain phases of their lives, for example, when caring for children (Borghart, 2012a). During a shortage of skilled workers, the challenge of finding qualified management staff becomes increasingly greater (Maznevski, Stahl, & Mendenhall, 2013). Therefore, organizations become more sensitive to individual situations and needs. In this regard, flexible working-time models, such as part-time jobs, are instruments of human resource management. Part-time leadership describes various forms of working-time models, such as reduced time (e.g., working only 80% of the full-time equivalent) in a leadership position (Moldzio & Ellwart, 2017). In some leadership models, where leaders have reduced working hours, tasks are delegated to followers or are assumed by co-leaders (Ellwart, Russell, & Blanke, 2015). Some leaders may reduce working hours to have time not only for childcare but also to participate in other projects or advanced training (Moldzio et al., 2016).

Thus, various working-time leadership models enable individuals to care for children and family members or to promote their career (e.g., by providing time for advanced training or alternative project work).

Even if many leaders are interested in working part time, the results of the European Labour Force Survey (2014, as cited in Stuth & Hipp, 2017, p. 34) show that only 9% of the participating leaders work part time. One reason for this finding might be that LPT often have to struggle with negative reactions from others (e.g., low acceptance). LPT may not match the traditional expectation regarding leadership held by leadership colleagues or followers for several reasons: First, many organizations have a culture of presence, and only leaders who are constantly present are trusted to manage work processes successfully (Hipp & Stuth, 2013). The widespread stereotype that a leader has to be omnipresent does not fit the new working-time leadership model of LPT because, based on this stereotype, reduced working hours and professional commitment are a contradiction in terms. Only those who work the whole day, even beyond their duties, might have a strong commitment to their jobs and the organization (Melchers & Zölch, 2001). Unsurprisingly, LPT are labeled as being insufficiently committed and being underperformers (Brett & Stroh, 2003). Second, there is the widespread but biased assumption that leadership responsibilities are neither shareable (i.e., by two leaders) nor delegable (Melchers & Zölch, 2001). The reduced contact time for formal and informal communication with followers might negatively affect the trust and commitment to the LPT. Moreover, followers who prefer a full-time leader feel distant from the LPT goals and values, thus resulting in a lower acceptance of everything related to the LPT (Alberternst & Moser, 2007). Consequently, LPT are often accused (justifiably or not) of being unable to fulfill their leadership responsibilities. In conclusion, there is ample evidence that leadership colleagues or followers react disrespectfully and express a lack of acceptance and respect towards their LPT (e.g., Moldzio & Ellwart, 2017). The perception of a lack of acceptance and respect, i.e., experiences of disrespect, is related to the experience of threat (Semmer et al., 2007, 2019).

Although to our knowledge, research on LPT and threats is lacking, there is some research on leaders in general. For example, Burnette et al. (2010) showed that women in their role as leaders

assessed their self-efficacy and self-esteem as being lower after experiencing threats from followers and colleagues. Likewise, Flanagan (2015), who also investigated women in leadership roles, postulated negative effects of threat experiences triggered by negative stereotypes of female leaders. The author found that women who feel threatened as leaders assess their ability to control their own career success significantly lower than do women who do not feel threatened as leaders. This could, on one hand, support the idea of a double stigma of woman in LPT. Women in full-time leadership positions often have to struggle for receiving respect, in general (Elprana, Hernandez, & Pundt, 2016). This might be because female stereotypes do not correspond to those of leaders (Koenig, Eagly, Mitchell, & Ristikari, 2011). While men are described with agentic traits, women are seen as more communal. Therefore, men are seen as more similar to the leader's stereotype of being competitive, confident, and strong than women (Rudman & Mescher, 2013). The incongruity between the stereotypes of women and leaders may explain a particular threat experiences of women in part time leadership positions. On the other hand, even though LPT are often female (Stuth & Hipp, 2017), it is likely that men who reduce work to their leadership positions also experience threats and even more than women. For example, studies that examine parental leave in fathers indicate that men who behave stereotype-incongruent are generally seen as worse workers (Wayne & Codeiro, 2003) and more ineligible for rewards (Allen & Russell, 1999), compared to women taking parental leave or men not taking parental leave. Gender-related stereotypes in LPT might be a further relevant facet in role threat research.

In sum, threat research concerning leadership, especially LPT, is rare. Even if the effects of threat on professional leadership are evident, the theoretical framework for explaining threat originally comes from stress research.

Threat by Disrespect. SOS Theory as a Guiding Framework

According to SOS (Semmer et al., 2007, 2019), behaviors indicating a lack of respect do not directly cause threats. Rather, potential disrespectful behaviors from others serve as triggers that are perceived as representing one’s exclusion from a relevant group (e.g., peers or colleagues). In this case, triggers offend the basic human need for belonging to significant others. The need for

belonging describes the desire to be accepted and respected (Leary & Baumeister, 2000). Based on the assumptions of SOS, disrespectful behaviors indicate that LPT are not accepted as being fully qualified. LPT may perceive themselves as being excluded from colleagues and followers; this exclusion, in turn, threatens the need of LPT to belong. Thus, threats to the professional role as a leader occur.

The need-based mechanism has been investigated in only a few studies. In a sample of officers from the Swiss army, Stocker and colleagues (2010) showed that disrespect leads to the perception of being less accepted and appreciated by others, thus resulting in low well-being, low job satisfaction, and feelings of resentment. Perceptions of low acceptance and appreciation by significant others, in turn, indicate a frustrated need for belonging (Leary & Baumeister, 2000). There are different kinds of expressing appreciation and respect or, in turn, disrespect (Stocker, Jacobshagen, Krings, Pfister, & Semmer, 2014). Thus, Meier and Semmer (2018), for example, operationalized unreasonable or unnecessary task assignments (illegitimate tasks) as a trigger of threats. Dysfunctional support represents also an important trigger because of the disrespectful characteristics of this type of support (Semmer et al., 2008). Some studies on LPT have examined the relationship between illegitimate tasks and work interruptions as potential triggers and a frustrated need for belonging; however, so far, none of these studies has examined the relationship between this need and dysfunctional support as a trigger.

Dysfunctional Support and Perceived Exclusion in LPT. Mechanisms and Effects.

Semmer and colleagues (2007, 2008) introduced the concept of dysfunctional support as one of several behaviors that indicate a lack of appreciation and respect. The authors found that if functionally supportive behaviour (e.g., giving someone important information) is coupled with dysfunctional reproaches and premature solutions, people experience threat, which affects their self-esteem or well-being (Semmer et al., 2008). In the context of LPT, dysfunctional support means, for example, that followers help LPT but accompany this help with accusations because of the reduced working hours of the leader seeking help. These behaviors indicate disrespect and express low acceptance of LPT as leaders. Similarly, if others expect special gratitude from supported LPT,

dysfunctional behavior may cause a threat because such behavior suggests to LPT that they do not meet the requirements of the leadership role, and therefore, need support. However, if such dysfunctional behaviors cause the perception of being excluded as the leader, or more specifically if dysfunctional support offends the LPT need to belong to a group of leaders and their followers, the LPT experience threat. We refer to this perception as "perceived exclusion as a leader because of being an LPT" and postulate that high levels of dysfunctional support should be associated with a high perception of exclusion.

Hypothesis 1: Dysfunctional support of LPT is positively related to their perceived exclusion as a leader.

So far, research investigates many stress- and health-related outcomes concerning threat experiences (e.g., Beals & Peplau, 2005; Muller & Butera, 2007). To take care of employees' well-being is an organizational issue to achieve high performance (Nielsen, Nielsen, Ogbonnaya, Känsälä, Saari, & Isaksson, 2017). In addition, research shows that identification with the professional role influences the motivation and performance of employees (cf., Ebaugh, 1988). Thus, the role identification of employees is also a central factor for organizations. There is evidence that threat has not only negative effects on well-being (Beals & Peplau, 2005) but also on role identification (Petriglieri, 2011). Since, at work, LTP experience threats related to their role as leaders, in this study, we investigate the effect of threat on role identification and, in accord with previous research, on stress-related symptoms, namely, on job satisfaction and rumination.

Role Identification

Organizational roles, such as leadership roles, are more variable than roles based on gender or race (Sluss, van Dick & Thompson, 2002). We describe role identification as the extent to which individuals are able or motivated to assume a role, such as the role of a leader in an organization. From an organizational point of view, low role identification or even a role exit (Petriglieri, 2011) is most critical because the individual disengages psychologically from the role and physically from its social relations or the related context at the workplace (Ebaugh, 1988). Case studies support that acceptance and support by followers are the strongest drivers of the successful introduction of part-

time leadership (e.g., Meyenberg & Schinner, 2017). Therefore, LPT who are supported and respected by their followers report higher identification with their role as a leader. Conversely, we expect high levels of dysfunctional support to be associated with a reduced role identification of LPT.

Hypothesis 2a: Dysfunctional support of LPT is negatively related to role identification as a leader.

Concerning threat mechanisms, dysfunctional support indicates a lack of respect and offends the individual need for belonging. Thus, perceived exclusion explains the effect of dysfunctional behavior on doubts about one's role as a leader.

Hypothesis 2b: Perceived exclusion because of LPT mediates the relationship between dysfunctional support and role identification as a leader.

Job Satisfaction

Blincoe and Harris (2011) found that disrespectful behaviors lead to a frustrated need for belonging and, therefore, to negative emotions. Moreover, threat is related to feelings of disappointment and dissatisfaction (Coyle, 1999). In an interview study (N = 41), Coyle (1999) identified several threats, such as the disrespectful behaviors of others, that produce dissatisfaction of patients in general health care. Likewise, Stocker and colleagues (2014) showed that recognition of success and support, which reflects the respectful behavior of others, correlates positively with increased satisfaction. The authors concluded that, conversely, experiencing disrespectful behavior is likely related to lower job satisfaction.

From the results, we deduce that LPT also experience dissatisfaction when facing threats in their role as a leader. We assume that high levels of dysfunctional support relate to reduced job satisfaction.

Hypothesis 3a: Dysfunctional support of LPT is negatively related to job satisfaction.

Job satisfaction is closely linked to fulfilled individual needs (e.g., Miller & Monge, 1986). Herzberg (1972) emphasized the importance of motivators, such as a sense of being respected in an organization, in creating positive job satisfaction. Recent studies have shown a link between dissatisfaction and offended needs (Unanue, Gómez, Cortez, Oyanedel, & Mendiburo-Seuguel, 2017).

Therefore, we assume that the connection between dysfunctional support and lower job satisfaction can be explained by frustrated needs.

Hypothesis 3b: Perceived exclusion because of LPT mediates the relationship between dysfunctional support and job satisfaction.

Work-related Rumination

Rumination means that it is difficult for people to stop worrying about work-related concerns after work and that they are often preoccupied with professional matters and thoughts even at home (Cropley, Michalianou, Pravettoni, & Millward, 2012). Muller and Butera (2007) suggest that threat leads to ruminative thoughts. Moreover, studies indicate that facing disrespectful behavior by others is associated with ruminative behavior. For example, Vahle-Hinz, Baethge and van Dick (2019) showed that workplace incivility (disrespectful behavior) is correlated with ruminative thoughts.

We assume that dysfunctional support relates to rumination among LPT. First, the necessity of support may indicate that leadership cannot be accomplished without the help of others. This may be accompanied by increased rumination over how to deal with work-related problems and one's own difficulties. Second, as discussed above, dysfunctional support offends the need for belonging. Concerning the threat mechanism, the perception of exclusion and lack of respect would also explain rumination of LPT.

Hypothesis 4a: Dysfunctional support of LPT is positively related to rumination.

Hypothesis 4b: Perceived exclusion because of LPT mediates the relationship between dysfunctional support and rumination.

Method

Participants and Procedure

N = 101 LPT completed an online questionnaire. The respondents worked in 21 different fields (e.g., finance, automobile industry, wholesale and retail, public services, media, science), represented all management levels, and had a mean leadership experience of 11.5 years (*SD* = 8.82). The participants' mean age was *M* = 46.59 years (*SD* = 8.71, and the ages ranged from 23 to 66 years). 78.2% of the participants were female. Working times in the leadership position varied between 20%

and 90% with a mean of 66.74% of a full-time equivalent (*SD* = 17.21). 53.3% of the participants reduced their working time for childcare and 12.9% for a better work-life balance. 2% of the leaders reduced their working time for caring for family members, 4% for a flexible retirement model, and 3% for participating in advanced training. 24.8% gave other motives for reducing their working time. Leaders were responsible for 1 to 102 followers (control span) and had a mean of 13.05 followers. Concerning the hierarchical leadership level, 30.7% worked on a low level (i.e., responsible for teams and project groups), 42.7% on a middle level (i.e., responsible for department, subject area), and 26.7% on a high level (i.e., executive or divisional management). With regard to the flexible working-time model, 23.8% of the sample reduced work time in the leadership position and took on projects and activities in other areas of the company in a non-leadership position; 77% of the sample worked in part-time leadership models and had no other positions at the organization. The participants were recruited through advertisements in print and online media and through social networks with a special focus on LPT.

Before their participation, participants received information about the purpose, procedure, duration, and the voluntary nature of the study. All participants were informed that the data collected would not allow any conclusions to be drawn about the company or the individual. Before participating in the survey, the participants agreed that the anonymized data may be used for scientific purposes. Cash prizes (4x25 Euro) were randomly awarded to the participants after the survey.

Instruments

The participants rated all responses on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). All items used in the questionnaire can be requested from the corresponding author.

Dysfunctional support

Five items measuring dysfunctional support were adapted from the scale developed by Semmer (2010) to the context of LPT. Items refer to different aspects of dysfunctional support, for example, giving help accompanied by accusations ("Because I work reduced working hours as a leader, social

support is often associated with accusations") or the expectation of gratitude ("I get help at work when I need it, but because I am an LPT, sometimes special gratitude is expected"). The reliability of the five items was very good (α = .86).

Perceived Exclusion as a Leader

Items that measured perceived exclusion as a leader[1] reflect the perception of lacking acceptance and of disrespect by colleagues and followers due to being an LPT ("Some of the employees do not accept LPT such as full-time leaders"). The reliability of the four items was very good (α = .86).

Role Identification as a Leader

Four items of role identification[1] ask respondents for their personal belief regarding whether they are equal to full-time leaders, i.e., whether they belong to the group of leaders or are an oddball (e.g., "As an LPT, I'm an oddball."). The reliability of the five items was good (α=.76).

Job satisfaction

Four items were used to measure job satisfaction as an LPT. Items were adapted from validated scales (e.g., Weiss, Dawis, England, & Lofquist, 1967) and reflected the degree of satisfaction with the work situation as an LPT (e.g., "I am currently satisfied with my work situation.") or behavioral indicators of satisfaction ("I would recommend other leaders to work as LPT"). The reliability of the four items was good (α = .75).

Rumination

Three items of the Work-Related Rumination Questionnaire (WRRQ) were used to measure affective, problem-related, and distancing components of rumination (Cropley et al., 2012). An example item is "It is easy for me to relax after work". The reliability of the three items was acceptable (α = .63).

Statistical Analysis

We applied the statistical package of *MPlus 8* (Muthén & Muthén, 1998-2014). Using confirmatory factor analysis (CFA), we analyzed the internal structure of dysfunctional support and perceived exclusion to show that they represent independent constructs. We, therefore, compared the properties of two structural models: Model 1 represents a first-order correlated factor model and

contains two different but correlated factors that correspond to dysfunctional support and perceived exclusion. We compared the first-order correlated factor model with a g-factor model (Model 2), where all items load only on a single general factor (*g*-factor). We hypothesized that Model 1 fits the data better than Model 2. In both CFAs, we specified dysfunctional support, perceived exclusion, and the *g*-factor as latent variables. To handle convergence problems, the unstandardized loading of the first item of each first-order factor was fixed to 1 (Model 1 to Model 2). We then evaluated both structural models based on different fit indices. We followed Kline (2011), Hu and Bentler (1999), and Dimitrov (2010) by evaluating the chi-square goodness-of-fit, *comparative fit index* (CFI), *Tucker-Lewis index* (TLI) (the values for both models should be above .95), *root-mean-square error of approximation* (RMSEA), *standardized root mean squared residual* (SRMR) (the values for both Model 1 and Model 2 should be below .08 and .06, respectively), *Akaike information criterion* (AIC), and *Bayesian information criterion* (BIC). To address missing data, the data analysis was carried out using *full information maximum likelihood* (*FIML*) estimation. FIML produces more efficient estimates than other methods (e.g., listwise deletion) of treating missing data and is, therefore, superior (Enders & Bandalos, 2001). The number of missing data was below 5% for all scales.

To test the hypotheses, we conducted a mediation model for each of the three outcomes (role identification, job satisfaction, and rumination) separately by using dysfunctional support as an independent variable and perceived exclusion as a mediator. We used nonparametric bootstrapping analyses macro by Preacher and Hayes (2004, 2008). Bootstrapping analyses are suited for smaller samples and do not impose the assumption of normality on the sampling distribution (Hayes, 2013). In detail, within the bootstrap test, we repeated the estimation of our structural models 5.000 times. The mediator effect is significant if the 95% bias-corrected and accelerated confidence interval (BCa CI) for the indirect effect does not include zero (Hayes, 2013).

Results

Preliminary Analyses

The CFAs revealed that dysfunctional support and perceived exclusion form distinct constructs. As expected, Model 1 with two distinct latent factors provided a better fit than Model 2 with only one

g-factor. Table 1 gives an overview of the two structural models and their corresponding goodness-of-fit indices. All model estimations terminated normally, no parameter estimates had negative variances, and all matrices of parameter estimates were positive. None of the two models exhibited poor model fit, although the chi-square goodness-of-fit statistic was statistically significant for each model. Evaluating both structural models in regard to alternative fit indices, the first-order factor model (Model 1), compared to Model 2, returned better incremental fit indices (χ^2 = 48.291, CFI = .942, TLI = .919), good absolute model fit indices (RMSEA = .092; SRMR = .053) and lower relative model fit indices of the AIC and BIC.

Table 1

Goodness-of-fit indices of alternative CFA models

Model	χ^2	*df*	CFI	TLI	RMSEA	SRMR	AIC	BIC
1: first-order correlated factor	48.291	26	.942	.919	.092	.053	2373	2446
2: g-factor	68.230	27	.892	.856	.123	.063	2398	2469

Note. χ^2 = chi-square for all models is $p < .01$; *df* = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual; AIC = Akaike information criterion; BIC = Bayesian information criterion.

The validity of the LPT-specific measures can be illustrated by their sensitivity to the degree of working-time reduction. Correlations showed that LPT whose working times were similar to that of full-time leaders report lower dysfunctional support (r = -.42, $p < .001$), lower perceived exclusion (r = -.40, $p < .001$), higher role identification (r = .32, $p < .001$), higher job satisfaction (r = .27, $p < .001$), and lower rumination (r = -.26, $p < .001$).

Hypotheses Testing

Hypothesis 1 confirms that dysfunctional support is positively related to perceived exclusion because of being an LPT in the workplace. Results from bivariate correlations in Table 2 (r = .72, p < .001) and separate mediations (see Figure 1) indicate that dysfunctional support acts as a trigger, which offends the need for belonging.

Table 2

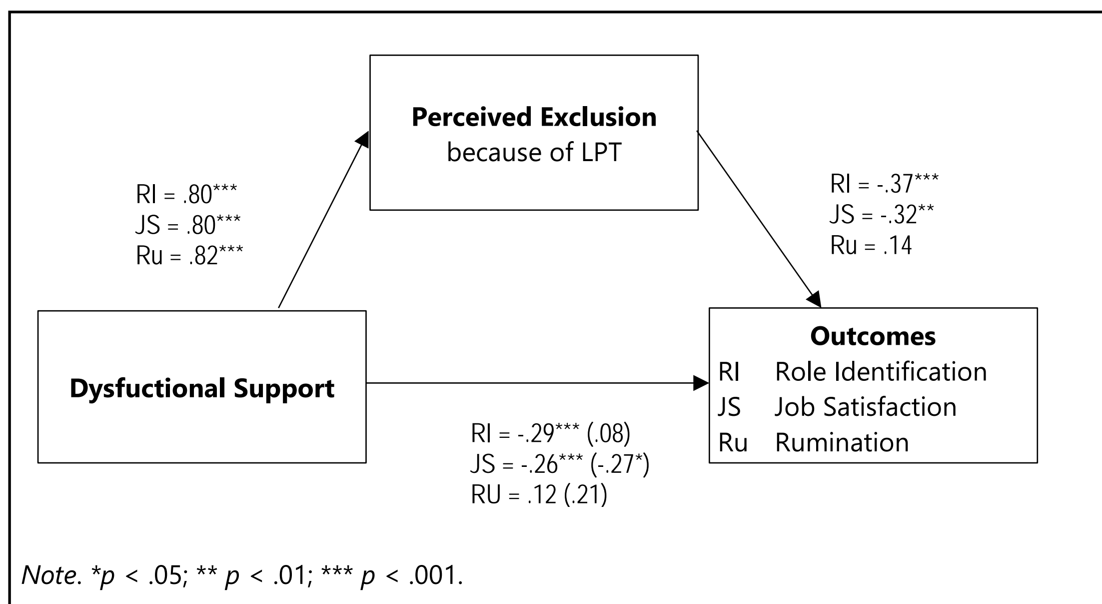
Descriptive statistics and correlations

Scale	*M*	*SD*	Min	Max	1	2	3	4	5
1 Dysfunctional support	2.25	0.90	1.00	5.00	**.86**				
2 Perceived exclusion	2.17	1.00	1.00	5.00	.72**	**.86**			
3 Role identification	3.99	0.88	1.50	5.00	-.38**	-.47**	**.76**		
4 Job satisfaction	3.63	0.85	1.50	5.00	-.56**	-.59**	.35**	**.75**	
5 Rumination	2.81	0.86	1.00	5.00	.35**	.33**	-.16	-.51**	**.63**
6 LPT working hours	66.74	17.21	20	90	-.42**	-.40**	.32**	.27**	-.26**

Note. M = mean, *SD* = standard deviation, Min = Minimum, Max = Maximum. Bold values on the main diagonal denote Cronbach's α as measures of internal consistency. ** $p < .001$.

Figure 1

Indirect and direct effects in parentheses from mediation analyses



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

According to hypothesis 2a, higher dysfunctional support is related to lower role identification ($r = -.38$, $p < .01$). Moreover, perceived exclusion because of being an LPT mediates the relationship between dysfunctional support and role identification (hypothesis 2b). As Figure 1 shows, we found a significant indirect effect of dysfunctional support on role identification ($b = -.29$, 99% BCa CI[-.6018, -.0148]).

Hypothesis 3a is also accepted. Higher dysfunctional support relates to lower job satisfaction in bivariate correlation (r = -.56, p < .01). In accordance with hypothesis 3b, there is evidence for the mediating effect of perceived exclusion (b = -.26, 99% BCa CI[-.4798, -.0590]).

Finally, in accordance with hypothesis 4a, LPT who receive more dysfunctional support report more rumination after work (r = .35, p < .001). However, hypothesis 4b is rejected. Perceived exclusion cannot explain the effect on rumination, as indicated by the confidence interval containing zero (b = .12, 95% CI[-.0789, .3213]).

Discussion

Using a sample of LPT, this study revealed the relationship between dysfunctional support and perceived exclusion as a leader. Moreover, there are correlations between dysfunctional support and three outcomes: role identification, LPT job satisfaction, and rumination. High levels of dysfunctional support are associated with identification problems with the leader role, reduced job satisfaction, and higher levels of rumination after work. Furthermore, the results show that the perception of being excluded by others because of being an LPT mediates the relationship between dysfunctional support and role identification and between dysfunctional support and job satisfaction. We found no mediating effect for rumination.

Our results are in line with the assumptions of SOS (Semmer et al., 2007; 2019). Already Beehr et al. (2010) found in a sample of non-faculty employees that dysfunctional support has far-reaching psychological and even physical consequences. Meta-analytical findings by Kurtessis et al. (2017) prove that the perceived support in an organization harms identification processes and motivational parameters, as is also the case in our study. This study provides further evidence that a lack of respect, for example through dysfunctional support, is not only a problem for followers but also leaders (cf., Stocker et al., 2014).

A special focus of this study was the distinction between dysfunctional support as a trigger and the offended need for belonging. In this study, we transfer the interplay between triggers and frustrated needs to the context of LPT. Perceived exclusion served as a mediating mechanism concerning role identification and LPT job satisfaction. The perception that others do not respect and

accept one another is decisive in assessing supportive behavior as helpful or not (Semmer et al., 2008). Beyond the degree of functional help, it is the message of disrespect and low acceptance of part-time leadership that is emotionally evaluated by the LPT. The oncoming frustrated need for belonging explains LPT-related outcomes, such as lower role identification or lower job satisfaction. However, we could not confirm the mediating role of perceived exclusion in the relationship between dysfunctional support and rumination. In our study, rumination generally referred to the ability to switch off and relax after work. These are labor-related thoughts in general and are not specifically related to the professional role of a leader. Indeed, the sense of belonging seems to influence role-related variables (e.g., "In my role as LPT I feel excluded at work") rather than labor-related thoughts in general (e.g., "I have a lot to do at work"). Being dependent on help can already lead to stronger rumination. This consideration is supported by study results supporting the mediating role of perceived acceptance in the relationship between illegitimate tasks (e.g., the engineer has to wipe the tables in the office and make coffee) and mainly role-related affective variables, such as resentment and job satisfaction (cf., Semmer et al., 2010).

Limitations

Despite its strengths, the present study has some limitations. This concerns primarily the measurement methods and the investigation design. We operationalized the threatening trigger (dysfunctional support) and the frustrated need (perceived exclusion), both in relation to the LPT role. This led to a mediator that seems conceptually close to the predictor (*r* = .72). Nevertheless, preliminary results indicate the distinction between the two constructs. Although we theoretically argue that, the frustrated needs are role-related, future measures need to be more distinctive between triggers and targeted needs. We suggest, capturing directly the actual need and the level of frustration (e.g., I feel that excluded). Furthermore, all measures are self-reports with partly newly developed scales. We used inverse items for all three outcomes. Due to inter-item-correlations smaller than .70 (Rammstedt et al., 2017), we cannot guarantee that there is an acquiescence problem. However, internal consistencies of all measures, item statistics, and factor analyses were acceptable. Moreover, our findings are limited to a small sample of *N* = 101 LTP in Germany. It would be valuable

to replicate our findings on the relationship between triggers, needs, and the observed effects of threat on outcomes in other organizational contexts in various countries with a larger sample of LTP.

Further, some random data measuring dysfunctional support and perceived exclusion are missing. Experts have not reached a consensus regarding the percentage of missing data that becomes problematic (Schlomer, Bauman, & Card, 2010). We decided to use FIML to analyze the structure of both constructs because FIML does not systematically overestimate or underestimate regression coefficients under completely random conditions and is superior to other methods of treating missing data (Enders & Bandalos, 2001).

Finally, our data were cross-sectional; therefore, we could investigate neither the causal relation between threat and outcomes nor their development over time. Longitudinal studies on the relationship may be able to generate new insights about the formation of role threat and its influence on different outcomes over time.

Despite these limitations, the study replicates the results of other studies on dysfunctional support in a new work context. Due to the similarity of the measuring instruments to those used in existing work and due to the similar result patterns, the findings are a first indicator that role threat in LPT influences role identification and job satisfaction.

Future Research Directions

Future threat research should focus on the negative consequences of threat and the empirical investigation of the underlying threat mechanism. The present study indicates several implications for future research.

First, in our study, we provide evidence that dysfunctional support, as a type of disrespectful behavior, is an important trigger of LPT threat. We discussed that other work-related behaviors are also perceived as disrespectful, for instance, the decisions of others that affect the individual (e.g., Kyratsis, Atun, Phillips, Tracey, & George, 2017). Further research should identify further behaviors by others that are perceived as disrespectful by LPT to illuminate what triggers LPT threats.

Second, in our study, we focused on perceived exclusion (need for belonging) as a mediating variable for experiencing threats and negative consequences according to theoretical assumptions (cf.,

Semmer et al., 2007). Further research should consider further needs (e.g., need for competence) as mediators in the relationship between triggers and negative outcomes, such as low job satisfaction.

Finally, future research should consider some contextual as well as work- and task-related factors as moderators.

Sex of the LPT

We have already mentioned the possible moderating effect of sex on LPT threats. Even though, post hoc analyses of our data did not provide any gender differences in dysfunctional support and the perception of being excluded[2], gender stereotyping of LPT should be a topic in future research. Rudman and Mescher (2013) indicate that men are confronted with female stereotypes (e.g., being weak and more communal) when they take on traditional female roles such as childcare. This might be the reason why they receive dysfunctional support just like female LPT. Furthermore, gender stereotypes indicate that men and women are differently sensitive to specific needs (men: need for status, women: need for inclusion, cf., Ellemers, 2017).

Motive for LPT

Individual motives for becoming LPT are divers (e.g., childcare, advanced training) and may also have an differently strong impact on LPT threats. Depending on how much the employees empathise with the motives for the LPT working time reduction, they may react with more or less disrespectful behavior (cf., Horvath et al., 2018). Additionally, motives may influence LPT need sensitivity (Armenta & Hunt, 2009). For example, LPT who choose the part-time leadership model to be able to take care of their children might have a stronger need for belonging than those who choose the working-time leadership model for developing their leadership skills in an MBA program after work. The latter type of LTP might have a stronger need for competence than an LPT who chooses the model to have time for childcare. However, post hoc analyses of our data confirmed the influence of motives neither on the perception of dysfunctional support, nor on perceived exclusion[3].

Extent of LPT

Furthermore, the range of working-time reduction may also influence LPT threats. Research indicates that negative expectations towards the new working-time model of leaders are the main

cause of dysfunctional supportive behavior (cf., Moldzio et al., 2016). This means the more LPT reduce their working time and the more their working-time model deviates from the traditional full-time-leadership model, the more LPT may experience dysfunctional support. Post hoc analyses confirm this assumption by indicating that the extent of working time reduction relates to the extent of dysfunctional support. Here, we also found a positive correlation between the extent of working time reduction and perceived exclusion.[4] Therefore, needs also seem to be influenced by the extent of the reduction.

Level of LPT

How leadership colleagues deal with LPT may also influence LPT threats. Research indicates that LPT benefit from support by colleagues from other hierarchical levels, for example, when the scheduling meetings in the way that LPT can participate (Gärtner et al., 2016). Thus, LPT are more present so that, on the one hand, followers have fewer reasons to fear that they will be overloaded, and on the other hand, LPT themselves feel less excluded and are less vulnerable for accusations like "you are never there". However, explorative analyses of our data did not confirm that LPT with responsibilities at lower, middle or higher leadership levels differ in dysfunctional support and perceived exclusion[5].

LPT Span of Control

The span of control, i.e. the number of followers for whom the LPT are responsible, may influence LPT threats. Especially in small teams, employees are faced with increasing work pressure, since tasks are always delegated to the same people and the work is distributed to fewer followers (Jochmann-Döll, 2017). However, post hoc analyses of our data did not confirm that span of control is related to dysfunctional support or perceived exclusion.[6] Our sample includes a wide range of control span (see participants and procedure), therefore, we apply for future research on this topic.

Practical Implications

Three practical implications can be derived from the study; these implications are linked to (1) LPT-relevant triggers, and (2) need-based expectations as a leader. First, to avoid threats to LPT, organizations should create an environment and culture where triggers based on being an LPT do not

occur. The working-time leadership model should be implemented in a task-oriented and functional manner. The necessary task analysis, job allocation, and prognostic evaluation aim to clarify the organizational tasks and roles of followers and leadership colleagues (Ellwart, Russel, & Blanke, 2015). This clarification includes, among other things, clear agreements on the definition and delegation of tasks, objectives, and representation rules (Karlshauer & Kaehler, 2017). Therefore, followers' participation in the change from full-time leadership to LPT might be central to overcoming resistance to LPT (e.g., Fernandez & Rainey, 2006). Thus, unrealistic expectations and the resulting cynicism of followers may be avoided (Bessing, Gärtner, & Schiederig, 2017). Additionally, organizations should create an environment and culture that supports the success of LPT through respect, professionalism, and continuous enhancement, so that, followers leader-related stereotypes, such as "a good leader is omnipresent" (e.g., Melchers & Zölch, 2001) would likely be unrealistic.

Second, the individual expectations and needs of LPT, the evaluation by LPT of potential triggers, and the search by LPT for resources to protect and support their own role provide useful perspectives for organizational human resource management as well as for the individual leader. With a massively changed working-time schedule due to family or other obligations, roles and role expectations inevitably change. LPT have to reflect their expectations and needs in new leadership situations (Jochmann-Döll, 2017). Since triggers have to be perceived as threatening, another approach is to influence the perception and evaluation of potential triggers in practice (cf., Petriglieri, 2011). Even though avoiding self-threatening evaluation (coping) has limitations, studies that present the organizational and clinical context show that people differ in the perception and evaluation of triggers. For example, in their study, Meier and Semmer (2018) found that leaders and followers differ in their evaluation regarding the illegitimacy of the same tasks.

Conclusion

The study transferred the theoretical concept of SOS (Semmer et al., 2007, 2019) to the context of LPT. Furthermore, the results provide empirical evidence for the threat mechanism based on the interplay of triggers and frustrated needs. In addition to these theoretical contributions, we offer approaches for the practical risk management of LPT.

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Footnotes

[1]There are no scales in prior research perceived exclusion as a leader or role identification. Therefore, LPT experts (consultants, researchers, N = 5) developed items based on theoretical definitions. The fit of the items to the corresponding construct was verified by cognitive interviews (e.g., Drennan, 2003). To differentiate statistically between dysfunctional support (independent variable) and perceived exclusion (mediator), we conducted a confirmatory factor analysis (CFA, see preliminary analyses). The psychometric properties of the dependent variables (role identification, job satisfaction, and rumination) were assessed according to Schmidt-Atzert and Amelang (2012).

[2]The Mann-Whitney U-Test for group differences was not significant for dysfunctional support, U = 810.00, Z = -.08, p = .938, and perceived exclusion, U = 797.00, Z = -.42, p = .672.

[3]The Kruskal Wallis H-Test for group differences was not significant for dysfunctional support, H(5) = 4.31, p =.506, and perceived exclusion, H(5) = 7.77, p = .169.

[4]Pearson correlations indicate a positive relationship between the extent of working time reduction of dysfunctional support, r = .42, p < .001, and perceived exclusion, r = .40, p < .001.

[5] The Kruskal Wallis H-Test for group differences was not significant for dysfunctional support, H(2) = .97, p = .616, and perceived exclusion, H(2) = .79, p = .675.

[6] Pearson correlations indicate no relationship between the LPT span of control and dysfunctional support, r = .15., p = .070, and perceived exclusion, r = .01, p = .410.

Study 4

Threats as a Stress in Critical Adversity Situations (CAS)

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Threat as a Stress in Critical Adversity Situations

Abstract

Emergency teams facing critical adversity situations (CAS) often feel questioned in their professional roles as conscientious rescuers leading to feelings of threats as a kind of stress experience. According to the Stress-as-offence-to-self theory (Semmer et al., 2007), perceptions of insufficiency and *disrespect* trigger threats by frustrating underlying needs. In this study, we explore threats in CAS by analyzing direct and future-related consequences of threats, investigating activation of threat triggers during in- and post-action phases of teamwork, and evaluating the mediating role of needs. In a multi-task experiment, teams (N = 60 dyads) experienced a controllable mission (non-CAS), followed by a CAS-mission in a computer simulation task. After CAS, teams received negative feedback (*situation-nonspecific* feedback; *situation-specific* feedback; *no* feedback). We measured threats, concerns of self-esteem regarding the present CAS and beliefs of success and fear of failure regarding future CAS, activation of insufficiency and disrespect triggers, and need-frustration. High feelings of threats are accompanied by low state self-esteem as well as by low beliefs of success and high fear of failure. While insufficiency triggers were activated in CAS but not in non-CAS, disrespect triggers were activated by situation-nonspecific and -specific feedback but not by no feedback. Furthermore, the results of mediation models indicate the postulated need-based mechanism between triggers and threats. Our study highlights that action- and post-action phases of CAS pose a variety of risks to experience of threats. To help individuals cope with these risks, needs are important screws.

Keywords: threats, stress, frustrated needs, critical adversity situations

Threat as a Stress in Critical Adversity Situations

"Police and emergency services are on duty 24/7 to protect each and every one of us. Yet they are often hindered in their work, insulted, or attacked" (Federal Ministry of the Interior, Building and Community Germany, 2017). Such stressful work events make emergency teams performing *in critical adversity situations (CAS*) often feel threatened in their role as reliable and conscientious rescuers (e.g., BBC, 2019; Feltes & Weigert, 2018). As a consequence, they get exhausted, even though they are doing the most important jobs for society (e.g., Anshel, 2000). To improve the understanding of threats in CAS and to identify approaches to assist emergency teams in coping, triggers and mechanisms of threats are a topic of interest.

Threats are a kind of stress experience (Semmer et al., 2019; Tuckey et al., 2015). According to the *Stress-as-offence-to-self theory* (*SOS*, 2007, 2019), threats occur by perceptions of *insufficiency* (i.e., the experience of failure) and *disrespect* (i.e., devaluation by others) that frustrate underlying needs (e.g., need for belonging). The daily work of emergency teams is characterized by phases of task execution (*in-action*), in which they are confronted with dynamic, ambiguous, complex situations (*critical adversity situations, CAS*, Semling & Ellwart, 2016), and phases of team reflection and feedback after task execution and during episodes of low activity (*post-action*; Schmutz et al., 2018). Especially in-action phases, emergency teams experience disrespect by (verbal) attacks of the public (e.g., Ansehl, 2000) but also insufficiency. Although emergency teams receive intensive training, the specific characteristics of CAS cause them to fail or behave inappropriately (e.g., inaccurate shooting, Anshel, 2000). Moreover, post-action phases of team reflection and feedback offer the potential to perceive disrespect, for instance, by reprimands of supervisors (Anshel, 2000). So emergency teams are exposed to potential dangers for threats at different phases of their teamwork, in- and post-action (cf. Marks et al., 2001). Moreover, experiences of threats are associated with negative emotional and cognitive functioning (e.g., anxiety, anger; Tuckey et al., 2015), which is contrary to a positive and future-oriented perspective being an important resource for a successful coping with CAS (e.g., Fletcher & Sarkar, 2011; Kossek & Perrigino, 2016; Stoverink et al., 2017).

In an experimental setting, we take on the temporal perspective from teamwork phases (Marks et al., 2001) and examine whether situational characteristics in-action (CAS vs. non CAS) and different kinds of feedback styles during post-action phases (situation-specific vs. situation-nonspecific vs. no feedback) activate insufficiency and disrespect as triggers of threats. Furthermore, sparse research empirically confirms the theoretically assumed need-based threat mechanism (e.g., Stocker et al., 2010), so we operationalize basic human needs and investigate them as underlying mediators between triggers and threats. Additionally, we examine the direct negative effects of threats on state self-esteem, but also more long-term effects on beliefs of success and fear of failure concerning future task execution.

This study extends research in several ways: First, we reinforce that threats are a type of stress that has direct but also long-term consequences. Second, we consider triggers postulated in SOS (Semmer et al., 2019) from a temporal teamwork perspective (Marks et al., 2001) and highlight that there is a great potential of threats not only in the CAS itself but also afterward. Third, we experimentally confirm the need-based threat mechanism assumed by SOS theory, emphasize the importance of triggers and needs for threats. Through the experimental design of our study, causal interpretation of the trigger-need-threat mediation is possible. At a practical level, our study highlights that action- and post-action phases of CAS pose a variety of risks to experience threats within and after an emergency scenario. To help emergency teams cope with these risks, needs are important screws. Need-frustration explains why threat perception occurs. Consequently, reattribution and reflection is an approach to lower need frustration and decouple the occurrence of threats in case of activated triggers in the context of CAS.

Direct and Long-term Consequences of Threats in CAS

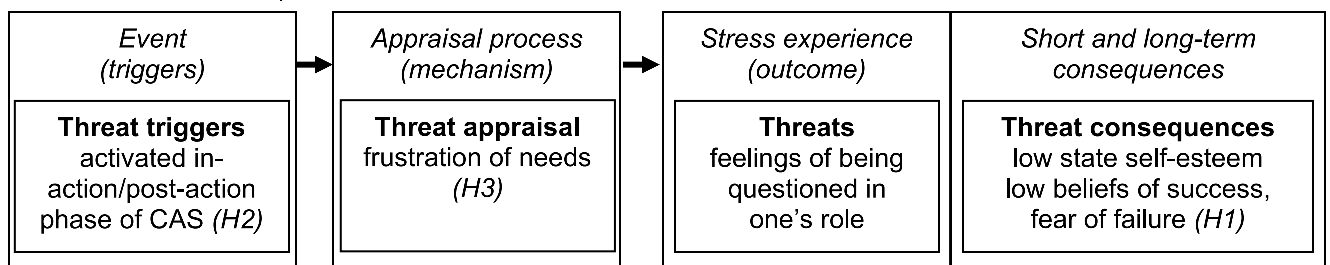
Although threats are most commonly thought of as a feeling triggered by a physical attack, various research disciplines describe threats as a kind of stress experience (Semmer et al., 2019; Tuckey et al., 2015). Individuals can appraise stressful events as challenges (i.e., feeling of mastery or gain), as hindrances (i.e., feeling hindered in the goal attainment), or as threats (i.e., feeling harmed or questioned in one’s role), all experienced as a kind of stress. Therefore, emergency workers who report

threats concerning stressful events feel questioned or harmed in their professional role as reliable and conscientious rescuers (Figure 1).

By investigating direct, affective consequences of stressful events, Tuckey et al. (2015) show that threats as a kind of stress experience are associated with anger and anxiety (cf. hindrances with fatigue, and challenges with positive affect). Also studies investigating threats in terms of SOS postulate direct negative consequences of threats such as low situational well-being (Semmer et al., 2020), feelings of anxiety, nervousness, sadness, and resentment (Semmer et al., 2020; Stocker et al., 2010), or high level of strain (Meier & Semmer, 2018)[1]. Additionally, threats as a kind of stress experience are not only related to direct but also to more long-term effects such as turnover intention (e.g., Apostel et al., 2017).

Figure 1

Overview of the threat process



Future-related cognitions and emotions in the sense of a positive mindset or an optimistic view, are important resources that help individuals to bounce back from adversity and make them resilient (Fletcher & Sarkar, 2013; Kossek & Perrigino, 2016; Stoverink et al., 2017). The daily work of emergency teams is characterized by *critical adversity situations* (*CAS*, e.g., Nedzinskas et al., 2020; Regehr & Millar, 2007) that are described as being confronted with complexity, dynamic, and ambiguity (e.g., Semling & Ellwart, 2016). CAS pose high demands on the emergency teams, who also bear a high level of responsibility for themselves and others (Hageman et al., 2012). Emergency teams not only have to be able to function during the action phase, but they also have to bounce back quickly to their

[1] Although research within the SOS does not explicitly measure threats as a dependent variable, it understands stress reactions triggered by perceptions of insufficiency and disrespect as threats to the self (cf., Semmer et al., 2019).

performance level in the post-action phases, as the next emergency can follow immediately (e.g., Paton, 2006). Negative cognitive and emotional states are detrimental, in this respect; instead, emergency teams benefit from positive views on task execution in future CAS. A positive view means believing in one's abilities to master the subsequent task successfully and is an important resource for bouncing back from adversity (Stoverink et al., 2017).

In this study, by referring to this resource perspective, we intend to show that threats (as a kind of stress experience) have serious negative effects on the work of emergency teams by impairing positive, future-related beliefs and thus limiting potential resources for coping with CAS. We explore the direct negative effects of threats on state self-esteem as well as on future-related beliefs of success and fear of failure acting as possible resources for dealing with threats in CAS.

Hypothesis 1: Perceived threats in CAS are negatively related to performance and social state self-esteem, beliefs of success, and positively to fear of failure in future situations.

CAS and the Activation of Threat Triggers

According to SOS (Semmer et al., 2007; 2019), insufficiency and disrespect are two triggers of threats. The perception of *disrespect* originates from events in which others' behaviors signal a lack of respect and appreciation. There is a wide range of disrespectful behaviors, for example, rude feedback, making someone lose face in the presence of others, ignoring someone, lacking social support, or in a more indirect way by the assignment of unnecessary tasks or providing inadequate technology (Semmer et al., 2007). The perception of *insufficiency* results from events in which individuals experience failure attributing this failure internally to a lack of abilities and skills (Semmer et al., 2007; 2019). Insufficiency often manifests in events demanding performance, such events, in which individuals evaluate their abilities and skills negatively in terms of attaining performance-related goals and perceive themselves as insufficient) or demanding ethical behavior (i.e., events, in which individuals evaluate their skills and abilities in terms of moral appropriateness to the given situation, Semmer et al., 2019). Therefore, a variety of events are potentially perceived as insufficient or disrespectful (i.e, activate insufficiency and disrespect as threat triggers).

Perceptions of insufficiency and disrespect are not uncommon in the daily work of emergency teams, who often complain about threats at work (e.g., Feltes & Weigert, 2018). For example, police officers report being stressed by an inaccurate shooting (Anshel, 2000) or firefighters report a lack of experience to handle the computer in the rescue vehicle successfully (Jacobsson et al., 2015). Both examples illustrate becoming aware of wrongdoing due to insufficient skills or abilities. Furthermore, firefighters report feeling stressed by being assaulted, exposed to violence such as stone-throwing, snowballs to the head, and public verbal attacks (Jacobsson et al., 2015), which illustrates the experience of disrespect. Reasons why emergency teams experience disrespect and insufficiency in their daily work and how both triggers manifest in the context of CAS is shown below.

Insufficiency Triggers in CAS

The emergency team's frequent experience of insufficiency can be explained by CAS these teams are confronted with in their day-to-day work (cf. Semling & Ellwart, 2016). CAS are characterized by complexity, dynamic, time pressure and pose undefined and complex demands for which there is no perfect solution (i.e., ill-defined problems, Wildman et al. 2011). Therefore, the question of what the appropriate action in CAS is cannot be answered unambiguously, so that the evaluation of being successful or failing remains additionally open (Semling & Ellwart, 2016). Moreover, teams working under CAS circumstances have high responsibility (e.g., Hagemann et al., 2012), as being insufficient has serious consequences for themselves and others (e.g., Maynard et al., 2018). This even makes them liable for mistakes (Marsden et al., 2019). As a result, emergency teams strive to master the CAS successfully. However, despite their best efforts, they also exhibit erratic behavior in the CAS, such as inaccurate shooting (Anshel, 2000) or they perceive that their skills are not sufficient, reported by referring to a lack of experience with the computer in the rescue vehicle (Jacobsson et al., 2015). They might perceive themselves as insufficient due to a failure in the CAS itself (in-action) based on their own skills and abilities, even if situational characteristics of the CAS have influenced the wrongdoing.

According to Petriglieri (2011), situational characteristics can also trigger threats without being attributed as an internal failure. However, the fact that situation characteristics such as those of CAS (e.g., complexity, ambiguity, Semling & Ellwart, 2016) appear threatened can also be explained by

insufficiency perceptions. Based on the threat-rigidity thesis (Staw et al., 1981), individuals respond to stressful demands such as those CAS place on individuals with impaired information processing. Thus, instead of having different environmental factors in mind and adapting as would be required to successfully master CAS (Maynard et al., 2018), characteristics of CAS lead to a narrowed field of attention, a reduction in the number of alternatives considered, and further actions that make failure likely (Kamphuis et al., 2011). Thus, hindrances in action experienced by situational characteristics of CAS might also lead to insufficiency and thus to threats while handling CAS (i.e., in-action). In this respect, we different two forms of insufficiency perceptions in CAS: the *experience of failure* (i.e., internal wrongdoing due to skills and abilities) and *hindered-action regulation* (i.e., external wrongdoing due to contextual and environmental factors).

As illustrated, both types of insufficiency, the experience of failure and hindered action regulation, appear to be directly related to actions in CAS, and thus, both more-or-less directly depend on situation characteristics. In our experimental study, we compare perceptions of insufficiency in CAS and controllable situations (non-CAS) and take into account that perceptions of insufficiency can be activated internally as an experience of failure and externally as hindered action regulation. We hypothesize:

Hypothesis 2a: In uncontrollable CAS activates hindered-action-regulation and experience of failure as insufficiency-triggers compared to non-CAS.

Disrespect Triggers in CAS

Emergency teams often experience disrespect while handling a CAS (e.g., Anshel, 2000). For example, Jacobsson et al. (2015) reported that firefighters feel disrespected in their duty by being assaulted, exposed to violence such as stone-throwing, and public verbal attacks. According to respect research (Decker & Van Quakebeke, 2015; Grover, 2013, Grover, 2020), this lack of receiving an unconditionally guaranteed and dignified treatment is one of two dimensions of disrespect, that we term *relationship-related disrespect*. Relationship-related disrespect manifests primarily in CAS itself (in-action) by dealing with the public, perpetrators, victims, or bystanders (Duran et al., 2018),

Furthermore, we find evidence that emergency teams also experience disrespect in post-action phases by feedback or a lack of support from supervisors (Anshel, 2000; Jacobsson et al., 2015). Krings et al. (2015) show that feedback need not even include offensive statements in an inconsiderate tone to be perceived as disrespectful (as is the case in behavior that is categorized as relationship-related disrespect). They report that dwelling on or blowing up mistakes, or suggesting that nothing was easier than avoiding a given mistake can also be perceived as disrespectful, even if it is expressed in an appropriate tone. Here, the disrespect is not related to human dignity, rather to the valuation of an individuals' excellence or expertise, and thus the performance and effort an individual has invested. According to respect research, this kind of disrespectful behavior describes another dimension of respect (Decker & Van Quakebeke, 2015; Grover, 2013; Grover, 2020), that we term *performance-related disrespect*. Performance-related disrespect manifests in interactions between team members or supervisors "because making judgments about others is essential to performance management and leadership" (p. 35, Grover, 2013). Therefore, the danger of performance-related disrespect exists also in reflection and feedback phases after a CAS (post-action).

In this study, we aim to show that feedback in post-action phases can activate disrespect triggers. However, the question arises, what makes feedback after a CAS appear disrespectful concerning performance in the CAS? According to Semmer et al. (2016; 2020), disrespect is experienced when the feedback recipient feels his or her interests are neglected and the feedback provider expresses disinterest (Semmer et al., 2016; Semmer et al., 2020). In the context of a CAS, not respecting the stressful situation characteristics of CAS in the feedback might lead to the attribution of such disinterest and, thus, to disrespect perceptions on the feedback receivers' side. Conversely, putting oneself in the situation of other people (i.e., CAS) and evaluating their performance considering the stressful situation characteristics of CAS (e.g., uncontrollable, complex, dynamic), might signal interest in the counterpart's experience and feelings, which is perceived respectfully. Van Thielen et al. (2018) who investigates teams in CAS, supports this assumption. They show that negative feedback is constructive and helpful when the feedback provider is tactful, supportive, and considerate of the feedback receivers' feelings.

Including situation specificity of CAS in feedback might be the key determinant for perceiving feedback after a CAS as respectful. Conversely, neglecting situation specificity of CAS in feedback after a CAS might be the key determinant that activates perceptions of disrespect. In this experimental study, we examine whether feedback after a CAS activates disrespect as a threat trigger. In more detail, we investigate the situation-specificity as a crucial determinant to perceive feedback after a CAS as disrespectful, and include the idea of respect research, by taking different kinds of disrespect (i.e., performance- and relationship-related disrespect) into account. Since negative feedback, in particular, is associated with stress and threat experiences (e.g., Burnette et al., 2010; Dunn & Dahl, 2012; Krings et al., 2015; Lee-Won et al., 2017), we examine the effects of negative situation-specific feedback, compared to negative situation-unspecific feedback and no feedback, on trigger activation.

Hypothesis 2b: In the post-action phase of CAS, negative, situation-nonspecific feedback activates performance- and relationship-related disrespect triggers compared to negative, situation-specific feedback, and no feedback.

Frustrated Needs. The Underlying Mechanism of Threats

Why individuals experience threats in the face of these triggers is due to appraisal processes (e.g., Tuckey et al., 2015), which means that individuals appraise stressful events (triggers) as threatening (Figure 1). While a variety of factors (e.g., attachment, beliefs, values) are discussed influencing emotional or motivational appraisal processes in general (Ellsworth & Scherer, 2003), frustrated needs (e.g., for competence, relatedness, or autonomy) are, in specific, cited as important determinants concerning the appraisal of threats (Ntoumanis et al., 2009). Needs are more than goals (e.g., „as a paramedic I want to be helpful"), which individuals try to reach (Deci & Ryan, 2000). Rather, needs are internal forces that are essential for supporting life and growth. If they are unmet, they create tension, stimulate drives within the individual (Kanfer et al., 2017), but also have negative cognitive, emotional, and motivational effects (e.g., Manganelli et al., 2018; Olafsen et al., 2017). For example, Quested et al. (2011) show that frustrated needs reported as threats were accompanied by feelings of anxiety. Also in the framework of SOS (Semmer et al., 2007; 2019), threats are explained by an underlying mechanism of need frustration.

While Semmer et al (2019) refer to a global need for positive self-view, Semmer et al. (2007) include more specific needs, such as the need for competence and relatedness to explain threats. The *need for competence* describes an individual striving to be effective in the achievement of desired outcomes (e.g., to have moral strength, to be competent, to fulfill ideal self-representations), which is frustrated by perceptions of insufficiency (Semmer et al., 2007). Individuals perceive that they do not meet their standards or ideals of self-representation. As a result, they cannot think of themselves as capable and effective individuals, instead, they experience feelings of failure and doubts about their efficacy, so that their need for competence is frustrated. The *need for relatedness* describes an individuals' striving to belong to a given group (i.e., to have close relationships with others), which is frustrated by perceiving disrespect (Semmer et al., 2007). By facing disrespect, individuals perceive themselves as treated poorly, ignored, or excluded instead of experiencing intimacy and genuine connection to others, which frustrates their need for relatedness.

In addition to the need for relatedness, Huo et al. (2010) refer to a *need for status* to describe effects of (dis-)respect. In the *Dual pathway model of respect*, Huo et al. (2010) differentiate needs for relatedness and need for status by describing two pathways through which respect shapes attitudes and behavior: Whereas the need for status describes the degree to which others value and appreciate them resulting in social engagement, the need for relatedness describes the degree to which others like them resulting in personal well-being. Especially concerning the two forms of disrespect as triggers in and after CAS, the need for status might be a fruitful extension of the needs relevant for threat experiences.

Furthermore, in addition to the need for competence and relatedness Semmer et al. (2007) refer to, *self-determination theory* (*SDT*; Deci & Ryan, 2000) as a well-established theory in the work context, suggests a need for autonomy (Deci et al., 2017). The *need for autonomy* describes the desire to have a way of determining what and how something is done and how resources are allocated and used. That this need is related to threats is shown at least by the study of Quested et al. (2011), who related the frustration of the three SDT needs (relatedness, competence, and autonomy, Deci & Ryan, 2000) to experiences of threats, and their satisfaction to the experiences of challenges.

This study examines the need for competence, relatedness, autonomy, and status in the mechanism of threats. Up to our knowledge, there is sparse empirical evidence confirming the mediating role of needs in the threat mechanism. Based on suggestions of SOS theory, Stocker et al. (2010) show that perceived appreciation, i.e., referring to a kind of standing or worth in front of colleagues and supervisors, acts as a mediator between illegitimate tasks as a form of disrespect and job satisfaction, or feelings of resentment. Rynek and Ellwart (2021) provide evidence that needs mediate the relationship between triggers and negative outcomes focusing on dysfunctional support (i.e., social support that is accompanied by reproaches) as a threat trigger for part-time leaders and the need for relatedness. Research modeling the underlying mechanism between multiple triggers, mediating needs, and threats simultaneously are lacking. The interplay that we assume between specific triggers and specific needs is explained below.

Insufficiency Trigger-Needs-Relations in CAS

Insufficiency triggers might be related to the need for competence. Individuals strive to explain their own and other individuals' behavior and engage in attribution processes. They attribute causes concerning the experience of insufficiency (Weiner, 2014). If individuals attribute insufficiency internally to their own behavior identifying their aptitude or talent as causes, this concerns directly their appraisal of competence (Perry & Hamm, 2017). For example, if a police officer, handling a CAS, attributes an inaccurate shooting to a lack of abilities in shooting, this is accompanied by feelings of incompetence. Thus, a frustrated need for competence may be the result of internal attribution in insufficiency.

Furthermore, insufficiency triggers might be related to the need for autonomy. If individuals perceive their actions as independent of the outcome, or in other words, if they feel that they cannot determine the outcome with their actions, this leads to the perception of helplessness (cf. Seligman, 1975), a kind of loss of control. The general feeling of being hindered in action is also associated with feelings of loss of control, which is an unpleasant state that individuals try to avoid (cf. Brehm, 1966). For example, if a police officer, handling a CAS, attributes an inaccurate shooting to being hindered in

action (e.g., I stand with my back to the wall…), this is accompanied by feelings of control loss. Thus, a frustrated need for autonomy might also be the result of perceiving insufficiency.

Integrating these relations between perceptions of insufficiency and the need for competence and autonomy into the trigger-need mechanism, insufficiency perceptions might not only offend the need for competence but also for autonomy resulting in threats. We postulate:

Hypothesis 3a: The need for competence and the need for autonomy mediate the relationship of insufficiency triggers (experience of personal failure and hindered action regulation) after facing a CAS on threats.

Disrespect Trigger-Needs-Relations in CAS

Disrespect triggers might be related to the needs for status and relatedness. Respect research implies specific connections between (dis)respect and needs for relatedness and status (Huo et al., 2010). In their dual pathway model of respect, Huo et al. (2010) describe that respect, is mediated via the need for status (i.e., desire for being valued by others) or the need for relatedness (i.e., desire for being liked by others) and shape attitudes and behaviors. If individuals are not treated fairly, they perceive that they are not worthy and valued members of a group, implying a low status. Similarly, individuals from unfair treatment may also perceive that they are not liked by others, implicating a feeling of low relatedness. Blincoe and Harris (2011) confirm the relationship between a lack of respect and frustrated needs for status and relatedness.

Integrating these relations between perceptions of disrespect and the need for relatedness and status into the trigger-need mechanism of SOS theory (Semmer et al., 2007), disrespect perceptions might not only offend the need for relatedness but also for status, which, in turn, lead to threats. We postulate:

Hypothesis 3b: The need for relatedness and the need for status mediates the relationship of disrespect triggers (relationship- and performance-related disrespect) after facing a CAS and threat.

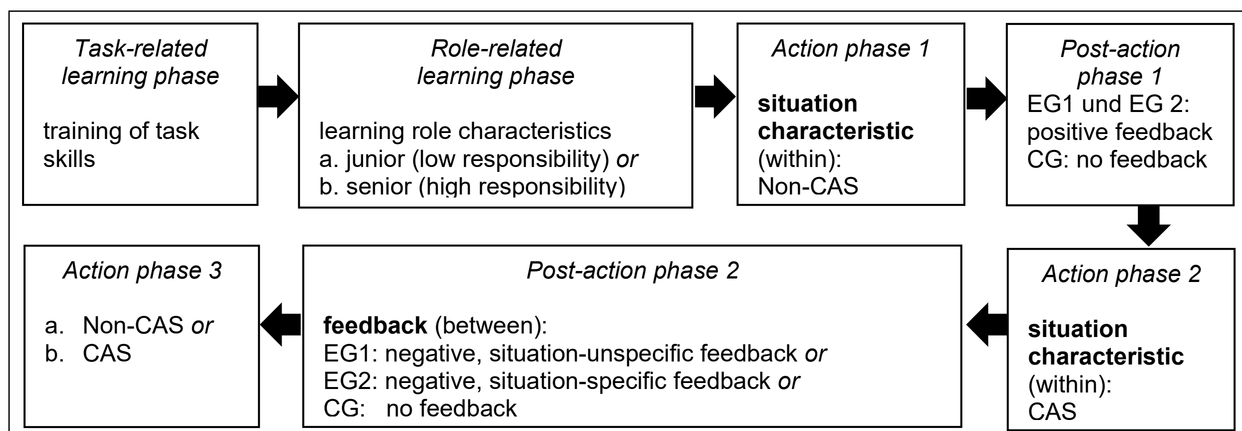
Method

Participants

Participants included *N* = 120 students from a German university. Students were recruited via advertisements on campus and the university student participant recruitment system. In the sample, 73.33% of the participants were female. Their mean age was *M* = 21.66 years (*SD* = 2.69). All students participated in teams of two in the experiment and received course credit. In 73.33% of the teams, the team members were friends, in 8.33% of the teams, they knew each other briefly, in 16.73% of the teams, they did not know their team partner, and 1.73% of the team members did not provide any information on their relationship.

Figure 2

The experimental procedure



Task – Characteristics of CAS

To implement a CAS in the experimental setting, we used the *Networked-Fire-Chief* computer simulation (*NFC*32 V1.42; Omodei et al., 1996) and stimulate an interdependent team-task-situation. Originally, the software was developed to examine psychological processes in complex, dynamic, and uncontrollable situations. The simulation runs to two networked computers simultaneously so that team members work together from their individual computers. The teams' task was to fight emerging fires on a map of a village environment. Team members had three fire trucks and three helicopters at their disposal for extinguishing fires. After use, they had to be refilled with water by positioning them at the lake. Situation characteristics (CAS vs. Non-CAS) are varied through the number of fires and the

speed at which they spread (e.g., CAS was implemented by a high number of fast-spreading fires). The functioning of the simulation can be learned easily.

Procedure

The study included a task- and role-related learning phase, three action phases, and two post-action phases (see Figure 2) and lasted approximately 90 minutes for each team. The first action phase served as a baseline in which the subjects were confronted with a situation that was easy to handle so that they were able to act as they had learned in the learning phase. Action phase 2 allowed the manipulation of a CAS. The following action phase 3 was again an experimental control phase.

Participants sat opposite each other at two computers in one room. They started with a task-related learning phase (similar to Uitdewilligen et al., 2013), in which they were introduced to the use of Networked-fire-chief-simulation. After a standardized presentation, an 8-minute practice trial followed during which the participants could familiarize themselves with the functioning of the simulation. The participants then evaluated their task skills in a questionnaire. In the following role-related learning phase, participants received information about four key role characteristics as a firefighter using a presentation (e.g., to be helpful). To ensure a uniform, realistic, and structured task-execution, we assigned responsibility as an additional key role characteristic to one participant as a senior firefighter (to be responsible – high responsibility) and one participant as a junior firefighter (the team partner is responsible – low responsibility). The senior team member received extra information (e.g., to monitor the environment) and was instructed to make decisions for the team in the case of CAS. This role-related learning phase was followed by a test on their knowledge of their role characteristics, role behavior, and role identification.

After the task- and role-related learning phases, which were the same for all teams, participants started their team tasks. They were allowed to talk to each other and were instructed to fight emerging fires together. In the three action phases, which were separated by two post-action phases, every team passed the Networked-fire-chief-simulations with two different *situation characteristics*, i.e., non-CAS and CAS (independent variable 1). In action phase 1, all teams faced a non-CAS operationalized by a few, slow-spreading fires. This non-CAS was easy to handle so that teams had a successful first

mission. During the following post-action phase 1, two-thirds of the teams received positive team feedback from the principal investigator (e.g., "You managed the situation successfully."). One-third of the teams, the control group (CG), received no feedback. With regard to H2a, in the subsequent action phase 2, a CAS was operationalized by many, fast-spreading fires. This CAS led to overburdening, decision dilemmas, and failure of team members' role requirements (i.e. team members are not able to behave according to their role characteristics, for instance, being too slow to extinguish all fires). Concerning H2b, in the following post-action phase 2, the CG again did not receive any feedback. For the other teams the principal investigator provided feedback in different styles of *feedback* (independent variable 2) so that teams received either negative, situation-unspecific feedback (EG1) or negative, situation-specific feedback (EG2). In EG 1, the principal investigator evaluated performance negatively and ignored situational characteristics (e.g., by simply saying: "You failed."). In negative, situation-specific feedback (EG2), supervisors gave feedback consisting of negative evaluation (same in G1) that also refers to situational characteristics (e.g., "The situation was difficult to handle."). After transition phase 2, half of the teams experienced another CAS, and half of the teams a non-CAS. This action phase 3 was implemented to show that there was no learning curve because we did not randomize the sequence of non-CAS- and CAS-situation characteristics across the action phases 1 to 3.

Participants answered a questionnaire during each transition phase 1 and 2. Immediately after having finished the simulation in action phases 1 and 2, we checked our manipulation of situation characteristics). After receiving feedback, we checked our manipulation of feedback and measured threat, beliefs and concerns related to the handling of a current CAS and future CAS, trigger-activation, and needs satisfaction.

Measures

Participants rated all responses on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). Since we derived scales used for measuring threat, trigger-activation, and needs in the context of CAS from theoretical definitions (cf. Rynek & Ellwart, 2020) or adapted along with validated scales (e.g., Basic psychological need satisfaction scale - BPNSS, Deci & Ryan, 2000), validity was ensured using expert interviews and correlates. Detailed information on validity is provided in the

appendix. All items used in the questionnaire can be requested from the corresponding author. To measure performance and social state self-esteem as well as the beliefs of success and fear of failure as potency beliefs, we used validated scales.

Threat

Four items assess the participants' perception of the extent to which they felt questioned in their role as a firefighter (e.g., "I feel questioned in my role."; α = .79).

Concerns related to Present Task Execution

We used three items, each with the highest reliabilities of the *State self-esteem scale* of Heatherton and Polivy (1991) to measure performance and social state self-esteem. To measure *performance state self-esteem,* participants rated the extent to which they currently feel their performance worthy (e.g., "I feel confident about my abilities.", α = .81). *Social state self-esteem* was measured by referring to the extent to which participants feel self-conscious, foolish, or embarrassed about their standing in the team or public image in the current course of action (e.g., "I am worried about what other people think of me.", α = .72).

Beliefs Related to Future Task Execution

For measuring the beliefs of success and fear of failure, we chose three items each with the highest reliabilities of the *Questionnaire to assess current motivation in learning situations* (Rheinberg et al., 2001). *Beliefs of success* refer to the extent to which participants feel confident to succeed in the following action phase (e.g., "I believe that I can handle the difficulty of the next simulation in my role as a firefighter." α = .78). Participants rated the extent to which they feel unable to succeed in the following action phase as a negative incentive to measure *fear of failure* (e.g., "I am afraid that I might become embarrassed in my role in the next simulation." α = .85).

Trigger-activation

To capture *experience of failure* as a perception of performing inadequately, we used three items (e.g., "I was not able to achieve the desired results"; α = .82). We used three items to measure *hindered action regulation.* Participants rated the extent to which they felt hindered in carrying out their actions (e.g., "I did not know how to act."; α = .76). For measuring *performance-related disrespect,* we used

three items indicating a lack of respect that refers to an individuals' expertise and performance (e.g., "I got the recognition I deserve for my performance."; α = .74). *Relationship-related disrespect* was measured by three items. Participants rated the extent to which they felt equally treated between individuals (e.g., Others conveyed to me with their behavior that they did not think anything of me [as a person].; α = .87).

Needs

Items measuring needs satisfaction were based on validated scales (e.g., BPNSS, Deci & Ryan, 2000) and express the participants' satisfaction with regard to the fulfillment of their needs. Three items measured the *need for competence* by referring to participants' desire for the craving to accomplish desired outcomes and for being able to act effectively (e.g., "I had the feeling that I was competent."; α = .89). Three items measured the *need for autonomy* as the participants' desire to be the perceived origin of one's behavior (e.g., "I had the feeling that I was in control of what I was doing."; adapted from the need for autonomy of BPNSS; α = .78). The *need for relatedness* was measured by three items that indicate the participants' desire for connectedness to other people (e.g., "I had the feeling that I belonged to others."; α = .83). We used three items measuring the *need for status* referring to the participants' desire for a positive standing and worth in a group (e.g., "I had the feeling that I was an important person for others."; α = .86).

Manipulation Checks

For checking the manipulation of *situation characteristics,* participants rated their perception of the situation based on five characteristics (complexity, dynamic, time pressure, resource availability). The manipulation of *feedback* was checked with five items (e.g., The principal investigator judged me negatively without considering the situation), similar to Krings et al. (2015), who also asked their participants to evaluate the feedback.

Checking the Learning Procedure

We checked *task skills* at the end of the task-related learning phase. Both knowledge and skills to handle the simulation were evaluated by two items (I know how fire extinguishing works; If a fire emerges in the simulation, I can extinguish it). Furthermore, we checked several aspects related to role-

learning: *role knowledge, role identification*, and *role behavior*. Before starting action phase 1, we checked the participants' role knowledge. Participants had to list their role characteristics and answered the question of who makes the decisions in CAS. Participants had to rate the extent of role identification (How well do you identify with the role as a firefighter/as a senior being responsible?). Furthermore, we checked whether the participants would apply their role characteristics in an emergency situation (role behavior). To do this, the participants imagine an emergency situation, in which they act as firefighters and judge their behavior in this situation. For this, their role characteristics were presented as dimensions (e.g., helpful ... no helpful, fast ... slow). On a Likert scale with values between 1 and 5, values of 5 indicated role-consistent behavior, while values of 1 indicated role-inconsistent behavior. After action phases 1 and 2, participants judge their behavior in the action phases also along with these dimensionally presented role characteristics to check whether they have behaved according to their role characteristics.

Statistical Analyses

To check the situation characteristic and feedback manipulation, we calculated group differences using *t*-tests in IBM SPSS Statistics 26 (Version 26.0.0.1). For testing hypothesis 1, we consider correlations of role threat and emotional and motivational effects. To test hypothesis 2a, we conducted a MANOVA with repeated-measures comparing trigger-activation in non-CAS and CAS. This MANOVA was calculated only for the no-feedback group (G3) to avoid confounding effects with feedback manipulation. A second MANOVA comparing trigger-activation of the three feedback groups (G1, G2, G3) provides results for hypothesis 2b.

Before testing hypotheses 3a and 3b, we analyzed the internal structure of triggers and needs to show that they represent independent constructs. We conducted a confirmatory factor analysis (CFA) with a lavaan package in RStudio (Version 1.2.5019) and compared the properties of two structural models: Model 1 represents a g-factor model, where all items load on a single general factor (g-factor). Model 2 represents a first-order correlated factor model and contains two different but correlated factors that correspond to triggers and needs. We hypothesized that Model 2 fits the data better than Model 1. In both CFAs, we specified five triggers and five needs and the g-factor or a general trigger-

and a general need-factor as latent variables. To handle convergence problems, the unstandardized loading of the first item of each first-order factor was fixed to 1. We then evaluated both structural models based on different indices. We followed Kline (2011), Hu and Bentler (1999), and Dimitrov (2010) by evaluating the chi-square goodness-of-fit, *comparative fit index* (*CFI*), *Tucker-Lewis index* (*TLI*) – the values for both models should be above .95 –, the *root-mean-square error of approximation* (*RMSEA*), the *standardized root mean squared residual* (*SRMR*) – the values for both Model 1 and Model 2 should be below .08 and .06, respectively –, *Akaike information criterion* (*AIC*), and *Bayesian information criterion* (BIC). We did not have any missing data on any of the scales. The models were nested, so model fit could be compared by using the chi^2-differences test.

To test hypotheses 3a and 3b, we, first, conducted parallel mediation models for each trigger as independent variables, the four needs as parallel mediators, and threat as the dependent variable. We used nonparametric bootstrapping analyses macro by Preacher and Hayes (2004, 2008). Bootstrapping analyses are suited for smaller samples and do not impose the assumption of normality on the sampling distributions (Hayes, 2013). In detail, within the bootstrap test, we repeated the estimation of our structural models 5.000 times. The mediator effect is significant if the 95% bias-corrected and accelerated confidence interval (BCa CI) for the indirect effect does not include zero (Hayes, 2013). Due to the correlations between the four needs (results from bivariate correlations in appendix), we found no mediation effects for the parallel mediation models. Thus, we conducted separate mediations for each trigger-needs (independent variable-mediator)-combination, with threat as an outcome.

Results

Preliminary Results

Checking the Learning Procedure - Task skills

A total of 97.48% of the participants state that they knew (answered with *rather agree* or *agree*) how fire extinguishing works, and 95.83% of the participants also dared to extinguish a fire as soon as it appeared on the screen (answered with *rather agree* or *agree*). The performance changed little over the action phases 1 to 3. In action phase 1, subjects saved an average of 99.69% of the surface by extinguishing the fire during non-CAS. By comparison, in action phase 3, they saved 99.88% of the

surface during non-CAS. Statistically, we found a significant difference between the performance in a non-CAS in action phase 1 and action phase 2, $t(59) = 13.07$, $p < .001$. In a CAS in action phase 2, they saved an average of 83.51% of the surface by extinguishing fires. When the subjects in action phase 3 were confronted with a CAS, they saved 86.98% of the surface. Statistically, we found a significant difference between the performance in a CAS in action phase 2 and action phase 3, $t(59) = -2.46$, $p < .017$.

Checking the Learning Procedure – Role

A total of 72.50% of the participants named at least half of the role characteristics correctly and 97.50% of the participants correctly identified the senior as the decision-maker. In addition, they behaved according to their roles in the presented scenario. On a scale where values of 1 indicate role-inconsistent behavior and 5 indicates role-consistent behavior, the test participants answered on average with $M = 4.2$. ($SD = 0.5$), which also shows that the participants knew their role characteristics. The majority of the participants (61.81%) identified well or very well with the role of a firefighter. 21.82% said that they could identify with the role of a firefighter fairly, 13.64% poorly, and 2.73% could not identify with it. A total of 51.66% of the participants could identify with the role of a senior firefighter well or very well. 21.67% of the participants stated that they could identify with the role as a senior fairly, 18.33% poorly, and 8.33% not at all. Junior and senior firefighters experience the same degree of threat in the non-CAS, $t(118) = 1.10$, $p = .272$, and in the CAS, $t(118) = 1.21$, $p = .229$. Therefore, in the following calculations, no distinction is made for the role factor.

Manipulation Check

The perception of *situation characteristics* differs significantly between action phase 1 (non-CAS) and action phase 2 (CAS), $t(38) = -13.33$, $p < .001$. In action phase 1, participants were more likely to perceive characteristics of a non-CAS ($M = 2.4$, $SD = 0.8$), while in action phase 2, they were more likely to perceive characteristics of a CAS ($M = 4.6$, $SD = 0.7$). The perception of the manipulation of *feedback* via situation-specificity differs significantly between G1 and G2, $t(78) = 8.22$, $p < .001$. Participants who received situation-unspecific feedback evaluated the feedback as more inadequate in relation to the

mastered mission (*M* = 3.5, *SD* = 1.0) compared to participants who received situation-specific feedback (*M* = 2.0, *SD* = 0.6). Therefore, both manipulations have worked.

Structure Testing of Triggers and Needs

The CFAs revealed triggers and needs are distinct constructs. As expected, Model 2, with two distinct latent factors provided a better fit than Model 1, with only one g-factor. The model estimation did not terminate normally. Parameter estimates for one item of the trigger *relationship-related disrespect* had negative variances. We followed the instructions of Urban and Mayerl (2014) and removed outliers from the analysis. The model fit for both models was acceptable, although the goodness-of-fit-statistic was statistically significant for each model. An overview of goodness-of-fit indices of both models is presented in Table 1. The chi²-difference test showed that the hypothesized Model 2 represented the data significantly better than Model 2 ($\Delta\chi^2[1] = 4.26$, $p < .01$).

Table 1

Goodness-of-fit indices of alternative CFA models

Model	χ^2	*df*	CFI	TLI	RMSEA	SRMR	AIC	BIC
1: g-factor	385.112	244	.871	.855	.073	.109	6543	6699
2: first-order correlated factor	370.056	243	.901	.888	.066	.118	6522	6681

Note. χ^2 = chi-square for all models is $p < .01$; *df* = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual; AIC = Akaike information criterion; BIC = Bayesian information criterion.

Hypotheses-related Results

Hypothesis 1. As illustrated in table 2, threat correlates negatively with performance and social state self-esteem (beliefs and concerns regarding the handling of the current CAS), and with beliefs of success and fear of failure (beliefs and concerns regarding the handling of future CAS). Thus, high feelings of threat are accompanied by high feelings that the work performed is not worthy (performance state self-esteem), high feelings of embarrassment about their standing in the team (social state self-esteem), low beliefs of mastering the next CAS successfully (beliefs of success), and high concerns of being able to perform adequately (fear of failure). These results confirm hypothesis 1.

Table 2

Correlations of threat and resilience-promoting factors after action phase 2

Scale	*M*	*SD*	Min	Max	1	2	3	4	5
1 TH	2.3	1.0	1.00	5.25	1				
2 PSE	4.1	1.0	2.00	5.67	-.34*	1			
3 SSE	3.2	1.1	1.00	6.00	-.38*	.24*	1		
4 BOS	3.1	.9	1.33	5.00	-.27*	.59*	.13	1	
5 FOF	2.4	1.0	1.00	4.75	.41*	-.54*	-.33*	-.38*	1

Note. TH = threat, PSE = performance-related state self-esteem, SSE = social state self-esteem, BOS = beliefs of success, FOF = fear of failure, *M* = mean, *SD* = standard deviation, Min = Minimum, Max = Maximum.* indicates $p < .01$.

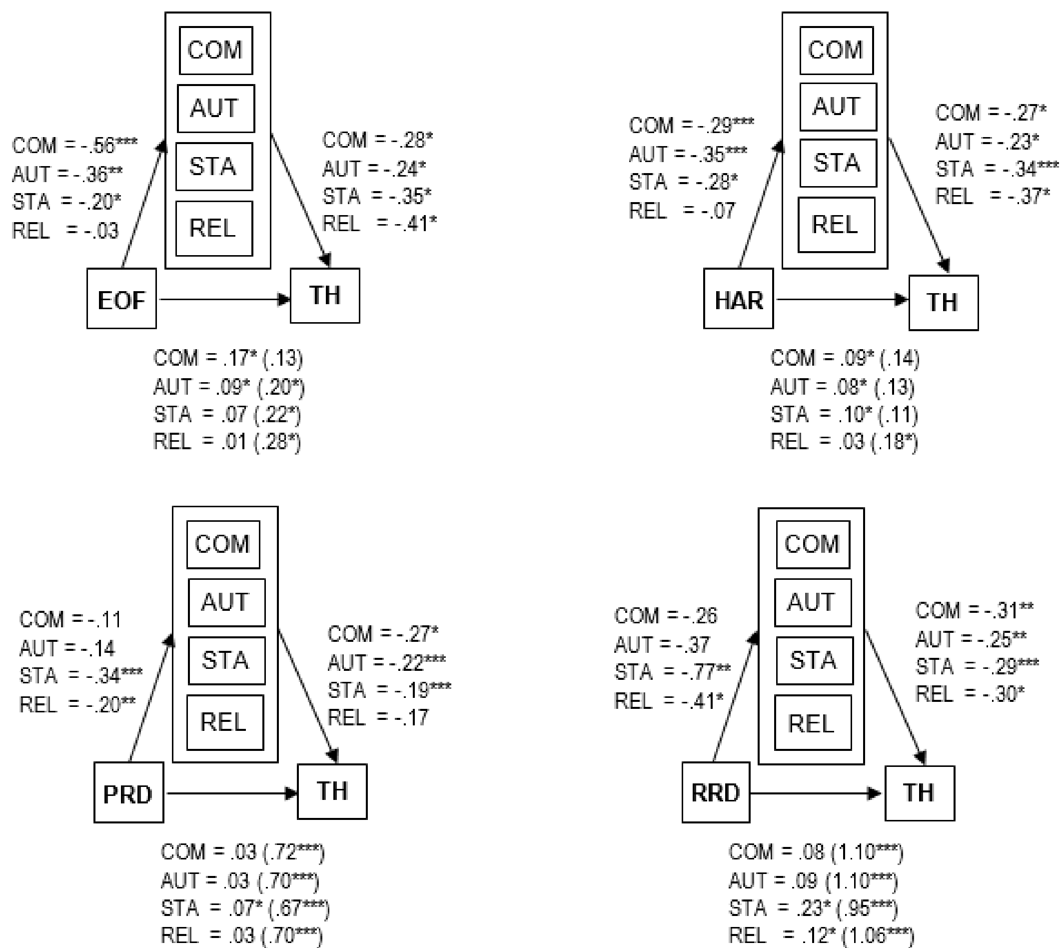
Hypothesis 2a. Non-CAS (action phase 1) and CAS (action phase 2) activate different triggers, $F(4,36) = 39.51$, $p < .001$, $\eta_p^2 = .81$. Non-CAS and CAS differs in trigger-activation for *experience of failure*, $F(1) = 148.88$, $p < .001$, $\eta_p^2 = .79$, and *hindered action regulation*, $F(1) = 57.66$, $p < .001$, $\eta_p^2 = .60$, for the no feedback group (G3). In CAS (action phase 2), participants who did not receive feedback (G3) perceived a stronger activation of *experience of failure* ($M = 4.6$, $SD = 0.9$) and of *hindered action regulation* ($M = 3.1$, $SD = 1.1$)., than in non-CAS (action phase 1; *experience of failure [*$M = 2.4$, $SD = 1.2$] and *hindered action regulation [*$M = 1.6$, $SD = 0.9$]). Thus, hypothesis 2a was supported. CAS activated an experience of failure and hindered action regulation as insufficiency triggers compared to non-CAS.

Hypothesis 2b. After CAS (action phase 2), participants differed in trigger activation depending on their feedback condition (negative, situation-specific vs. negative, situation-unspecific feedback vs. no feedback), $F(4,113) = 945.53$, $p < .001$, $\eta_p^2 = .97$. Post hoc tests showed that G1 ($M = 2.7$, $SD = 1.1$) and G2 ($M = 2.4$, $SD = 0.8$) differed significantly from G3 ($M = 1.8$, $SD = 0.6$) in the activation of the trigger *performance-related disrespect*. There was no significant difference between G1 and G2 in the activation of *performance-related disrespect*. Additionally, participants receiving different feedback did not differ in trigger activation of relationship-related disrespect, G1 ($M = 1.2$, $SD = 0.4$), G2 ($M = 1.1$, $SD = 0.4$), G3 ($M = 1.0$, $SD = 0.2$). Therefore, hypothesis 2b was only partially supported. After CAS, negative, situation-nonspecific, and situation-specific feedbacks activated the performance-related disrespect trigger compared to no feedback. Contrary to our hypothesis, we found no effect of

feedbacks' situation-specificity on performance-related trigger activation. Furthermore, any feedback condition (G1-3) did not influence relationship-related trigger activation.

Figure 3

Indirect and direct effects in parentheses from mediation analyses for the trigger-needs-threat relationships



Note. TH = threat, EOF = experience of failure, HAR = hindered action regulation, PRD = performance-related disrespect, RRD = relationship-related disrespect, COM = need for competence, AUT = need for autonomy, STA = need for status, REL = need for relatedness,*$p < .05$; ** $p < .01$; *** $p < .001$.

Hypothesis 3a. We found a significant direct effect of *experience of failure* on threat ($r = .28$, $p <$ .003) and significant indirect effects of *experience of failure* on threat for the *need for competence* ($b =$ .156, 95% BCa CI[.0076, .3231]) and *need for autonomy* ($b = .086$, 95% BCa CI[.0196, .1860]) as mediators (see Figure 3). Furthermore, we did not find a direct effect of *hindered action regulation* on threat ($r = .14$, $p = .082$). However, we found a significant indirect effect of *hindered action regulation*

on threat for the *need for competence* (b = .079, 95% BCa CI[.0177, .1596]), *need for autonomy* (b = .079, 95% BCa CI[.0181, .1498]), and *need for status* (b = .095, 95% BCa CI[.0361, .1748]) as mediators (see Figure 3). As hypothesized, the results indicate that the relationship between the experience of l failure and hindered action regulation as insufficiency-triggers and threat was mediated by the need for competence and autonomy. Contrary to our hypotheses 2a and b, for the relationship of hindered action regulation and threat, we found a mediating effect by the need for status.

Hypothesis 3b. We found a significant direct effect of *performance-related disrespect* on threat (r = .70, p < .001). Moreover, we found a significant indirect effect of *performance-related disrespect* on threat for the *need for status* (b = .066, 95% BCa CI[.0089, .1360]) as mediators (see Figure 3). Furthermore, we found a direct effect of *relationship-related disrespect* on threat (r = .96, p < .001). There were an indirect effects of *relationship-related disrespect* on threat for the *need for status* (b = .227, 95 % BCa CI[.0576, .4719]) and the *need for relatedness* (b = .123, 95% BCa CI[.0018, .3295]) as mediators (see Figure 3). With regard to the relationship-related disrespect-trigger, the results support our hypothesis 3b, so that the relationship of relationship-related disrespect and threat is mediated by needs, relatedness and status. In the case of performance-related disrespect, we found a mediating effect on the need for status only.

Discussion

In an experimental setting, we investigated the direct and more long-term effects of threats, the activation of threat triggers in- and post-action phases, and the mediating role of needs. We show that threats negatively correlate with state self-esteem and with beliefs of success and fear of failure related to future task execution. Second, triggers were activated due to situation characteristics in action phases (CAS vs. non-CAS) and due to feedback in post-action phases (situation-specific vs. situations-nonspecific vs. no feedback). In more detail, our results indicate that in-action phases situation characteristics of CAS (compared to non-CAS) activate both insufficiency triggers, the experience of failure and hindered action regulation (hypothesis 2a). In post-action phases, negative situation-specific and situation-unspecific feedback activate the trigger performance-related disrespect, but not relationship-related disrespect (hypothesis 2b). This temporal perspective on teamwork as well as the

differentiation of the two forms of disrespect and the two forms of insufficiency highlights the potential prevalence of threat triggers in CAS. Third, we strengthened the crucial role of needs in the threat mechanism. Specific triggers frustrate specific needs and lead to threats (hypotheses 3a and 3b).

Our study results indicate that threats have negative effects on future-related beliefs. Following resilience research (e.g., Stoverink et al., 2017), this means that threats potentially pose a loss of resources for successful mastering subsequent tasks. The importance of having access to sufficient resources to buffer or cope with stress is not new, but has been postulated in a variety of theoretical models (e.g., Conservation of Resources, Hobfoll, 1989; Job Demands-Resources Model, Demerouti et al., 2001). Having limited resources due to the experience of threats means being limited in buffering and coping with stressful events such as CAS. Therefore, this study emphasizes that threats incorporate a great danger for the everyday work of emergency teams being confronted with CAS.

Furthermore, our results show that individuals in-action phases of CAS perceive insufficiency in two ways: experience of failure and hindered action regulation. Experience of failure due to an internal attribution of insufficiency to skills and abilities is postulated as a threat trigger in SOS (Semmer et al., 2007; 2019). In the context of CAS, we identified hindered action regulation describing the external attribution of insufficiency to environmental or contextual factors as another trigger. The fact that events perceived as hindrances for goal attainment are stressful, is also postulated in *challenge hindrance models* of work stress *(CHM,* Cavannaugh et al., 2000). Even though hindrances are seen as a separate kind of stress experience in CHM, some empirical studies imply triggers such as bureaucratic constraints, which are otherwise associated with hindrances, can trigger threats, as well (Brady & Cunningham, 2019). This is in line with our findings showing that perceptions of insufficiency in-action phases of CAS can be attributed not only to internal but also to external factors. This highlights the multifaceted risk for activating threat triggers and underscores the danger of threats.

Additionally, the results of this study show that there is a threat potential in feedback in post-action phases. Even though post-action feedback and reflection processes are important for the learning and adaptivity of teams (Konradt et al., 2015), several studies indicate that negative feedback is accompanied by threats (e.g., Burnette et al., 2010; Dunn & Dahl, 2012; Lee-Won et al., 2017). There

is a great deal of research postulating advice in giving feedback. For example, Gabelica et al. (2012) postulate in their review that feedback is effective, if the feedback is accurate, given on time, and is non-threatening. What exactly is experienced as threatening is not specified more precisely. Based on our study results, we did not find any evidence that situation specificity in feedback is decisive for perceptions of disrespect and, in turn, for threats. Our study results show that negative feedback, whether situation-specific or not, signals performance-related disrespect. The negative feedback emphasizes the failure that participants have previously experienced in the CAS itself (in-action activation of experience of failure and hindered action regulation as threat triggers). Although participants made an effort, their performance was rated poorly, indicating a kind of disrespect (cf. Grover, 2013). Due to the strength of the negative feedback ("You failed…"), participants possibly did not perceive subsequent attributions to situation characteristics. Furthermore, it is not surprising that any feedback (situation-specific vs. situation-unspecific vs. no feedback) activates relationship-related disrespect as a threat trigger. In all feedback conditions, feedback was given in a friendly tone according to the standards of interpersonal interaction and expressing human dignity. Due to ethical limitations, relationship-related disrespect could not be manipulated and decisively analyzed in this experiment. Nevertheless, our findings imply that even in simple feedback processes there is a great danger for the perception of disrespect. This shows the great risk for activating threat triggers in post-action phases, which also underlines the danger of threats.

Moreover, this study confirms how individuals perceive, evaluate, and respond to triggers is determined by needs, so that needs are responsible for whether events act as triggers and lead to threats. Therefore, the danger of threats lies not only in the experience of insufficiency (i.e., the experience of failure and hindered action regulation) and disrespect (i.e., relationship- and performance-related disrespect) but depends on needs. Needs are more than goals and are essential for optimal functioning and growth (Manganelli et al., 2018). They guide a variety of basic human processes, including how individuals define themselves in the sense of who they are and want to be (Ashforth & Schinoff, 2016). Therefore, triggers that frustrate needs target the individual at the root, which also strengthens the danger of threats.

Theoretical and Practical Implications

First, we take on a resource- and resilient-oriented perspective by showing that threats potentially pose a loss of resources. Hobfoll (1989) already emphasizes that individuals are motivated both to gain resources and to protect themselves from a loss of resources. Similar to the two-factor theory from Herzberg (1959), the avoidance of possible resource loss can provide a complementary perspective to promote resilience. The identification of possible factors causing the loss of resources such as threats are an important step to take this avoidance perspective into account.

Second, we confirm the triggers of SOS in the context of CAS and extend them with the perspective of in-action and post-action phases of teamwork (Marks et al., 2001). This highlights that the danger for threats exists not only in the situation itself but also in the aftermath. Nevertheless, we show that in the context of CAS, triggers can manifest in different forms, for instance, disrespect is separated in the relationship- and performance-related disrespect. This subdivision of triggers helps to be sensitized for potential threat-triggering events. Becoming aware of triggers is an important approach to avoid threats. For example, if supervisors know that their performance feedback has a threatening effect by signaling disrespect, they can interact more attentively with their staff such as by taking needs into account (Van Quakebeke & Felps, 2018).

Third, we strengthen the assumption of the needs-based mechanism as an explanatory approach to threats postulated in the framework of SOS (Semmer et al., 2007). Needs are well known as an important factor influencing appraisal processes in motivational research (e.g., Deci et al., 2017) or in stress research in general (e.g., Rohmert, 1983). In this study, we show that needs are specific for threat appraisals. Therefore, we render threats as a stress experience more explainable, and predictable.

All in all, our study highlights that action- and post-action phases of CAS pose a variety of risks to experience threats within and after an emergency scenario. Research on teams in CAS provides numerous recommendations on how teams can master CAS successfully or how teams can remain able to act during CAS (e.g., Maynard et al., 2018). For example, in complex crises and under time pressure, teams need a highly disciplined communication structure and a common understanding of the situation for a rapid response (Uitdewilligen & Waller, 2018). To help individuals cope with these risks,

needs are important screws. Need-frustration explains why threat experiences occur. Consequently, reattribution and reflection is an approach to lower need frustration and decouple the occurrence of threats in case of activated triggers.

Limitations

Despite the promising results of this study, some critical remarks have to be made. First, the computer-based simulation of CAS, as well as the student sample who assumed the role of a firefighter, may lack ecological validity. However, initial findings from interviews with paramedics and police officers confirm the relevance of these triggers and needs for experiencing threats in the field (Rynek & Ellwart, 2020). Correlative data in a sample of leaders working part-time also confirm the mediator effect of needs in the field (Rynek, Ellwart, 2021). Additionally, the experimental design in this study allows a causal interpretation of the effects of the triggers and needs in and after CAS.

Second, even though research indicates that there are often multiple triggers and needs involved in one threat situation (e.g., Anshel, 2000), this study provides as little evidence of the effects of multiple triggers and needs within a single situation as it does of the effects of specific trigger-need combinations on threat experiences. In the real world, we have many processes and effects at the same time. However, in an experimental environment, selected triggers and needs are operationalized in the laboratory setting. We manipulate individual threatening events in an experimental setting and test both the perception of these events as triggers and the extent to which they frustrate needs and thus lead to threats. It is important to understand the experimental causal effects before interaction effects become the focus of research.

Third, although we assigned different role descriptions (senior vs. junior firefighter) to the team members, we did not find any differences between threat experiences among team members' roles (see Preliminary Results). Individuals take on different roles depending on the context (e.g., role as mother, friend, supervisor, colleague; Sluss et al., 2011). Needs’ strength depends on predispositions but also contextual features (Ashforth & Schinoff, 2016). By assigning responsibility to one team member and, thus, making senior firefighters aware of being the decision-making person in the team, in our experimental study, we create a context in which status beliefs become salient. However, we did

not find any differences between the roles of senior and junior firefighters in threat experiences. Although the senior has an important position in the team because of being responsible for the actions and performance in the team, the assignment of responsibility might have stimulated reflection on the standing in the team for the junior, as well. Based on our role-manipulation, it is not possible to make claims about role-related differences in needs and thus threat experience. The general understanding of the trigger-need-mechanism was revealed for the junior and senior roles. In future studies, the manipulation of role differences should be improved

Future Perspectives

We have shown that handling CAS and feedback thereafter represent a danger for trigger activation and results in threats. CAS are often mastered in a team that might also influence the experiences of threat. The team perspective provides triggers, such as disrespectful feedback from colleagues or supervisors (Anshel, 2000; Rynek & Ellwart, 2020), but also offers approaches to compensate frustrated needs (e.g., social support, Bakker & Demerouti, 2007), so that teamwork includes a strengthening or hindering potential for threats. The systematic of input-process-output models (Mathieu et al., 2008) indicates concepts to avoid triggers (e.g., psychological safety) and concepts that strengthen individual needs as a buffer (e.g., team cohesion), which should be a topic in future research.

Furthermore, especially in the context of CAS, there might be often multiple triggers and needs involved in one threat situation. For example, while a firefighters' action is hindered by too many injured people and a lack of resources to save them, the firefighter tries to protect his own life and limb against the huge fire (Jacobsson et al., 2015). Not only impaired regulation of action but also physical danger act as a trigger. A frustrated need for physical integrity, which should inevitably be activated when experiencing physical danger, is according to Maslow (1943) a need that is more significant than others. Therefore it is conceivable that just the activation of the trigger physical danger has stronger effects than others and that the combination of many triggers increases threat experiences. So the interaction of triggers and needs should be the subject of future research.

Finally, future research should take the investigation of threats from different samples of professionals like firefighters or police officers into account. Unlike a student participant who learns the firefighter role in the short term, professional firefighters' role expectations are consolidated. Instead of students, real firefighters can run the Networked-fire-chief-simulations in the laboratory setting and receive feedback from their supervisors instead of the principal investigator, in future research.

Conclusion

This study emphasizes the potential danger of threats in CAS not only in the short term by referring to concerns of self-esteem but also in the long term having negative effects on future-related beliefs acting as a resource for future task execution. The knowledge about different triggers and effects of needs offers the chance to find new approaches to understand, avoid, or deal with threats in CAS. Through the differentiation of in-action and post-action phases, we underline the diversity of triggers but also possible resources for mastering CAS successfully.

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General Discussion

In traditional *challenge-hindrance models (CHM*), challenges and hindrances are distinguished as two stress dimensions (Horan et al., 2020). Tuckey et al. (2015) added threats as another stress dimension that has not yet received comparable attention in CHM research as the other two dimensions (Horan et al., 2020). However, threats entail more serious negative reactions (e.g., anger, emotional exhaustion) than challenges (e.g., positive affect, job satisfaction) and hindrances (e.g., fatigue, turnover; Searle & Tuckey et al., 2017). Therefore, threats should be avoided. In this thesis, I investigated the *when* and *why* of threats.

Individuals face diverse stressful events in the workplace (e.g., dealing with a high workload, experiencing conflicts, or facing critical adversity situations) that can potentially be appraised as challenges, hindrances, or threats. Although CHM research typically refers to events that are characterised by disrespectful interpersonal behaviour (e.g., workplace aggression, customer-related stressors; Tuckey et al., 2015), interdisciplinary threat research (stress: Semmer et al., 2019; stereotype: Fingerhut & Abdou, 2017; identity: Petriglieri, 2011; self-regulation: vanDellen et al., 2011) describes threats in a wider range of events, such as the experience of personal wrongdoing (e.g., Davies et al., 2005), being confronted with difficult goals (Espedido & Searle, 2018), or having to deal with forced changes (Kyratsis et al., 2017). This diversity of threat signals illustrates that threats can arise from almost "anywhere". The question is whether this diversity of events can be systematised as potential threat triggers to develop an overview of possible triggers. This overview is valuable to effectively prevent threats.

The explanation of *why* events are appraised as threats is often based on a frustrated global need to maintain positive self-views (e.g., Semmer et al., 2019; Tesser, 2000). This basis means that an event is appraised as a threat if an individual perceives that he or she has failed to have a positive standing in front of him- or herself and others (i.e., frustrated need for positive self-views). For example, a paramedic is ignored by colleagues during breaktime, signalling that he does not have a positive standing in the eyes of his colleagues; thus, he feels threatened.

The need for positive self-views depends on how people define themselves by answering the question 'what am I striving for?'. However, the answer to this question is rather fuzzy since it is based on personal goals, expectations, and beliefs that, in turn, are context-dependent and dynamic, and the individual is not always aware of them (cf. Ashforth & Schinoff, 2016). Therefore, due to this fuzziness of individuals' striving, it is equally fuzzy what individuals themselves can do or how others can support them in their striving to satisfy the need for positive self-views and, thus, to avoid threats.

Nevertheless, people have more specific needs (e.g., competence) than the global need for a positive self-view. These are more specific in content, indicating what all individuals universally strive for (Deci & Ryan, 2000) and seem to be fruitful determinants in the threat mechanism, in addition to the global need for a positive self-view. Based on content specificity, actions can be derived to satisfy needs (e.g., to satisfy his need for competence, a paramedic may report for duty, help other people, and feel competent). Both in explanations of threats (e.g., Petriglieri, 2011; Semmer et al., 2007) and in stress appraisal processes in general (Quested et al., 2011), we found some evidence for specific needs as determinants in the threat mechanism.

However, the specific content of needs depends on the particular approach (e.g., *self-determination theory, SDT*, Deci & Ryan, 2000; *motive-disposition theory*, MDT, McClelland, 1961) in which different contents of needs are postulated. Needs are traditionally studied concerning motivation research (Deci & Ryan, 2000; McClelland, 1961), discussed in self and identity research (Ahsforth & Schinoff, 2016; Stets & Burke, 2014), or considered from an evolutionary perspective (Schaller et al., 2017). These approaches postulate a wide range of needs that differ in number and terminology. Thus, the question arises not only whether specific needs are a determinant in the threat mechanism but also which specific needs are associated with threats.

This thesis contains four studies that pursued three main research goals (see Introduction Figure 1). The first goal was the classification of triggers to provide an overview of events that drive threats. The second goal was the classification of needs that are associated with threats. The third goal was the investigation of the trigger-need interplay as a mechanism of threats (i.e., to examine whether frustrated needs mediate the relation between triggers and threats). In the following general

discussion, insights and findings from the four studies regarding the three research goals are discussed. After deriving theoretical and practical implications as well as directions for future research on threats, the discussion ends with a conclusion.

Findings on the Research Goals

In the following three sections, I summarize the findings on the research goals.

Research Goal 1: Classification of Triggers

Studies 1 and 2 provide results regarding research goal 1, the *classification of triggers*. In a literature review (Study 1), we systematised five triggers in diverse events and contexts (e.g., failure experiences, social devaluation; Leary et al., 2009) of interdisciplinary psychological threat research (e.g., stereotype: Fingerhut & Abdou, 2017; identity: Petriglieri, 2011; self-regulation: vanDellen et al., 2011). We identified the experiences of failure, hindered action regulation, relationship- and performance-related disrespect, and physical danger as triggers. In the second study, the five triggers were ecologically validated. Interviews on threatening events in their daily work with police officers, paramedics, teachers, and employees of the German Federal Employment Agency provide anecdotal evidence for the triggers identified in Study 1. We find the same triggers in different research fields and, thus, in different situations and contexts as well as in different professional groups, whose daily work routines differ immensely.

Our classification includes the same trigger categories as those in Semmer et al. (2019) in terms of *content*: insufficiency and disrespect. Experiencing insufficiency describes a trigger that is internal in the individual (i.e., wrongdoing attributed to abilities, skills, competencies) and is similar to our experience of failure. Hindered action regulation is not explicitly named and studied as a trigger in SOS theory (Semmer et al., 2019), but we describe it as a second dimension of insufficiency, in which wrongdoing is attributed to external, contextual factors. Disrespect describes a trigger that is external to the behaviour and evaluations of others. We find this in a differentiated form as relationship- and performance-related disrespect. Even if we differentiate the trigger categories in more detail than Semmer et al. (2019), we confirm that events containing a message of disrespect and insufficiency trigger threats and strengthen postulates from SOS.

Furthermore, we find great similarities of our classification of threat-triggering events to a well-known classification of stressful events (stressors) by McGrath (1983). McGrath (1983) distinguishes three major categories of stressors in terms of *localisation*. First, stressors originate from the individual itself (personal system). They are internal and thus fit our category of experience of failure. Second, stressors emanate externally from other individuals (social system). Our two disrespect triggers fit this category. Third, there are stressors external to the individual as environmental factors (material-technical system). Our hindered action regulation trigger can be assigned to this category. The categorisation along the localisation of the triggers illustrates where the danger of stress in general and specifically for threat is located – in the person, in the environment, and in social interactions. This threefold categorisation of triggers is also suggested by Petriglieri (2011). With our classification of triggers, we extend and complement the ideas of SOS (Semmer et al., 2007; 2019) as well as the idea of categorising stressors according to localisation by McGrath (1983) and Petriglieri (2011) to systematise threat triggers.

Research Goal 2: Classification of Needs

Results from Studies 1 and 2 contribute to research goal 2, the *classification of needs*. In addition to the five triggers, five different needs in terms of content were identified in the literature review in interdisciplinary psychological threat research (e.g., stereotype: Fingerhut & Abdou, 2017; identity: Petriglieri, 2011; self-regulation: vanDellen et al., 2011) and empirically validated in interviews with four different professional groups. These are the need for competence, control, relatedness, status, and physical integrity. The classification of needs fits well into existing need approaches. Our five needs are similarly found in a variety of theories (see Table 1), even if this exact classification in terms of number and terminology (i.e., need for competence, control, relatedness, status, and physical integrity) is not reflected in a single, existing needs approach of motivation (Deci & Ryan, 2000; McClelland, 1961), self and identity research (Ashforth & Schinoff, 2016; Stets & Burke, 2014), or even in terms of an evolutionary psychological perspective (Griskevicius & Kenrick, 2013; Schaller et al., 2017).

Table 1

Classification of need categories across different theoretical need approaches

	Alternative terms	**Definitions**	**Theoretical need approaches**
Need for competence	Need for esteem	Desire for achievement (one component of this need)	Maslow (1943)
	Motive for achievement	Desire to be effective and accomplish something difficult	McClelland (1961)
	Need for competence	Desire to be effective in the achievement of desired outcomes	Deci & Ryan (2000)
	Motive for self-efficacy	Desire to see oneself as efficacious or agentic	Stets & Burke (2014)
	Motive for meaningfulness	Need to find significance and purpose	Ashforth & Schinoff (2016)
	Motive for self-efficacy	Need for a sense of capability and competence	Ashforth & Schinoff (2016)
Need for inclusion	Need for love	Desire for friendship	Maslow (1943)
	Motive for affiliation	Desire of being connected to others	McClelland (1961)
	Need for relatedness	Desire to have close relationships	Deci & Ryan (2000)
	Motive for acquiring a mate	Desire to acquire a mate	Griskevicius & Kenrick (2013)
	Motive for making friends	Desire to make friends	Griskevicius & Kenrick (2013)
Need for control	Need for safety	Desire to seek stability in the world	Maslow (1943)
	Need for power	Desire to have the power of oneself and others, in the sense of having control over oneself and others	McClelland (1961); Schüler et al. (2019)
	Need for autonomy	Desire for the full willingness and volition when carrying out an activity	Deci & Ryan (2000)
	Motive for authenticity	Desire to find coherence in one's life (meaning, and understandings about the self)	Stets & Burke (2014)
	Motive for control	Need to influence domains perceived as important	Ashforth & Schinoff (2016)
Need for status	Need for esteem	Desire for reputation and prestige (second component of this need)	Maslow (1943)
	Motive for power	Desire of having an impact on other people	McClelland (1961)
	Motive for social worth	Desire to feel worthwhile and accepted	Stets & Burke (2014)
	Motive for attaining status	Desire to attain status	Griskevicius & Kenrick (2013)
Need for physical integrity	Need for survival	Immediate physiological needs, such as eating or sleeping	Maslow (1943)
	Motive for disease avoidance	Desire to avoid infections	Griskevicius & Kenrick (2013); Schaller et al. (2017)
	Motive for evading physical harm	Desire to evade physical harm	Griskevicius & Kenrick (2013)

Our results integrate various existing motive and need frameworks. We highlight similarities and differences. For example, we find our need for competence, describing the striving to be competent and to perform effectively, in the definitions of MDT (McClelland, 1961) and SDT (Deci & Ryan, 2000) and in the self and identity construction approaches from Ashforth and Schinoff (2016) and Stets and Burke (2014). Although more needs than those we identify can probably be related to threat in terms of content, the most popular need approaches of SDT and MDT show that even a small number of needs can explain a wide range of human behaviour (Schüler et al., 2019). Therefore, we focus our classification on only five needs: competence, relatedness, status, control, and physical integrity.

The need for physical integrity occupies a special position as a unique physiological need compared to the needs for relatedness, status, competence, and control. Maslow (1943) pointed out that people first need to satisfy hunger, sleep, and health (i.e., all physical needs) before other needs such as achieving social status can be satisfied.

The need for physical integrity is found in two facets in the Fundamental Motive Framework, an evolutionary psychological perspective on needs (Schaller et al., 2017; Griskevicius & Kenrick, 2013): the motive[1] for disease avoidance and the motive for evading physical harm. Even if individuals currently no longer have to fight with sabre-toothed tigers, it is nevertheless evident that even in professional groups whose role description does not primarily involve physical danger, such as teachers or employees of the Federal Employment Agency, individuals perform their work from the office, the classroom, or behind the counter (Chebat & Kollias, 2000). Unlike police officers or firefighters, who do not expect danger to life and limb in their everyday work (Semling & Ellwart, 2016), physically threatening situations still occur in everyday work (e.g., Jahn, 2020). A strength of the given threat classification is the inclusion of the need for physical integrity. Empirical evidence shows that professionals who are not at risk of physical danger in their daily business report physical danger and harm. Therefore, it is reasonable to integrate this physical category with the need for physical integrity in our classification.

[1] In this thesis needs and motives are used synonymously.

The integration of specific needs as a mechanism of threats, or more specifically the knowledge of their content, aimed to find approaches for need satisfaction and, thus, for avoiding threats. How well individuals can satisfy needs themselves is also related to the content of the need. Needs for relatedness and status are social needs (cf. Griskeviscius & Kenrick, 2013). The satisfaction and even frustration[2] (i.e., experiencing threat in our sense) of these two social needs do not depend on the individual but rather on the social system in which the individual operates (Huo & Binning, 2008). Depending on how the individual is treated *by others* determines if this need is experienced with satisfaction or frustration (i.e., need for relatedness means belonging to *others*, need for status means being valuable for *others*). The individual can only act with behaviours to increase the likelihood of social needs satisfaction by others (e.g., an individual is helpful to other group members to avoid being excluded and thus to avoid a frustrated need for relatedness) or attend social groups where needs satisfaction is likely (e.g., in the family, rejection is unlikely and the need for relatedness is satisfied in the family context). For the threats originating from a frustrated need for status or relatedness, this means that the responsibility for need satisfaction mainly depends on the behaviour of other people and not on the individual.

Research Goal 3: Trigger-Need-Mechanism

The mediating role of needs in the relationship between triggers and threats was first investigated and confirmed in a correlative survey design (Study 3) and then in a controlled laboratory experiment (Study 4). Study 3 shows that the specific combination of disrespect as a trigger and a frustrated need for belonging is associated with negative consequences such as rumination and problems with role identification and job satisfaction in a sample of leaders working part-time (LPT). By the experimental design of Study 4, the results indicate that triggers resulting in need frustration lead to threats (causality). While the experience of failure and hindered action regulation lead to threat via frustrated needs for competence and control, both types of disrespect lead to threat via the two social needs of

[2] Need research debates this in terms of the independence and interplay between need satisfaction and frustration (e.g., Rouse et al., 2020).

relatedness and status. Hindered action regulation additionally affects the need for status and leads to threats.

Needs have a powerful effect on threats. If we understand threats as an appraisal process, then our results fit the general view that needs (often discussed in terms of goals, concerns, or motives) are important factors for appraisal. Needs determine the evaluation (appraisal processes) of events and thus the emotional, motivational, cognitive responses to the trigger (Ellsworth & Scherer, 2003). Nevertheless, Ellsworth and Scherer (2003, p. 578) note, "we still have little concrete understanding of how the relevance of events to motives, needs, concerns, or goals is likely to be computed." The results presented here support the view of needs as mediators in the research fields we integrated into this thesis (e.g., motivation research). For example, needs are presented in motivational research (Deci et al., 2017) as a mediator between work context and work behaviour. In stress research, needs are suggested as having a mediating effect and being a factor in the appraisal process. For example, Rohmert (1983) postulates in the extended stress–strain concept that objective stresses become strains via individual characteristics, abilities, and needs. Needs are well known as an important factor influencing appraisal processes in general. In this thesis, I showed that needs are specific threat appraisals.

In conclusion, by answering the three main questions, this thesis contributes to existing threat research (1) by clarifying the *when* of threats by giving an overview of events typically accompanied by threats, (2) by providing a universal but concrete content of humans' striving relating threats to frustrated needs, and (3) by specifying the understanding of *why* an event triggers threats by analysing the trigger–need interplay.

Limitations

Although this work contains several important contributions, there are limitations. First, this thesis solely focused on needs as a mechanism of threats, while challenges and hindrances are also relevant stressors that are worth examining against the background of need satisfaction. Needs are thought to contribute to appraisal processes in general (Ellsworth & Scherer, 2003). This thesis supports the finding of Quested et al. (2011), who show that need frustration is associated with threats. Therefore, I

provide an important contribution by using frustrated needs to specify the *why* of threats and thus provide a starting point for avoiding this dimension of stress with the most serious consequences. However, no empirical evidence supporting the role of needs concerning challenges and hindrances as other important stressors can be made.

Second, I consider threats as the lack of need satisfaction, or in other words, need frustration. However, building on the ideas of SDT (Deci & Ryan, 2000) and MDT (McClelland, 1961), there are two different approaches to explain the process of need satisfaction or frustration (Prentice et al., 2014). Both approaches differ in how active the individual's part in need satisfaction is (Prentice et al., 2014). Whereas in SDT (Deci & Ryan, 2000) the individual is passive and experiences the need being satisfied by the context (e.g., a police officer experiences a deployment situation that satisfies his need for competence), in MDT (McClelland, 1961) the individual takes an active part and seeks out contexts that satisfy his needs (e.g., a police officer reports for deployment to satisfy his need for competence). Considering threats as need frustration, according to SDT (Deci & Ryan, 2000), an individual experiences threats because a situation that does not satisfy an individual's needs. In contrast, according to MDT (McClelland, 1961), an individual experiences threats because the individual fails to find an adequate need-satisfying context. Although this present thesis cannot conclusively answer the question of how individuals satisfy their needs, this thesis highlights need frustration as a crucial determinant in threats, which is the first step to avoid or deal with threats.

Third, I equate needs as a type of standard to other self-defined standards such as 'As a paramedic, I am helpful'. However, differentiating the self-definition and self-enactment process in a more sophisticated way, needs act as influencing factors on self-definition and self-enactment (cf., Ashforth & Schinoff, 2016). For example, a paramedic sets ambitious goals of striving to help everyone (i.e., self-definition) because he or she has a strong need for competence. In the same way, the paramedic is guided in the execution of being helpful (i.e., self-enactment) by his need for competence so that in a rescue situation, he strives to work as quickly as possible to prevent the patient from experiencing much pain and generally to perform his job as competently as possible. Whether needs should be seen as a kind of standard or whether they should be viewed as influencing factors for self-definition and

enactment remains unexplored in this thesis. Nevertheless, this thesis shows that needs, whether as a standard or not, play an important role in threats.

Theoretical Implications

The thesis integrates different research fields, such as self and identity research, needs research, and interdisciplinary threat research, and contributes to the understanding of *when* and *why* threats occur. The theoretical implications that arise from this are presented below.

First, we *provide a classification of threat triggers* by the integration of interdisciplinary threat research (e.g., stress, Semmer et al., 2019; stereotype, Fingerhut & Abdou, 2017; identity, Petriglieri, 2011; self-regulation, vanDellen et al., 2011). With this, we contribute fundamentally to the understanding of the *when* of threats. We propose a classification of triggers, in which we combine categories based on content (insufficiency and disrespect) and on localisation (person, social interaction, environment) of potential threat triggers. In this way, we indicate not only where the danger of threat exists but also which events potentially become threat triggers. This classification can be integrated into CHM, which originally intends to differentiate types of stressful work events according to challenges and hindrances as two stress dimensions (Cavanaugh et al., 2000). Our classification provides an overview of threat triggers, considering threats as the third dimension of stress in CHM added by Tuckey et al. (2015).

Second, we *clarify the meaning of threats as harm to the self* through the integration of self and identity approaches (e.g., Ashforth & Schinoff, 2016). In CHM, threats are defined as harm to the self (Tuckey et al., 2015) or elsewhere in threat research as failure to protect the positive self-view (e.g., Semmer et al., 2007). We draw on self and identity research (Ashforth & Schinoff, 2016; Stets & Burke, 2014) to understand concepts such as self and positive self-view in the face of threats. Self and identity research proposes that individuals define themselves in terms of some kind of standard of who they are (Easterbrook & Vignoles, 2012) and try to behave according to these standards (Stets & Burke, 2014). We identified a discrepancy between self-defined standards and actual behaviour as the basis of threats. Therefore, the integration of the self and identity research perspectives clarifies the meaning of threats.

Third, we *provide universal but concrete evidence of human striving (self-defined standards)* by the integration of needs research. Even though threats can be understood as a discrepancy between striving for standards and actual behaviour, the content of the strived for standards is fuzzy. Based on needs approaches (SDT, Deci & Ryan, 2000; MDT, McClelland, 1961), we understand needs as a kind of standard with specific content that is universal for all individuals. We postulate that a discrepancy between the strived for standards in the sense of needs (i.e., to be competent, to have control, etc.) and actual behaviour represents a frustration of needs presented as a mechanism for threats. By integrating the needs perspective, we not only highlight threats as a discrepancy between strived for needs and actual behaviour but also specify the content of the strived for standards. Therefore, we better describe, explain and predict threats in CHM research (Tuckey et al., 2015) through the integration of universal but content-specific needs.

In general, our multimethod approach and the integration of different research fields provide a consistent research framework from which further research questions can be systematically derived (see section future directions). Furthermore, findings from further research areas, in addition to self and identification research (e.g., Aschforth & Schinoff, 2016) or need research (e.g., Deci & Ryan, 2000), can be integrated into the classification of triggers and needs, such as findings from team- or technology-based research. What questions arise for future research are discussed below. First, however, I outline practical implications.

Practical Implications

This work has far-reaching practical implications for dealing with and avoiding threats in everyday work across professions.

Avoiding and Preventing Threat Triggers

The identification and elimination of triggers is the most effective way to avoid threats and associated negative consequences. Triggers such as performance-related disrespect can be eliminated if people are made aware of these triggers (cf. Anshel, 2000). For example, our performance-related disrespect trigger draws attention to the fact that there is great threat potential in performance feedback that supervisors typically provide. Being sensitive to this issue and investing in respectful

interaction is an approach to avoiding a lack of courtesy as a trigger (Decker & Van Quakebeke, 2015; Van Quakebeke & Felps, 2018). This can be realised in the team by implementing a situationally appropriate and task-oriented feedback culture (Ellwart et al., 2016). The prevention of hindered action regulation, another trigger, can be supported by providing well-structured processes and task-related reflection (Rynek & Ellwart, 2020). The risk of experiencing failure (trigger) can be avoided by providing employees with competence and skill training. Furthermore, formulated goals and expectations can also reduce the fear of failure, which is also known to be a kind of trigger (e.g., O'Brien & Hummert, 2006). The risk of physical danger (trigger) can be reduced by appropriate occupational safety standards. Being aware of potential triggers is the first step to avoiding them.

Awareness and Differentiation of Needs and Context Conditions

In addition to addressing triggers, awareness and reflection of needs are other approaches to reduce threats. Needs guide our experience and actions, yet we are not aware of them (Kanfer et al., 2017). Becoming aware of one's own needs means reflecting on the functionality of automatic mindsets, styles of explanation, and resulting reactions. Such reflections help cope with stressful events, as shown by various approaches from consulting and therapy (e.g., Ellis, 1962; Kaluza & Chevalier, 2017; Rosenberg, 2016). For example, Ellis (1962) suggests reflecting on contextual conditions, individual thoughts, and consequences to reduce the experience of stress. According to Rosenberg (2016), conflict management can be improved if individuals become aware of their needs in conflict situations and communicate them to their counterparts. Since we identified needs as a key element for threats, becoming aware of and relating them to events could also be helpful for avoidance and coping with threats. For example, a police officer who strives to appear competent makes a mistake during an emergency mission and thus feels threatened in his role as a police officer. Afterwards, he realises that his striving to be competent (i.e., becoming aware of the need for competence) guided him to keep his own concerns and problems to himself, instead of sharing with the team members (i.e., becoming aware of automatic reactions), which had negative consequences for team performance. By becoming aware of his needs, automatic reactions, and negative consequences, he can rethink the meaning of his striving for competence in the emergency mission

and may conclude that a strong striving for competence should be less relevant to mastering an emergency successfully. Being aware of needs and how they fit with contextual conditions could be another way to avoid threats.

Bolstering Specific Needs in Threat Situations

The results of this thesis indicate that a frustrated need for competence, control, status, relatedness, or physical integrity is crucial for threat experiences. Research on SDT (e.g., Ntoumanis et al., 2009; Vasteenkiste & Ryan, 2013) postulates that needs can be satisfied by shaping the environment. For example, a supervisor can contribute to employees' satisfaction of their need for relatedness by offering an increased chance for exchange within the team. Therefore, employees' need for relatedness is bolstered and not affected by threats (Ntoumanis et al., 2009). However, individuals do not have a single need that can be satisfied or frustrated; rather, one need may be frustrated while another is satisfied (e.g., Deci & Ryan, 2000; McClelland, 1961). Vansteenkiste et al. (2020) postulate that "the frustration of needs [...] prompt individuals' pursuit of need substitutes" (p., 11). Based on this idea, it is conceivable that while one need is frustrated, other satisfied needs can serve as a resource and buffer other frustrations. For example, emergency staff may find their need for belonging strengthened by high levels of team cohesion and social support, while at the same time, their need for status is frustrated by verbal disrespect.

Differentiation of Roles

Individuals do not have only one global self but take on different roles depending on the situation and context (e.g., role as spouse, parent, friend, leader, colleague; Sluss et al., 2002). Ruderman et al. (2002) show that assuming multiple roles helped individuals cope with work-related issues. Through different roles, participants gained confidence, esteem, satisfaction, and a well-rounded perspective (Ruderman et al., 2002). Becoming aware of different roles might also be helpful in the case of threats. For example, if an individual feels threatened in the role of a Ph.D. student with feelings of stress and negative affect, reflecting on having multiple roles (e.g., I am also a lecturer) can minimise those threats. The differentiated role perspective supports the realisation that the individual is not affected as

a whole; rather, an individual can draw on other roles as a resource (e.g., I am a lecturer, and students praise me for my good teaching).

Directions for Future Research

In this thesis, I have integrated ideas from different research fields (e.g., need research, self and identity research) to better understand the *when* and *why* of threats as a dimension of stress. However, each research field offers a complex system of variables and processes beyond those targeted in the present four studies. This implies possible future research perspectives on threats, which are presented below concerning CHM research, needs research, self and identity research, and research on the work environment. These future perspectives relate to either understanding individuals' threats in more detail or further investigating approaches to threat prevention and coping. Finally, I present research perspectives that consider threats not only at the individual level but also in the team- and technology-based work environment.

Research Perspectives from CHM Research

Differentiation of Hindrances and Threats. In this thesis, I focus on the investigation of threats without addressing the dimensions of challenges and hindrances (Tuckey et al., 2015), and distinctly differentiating them from threats. While challenges are accompanied by positive consequences, hindrances, and threats, both have negative consequences (Horan et al., 2020). Searle and Tuckey (2017) state that threats are associated with more serious consequences (e.g., anxiety, anger, emotional exhaustion) than hindrances (e.g., fatigue, turnover). However, what constitutes this seriousness of consequences remains vague in CHM research.

In general, in stress research, more serious consequences are associated with a higher *number* or higher *intensity* of stressors (e.g., multiple demands increase the risk of suffering from fatigue; Nordenmark, 2004). Since threats are the stress dimensions with more serious consequences than hindrances (Searle & Tuckey, 2017), threats should result from a higher number of or more intense triggers and hindrances from fewer or less intense triggers. For example, if an employee feels hindered at work by time pressure (i.e., just one threat trigger), he might appraise the situation as a hindrance. If the same employee not only experiences hindered action regulation by time pressure (i.e., one threat

trigger) but also is confronted with ambiguous situations and lacking technology (i.e., two more threat triggers), then he might appraise the situation as a threat. Similar to our Study 4, in an experimental setting, the number and intensity of triggers in stressful events could be systematically manipulated and investigated in future research to differentiate hindrances and threats as stress dimensions with negative consequences.

For the differentiation of hindrances and threats based on the seriousness of consequences (Tuckey et al., 2015), an explanation based on triggers and frustrated needs is possible. Similar to triggers, research on needs postulates that the stronger the need frustration is (i.e., number of simultaneously frustrated needs or intensity of single need frustration), the more serious the negative consequences. For example, Shepherd and Cardon (2009) indicate that the intensity of negative emotions triggered by project failure relies on the satisfaction of SDT needs. Since threats are the stress dimension with more serious consequences than hindrances, threats should result from a higher number or more intense need frustration, and hindrances from fewer and less intense need frustration. For example, if an employee experiences the frustration of the need for status, relatedness, and competence simultaneously or experiences a strong frustration of the need for status, this might be associated with threats. In contrast, if an employee experiences only frustration of the need for status or if need frustrations are less intense, this might be associated with hindrances. Therefore, to differentiate hindrances and threats as stress dimensions with negative consequences, the number and intensity of the needs involved in a situation should be examined.

Instead of considering the number and intensity of needs involved, the extent of the discrepancy between needs, as a kind of standard individuals strive for, and actual behaviour can also be considered as an explanation of the hindrances and threats based on the seriousness of consequences. According to the *effort-reward-imbalance model* (Siegrist, 1996), an imbalance between effort and reward at work suggests stress and reduced well-being. The stronger the imbalance is, the more serious the negative consequences are. Considering threats as the stress dimension with more serious consequences than hindrances, a stronger imbalance (i.e., a stronger discrepancy between needs as a kind of standard and behaviour) should be associated with threats, whereas a smaller imbalance might

be associated with hindrances. Future research should address the extent of the discrepancy between needs and behaviour to differentiate hindrances and threats as dimensions of stress. This helps to understand what constitutes threats as the most serious stress dimension and provides further indications for avoidance and coping.

Research Perspectives from Needs Research

Implicit and Explicit Needs. In our studies, we suggest that becoming aware and reflecting on needs is an important approach to avoid or deal with threats. Therefore, we address an explicit kind of need that is differentiated from implicit needs (Schüler et al., 2019). Explicit needs are aroused by rationale incentives such as social expectations, demands, and external rewards and are associated with immediate responses to specific situations that are often based on cognitive decisions. In contrast, implicit needs are more likely to be elicited by affective incentives and reward-promising emotions and predict spontaneous behaviour (Schüler et al., 2019). Explicit and implicit needs do not always have to be congruent (e.g., an individual may indicate that he or she does not need social contacts, which indicates a low explicit need for relatedness, but in spontaneous actions, still seeks contact with others, which indicates a high implicit need for relatedness; e.g., Hofer & Busch, 2011, 2017). In the case of incongruence between implicit and explicit needs, individuals explicitly state that their needs are satisfied, but when implicit needs are measured, the result is that they are not satisfied or vice versa. This satisfaction leads to the assumption that threats can occur not only at the explicit level of need frustration but also at the implicit level (i.e., when explicit needs are satisfied). To investigate the role of implicit needs concerning threats, simple self-report instruments may be inappropriate. Implicit measures such as the *Operant motive test* (*OMT*, Kuhl, 2013), in which individuals answer open-ended questions in response to 15–20 pictures, allow implicit needs to be extracted from the answers. Since implicit needs may constitute further alternative explanations for the need mechanism of threats postulated in this thesis, they should be considered in a survey and experimental studies of future research.

Research Perspectives from Self and Identity Research

Needs and Self-definitions as Two Kinds of Standards. In this thesis, I consider needs ("I strive to be competent") as universal but also substantively specific standards of individuals and equate them with self-definitions ("As a paramedic, I strive to be helpful"). However, self and identity research indicates a complex interaction of needs and further self- and identity construction processes. For example, Vignoles et al. (2006) distinguish needs from a self-definition process and a self-enactment process (see section Limitations). While self-definition describes the process in which individuals answer the question of who they are, self-enactment is the process in which individuals attempt to behave according to that self-definition. Both processes are affected by needs (Easterbrook & Vignoles, 2012; Vignoles et al., 2006). For example, a strong need for competence might lead an individual to self-define high standards (self-definition process). Additionally, a strong need for competence might lead an individual to enact in a performance-motivated manner to achieve these standards (self-enactment process). Future research should investigate self-definitions as a form of standard in addition to needs and study the enacted behaviour. Since self-definitions are usually vague and individuals are not always aware of them (cf. Ashforth & Schinoff, 2016), experimental designs in which individuals explicitly learn self-definitions related to a role ("As a firefighter, I am helpful, I react fast, I am conscious in managing the technique...; cf. Study 4) are useful to consider interactions between self-definition processes, needs, self-enactment processes and their relation to threats.

Role-dependent Need-satisfaction. In this thesis, I attribute threats to frustrated needs and thus to what an individual strives for. The fact that individuals differ in the standards they strive for depends on the context and the role they assume (Sluss et al., 2002) is rarely investigated. In our studies, we show that need frustration is a crucial determinant of threat experiences across different individuals and situations. According to the *roles-as-perspective theory* (Meier & Semmer, 2018), individuals differ in how they experience the context in different roles. In both SDT (Deci & Ryan, 2000) and MDT (McClelland, 1961), context plays a key role in need satisfaction. While in SDT (Deci & Ryan, 2000), the context is perceived as need satisfying, in MDT (McClelland, 1961), the individual searches for an appropriate context for need satisfaction. Taking role-as-perspectives theory and insights from MDT

and SDT together, perceived need satisfaction (or frustration) and, in turn, threat experiences, should differ from role to role. For example, while a man in his role as a father perceives a knife attack as threatening, he perceives it as less threatening in his role as a police officer (i.e., the police officer expects the knife attack in his professional role because of his understanding of who he is as a police officer). To date, there is little research that proves that need satisfaction (or frustration) differs between roles. Merely Johnson et al. (2006) provide evidence that individuals in different groups, in which they assume different roles (e.g., assuming a professional role in a task group versus assuming a role as a friend in social groups), perceive needs to be satisfied to varying degrees according to the groups (e.g., task groups were associated with needs for competence, social groups were associated with needs for belonging). If needs differ between roles, individuals might differ in threats depending on their roles and in their perceptions of multiple roles as resources (see section Practical Implications). To understand the relation between roles, further research is needed. This further research could be implemented in a vignette study in which participants are instructed to take on different roles, such as the role of friend and the role of paramedic. Then, participants are presented with stressful situations as vignettes for which they have to evaluate their need relevance in both roles, as friend and paramedic.

Research Perspectives Regarding the Work Environment

The presented perspectives of CHM research, self and identity research, and needs research intends to identify the need-based mechanism of threats as well as the individual experience of coping with threats. Since individuals are not isolated in everyday work but teamwork is prevalent, threats should be considered from a team perspective. Furthermore, humans are supported by diverse workplace technologies ranging from computers and smartphones to autonomous technologies, which are a double-edged sword and are not necessarily seen as opportunities but are often perceived as threats (e.g., Smids et al., 2019). Further research perspectives arise regarding the team- and technology-based work context.

Team Research. Teams are “collectives who exist to perform organizationally relevant tasks, share one or more common goals, interact socially, exhibit task interdependencies, maintain and manage

boundaries, and are embedded in an organisational context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity" (p. 411, Mathieu et al., 2008). Teamwork is used in every organisation, in every profession, in all aspects of our lives (Salas et al., 2018). Due to the prevalence of teams in today's business environment and the frequency with which teams suffer adversity-induced setbacks (Stoverink et al., 2017), the team perspective is of particular interest for future research. The team perspective provides triggers, such as disrespectful feedback from colleagues or supervisors (Anshel, 2000; Rynek & Ellwart, 2019) but also offers approaches to compensate frustrated needs (e.g., social support, Bakker & Demerouti, 2007) so that teamwork includes a strengthening or hindering potential for threats. The systematic *input-mediator-output–input* (*IMOI*; Mathieu et al., 2008) is a prominent and widely recognised model of team research, systematising inputs (e.g., characteristics of individual team members, team characteristics, job characteristics), processes (e.g., communication), emergent states (e.g., shared mental models), and outcomes (e.g., performance, team effectiveness) of teamwork. Based on this framework, resources that might support the avoidance of problematic triggers (e.g., psychological safety) and resources that might strengthen individual needs (e.g., team cohesion) can be identified that influence threat. In the following section, I outline research perspectives on the two team constructs – team psychological safety and team cohesion – in relation to threats.

A potential team resource supporting the avoidance of threat triggers might be *psychological safety*, which describes an individual's perception of the consequences of interpersonal risk-taking (Edmondson & Lei, 2014) and represents an important resource in dealing with adverse situations (Stoverink et al., 2017). Lee et al. (2004) noted that psychological safety could help avoid the experience of failure and associated interpersonal costs. Experience of failure means becoming aware of the lack of expertise and knowledge (e.g., see Study 1) and, in consequence, losing image or professional standing, among others (Lee et al., 2004). If team members feel psychologically safe, they are not concerned about the interpersonal risks of failure. Instead, they feel free to ask questions, search for feedback, or report mistakes (Edmondson, 1999; Nembhardt & Edmondson, 2010). A high level of psychological safety enables teams to not perceive mistakes as mishaps but rather as learning

opportunities and to be reluctant to focus on future team challenges (Lee et al., 2004). Accordingly, teams with a high level of psychological safety may experience less failure than teams with low psychological safety; psychological safety might reduce the interpretation of failure of an experience and instead provide a future-oriented view of the critical adversity situation.

Another potential team resource supporting dealing with threats by addressing the satisfaction of needs, such as the need for relatedness, is *team cohesion*. The need for relatedness means feeling connected or belonging to other people (Alderfer, 1969; Huo et al., 2010; Leary & Baumeister, 2000). Thus, the need for relatedness is satisfied if team members feel they belong to their team. The concept of team cohesion describes exactly this: team members standing up for each other, supporting each other, and having a sense of belonging (Bollen & Hoyle, 1990). Therefore, teams with a high level of team cohesion may have a satisfied need for relatedness; thus, this need cannot be frustrated by threat triggers. Team cohesion might minimise threats by strengthening need satisfaction in postadversity phases. The potential moderating role of team cohesion as well as psychological safety in threats could be investigated in a team setting similar to Study 4.

Another interesting perspective for future research might be a multilevel approach, referring to the shared need frustration in teams and its effects on team performance. In our studies, we illustrate that frustrated needs are crucial determinants in the threat mechanism. However, whether individuals perceive their needs as frustrated or satisfied and, thus, whether they experience threats depends on the context in both SDT (e.g., Deci & Ryan, 2000) and MDT (McClelland, 1961). We know from adaptation research that unshared perceptions of a situation make team adaptation more difficult (Maynard et al., 2015). If team members perceive different requirements for action in the same situation, this results in different strategies and priorities to handle the situation (Burke et al., 2006; Maynard et al., 2015). Thus, an undivided perception of threats might imply different courses of action. For example, while a team member may feel very threatened and focuses on coping, another team member may have resources available to work on the specific team task because he or she feels less threatened. Especially in adverse situations, in which actions are often unclear due to uncertainty, complexity, and lack of transparency, the negative effects of not sharing, for example, on team

performance are amplified (cf., Mischel, 1973). However, the undivided threat experience could also be a resource. While one team member is busy coping, the other team members can stay active and focus their efforts on the task. Furthermore, in the case of not sharing the same threats, the team members who do not feel threatened could reduce the threat experiences of another team member if they reflect on the situation together in the team and present their "un"-threatening perspective. Since the investigation of shared or unshared perceptions of threats seems to provide interesting information to make teamwork more effective, this should be addressed in future research.

Research on (Autonomous) Technologies. The modern working world is not only characterised by human teamwork; individuals are increasingly collaborating with (autonomous) technologies (e.g., Shaw, 2018). Even if digital systems are supposed to relieve or simplify work, especially in regard to autonomous workplace technologies, they are often experienced not only as an opportunity but also as a threat (Smids, 2019). According to our classification, triggers and needs both represent interesting approaches for avoiding threats posed by technologies. In the following, I outline possible future research directions and highlight why threat triggers and needs should be considered in the design and implementation of workplace technologies.

Technology design can have an impact depending on whether technology is perceived as an opportunity or a threat, for example, if the technology signals disrespect to the users. Sparrow (2016), who analyses the use of autonomous technologies in elderly care, postulates that people experience a lack of respect (i.e., disrespect) when interacting with autonomous technologies. Spain and Madhavan (2009) showed that if an autonomous technology provides polite feedback, this is perceived as more reliable and trustworthy than a technology that provides rude feedback. However, conveying respect means more than being polite to another person; rather, it means expressing dignity and recognition of performance and excellence (e.g., Grover, 2013). In interpersonal interactions, a wide range of behaviours proved to be signals of (dis)respect (e.g., illegitimate tasks, dysfunctional support; Semmer et al., 2007). Expressing respect and avoiding disrespect mean being sensitive to the needs, goals, and feelings of another person (cf. Van Quakebeke & Felps, 2018). Furthermore, the results of our Study 4 indicate that the situational specificity of feedback affects whether the feedback is perceived as

(dis)respectful. Similar to Study 4, future research could make a comparison between different types of feedback (e.g., situation-specific, polite, rude) from an autonomous technology and an experimenter to elaborate differences between human and technological communication on respect perceptions. Since it is obvious that rude feedback is perceived as disrespectful (cf. Semmer et al., 2019), nonverbal characteristics should also be examined concerning disrespect. Existing research already focuses on how (non)verbal communication from autonomous technology affects cognitive framing, emotional responses, and task performance (e.g., Huang et al., 2019; Saunderson & Nejat, 2019), but there is a lack of research and guidelines on how autonomous technology should be designed to signal respect. Future research should investigate the activation of such possible threat triggers through the design of autonomous technology or, in turn, how technology can be designed to not activate triggers.

Apart from technology design, this thesis provides starting points for future research on how to best implement new workplace technology to avoid the perception of technology threats (e.g., Papadopoulos et al., 2020). Sticking to the example of autonomous technologies signalling a lack of respect and acting as a threat trigger, according to *the Effort Reward Imbalance Model* (Siegrist, 1996), an employee needs recognition for his performance, such as in the form of money or appreciation. If he or she does not receive recognition from collaboration with autonomous technology, he or she seeks recognition elsewhere (e.g., the supervisor) to satisfy basic human needs and stay mentally healthy in his or her work performance. Future research should therefore address to what extent organisations and supervisors are aware of possible threat triggers and how this awareness can help a) introduce robots as need-satisfying and b) buffer possible need-thwarting human-robot interaction by targeted human need-supporting behaviour.

Apart from a trigger focus, the consideration of needs in robot design and implementation may help to avoid workplace threats (Szalma, 2014). Research has already acknowledged that considering needs in the design of autonomous technologies is fruitful, for example, to increase motivation (e.g.,

Minkelen et al., 2020) or acceptance of using the technology (e.g., Fathali & Okada, 2018; Stubbe et al., 2019). That the use of technology such as the use of virtual reality in video games can frustrate needs has also been experimentally shown (Allen & Anderson, 2018; Ryan et al., 2006).-According to

SDT (Deci & Ryan, 2000), all three basic psychological needs are innate and universal in the particular context of workplace technology (Schauffel et al., 2021), although the need for control seems to be a balancing act. Increasing autonomy (i.e., control) is being delegated to technology, although there is a need for human autonomy. Designing and implementing technology should consider the balance between the level of autonomy on the technology side and the level of control on the employee side. Smids et al. (2019) suggest, on the one hand, that autonomous technologies' functions, such as monitoring tasks, frustrate the need for control, as individuals feel restricted in their actions. On the other hand, the use of artificial intelligence also leads to a frustrated need for control, as artificial intelligence is like a black box and individuals lack an understanding of the technologies' actions. For example, research indicates that different levels of autonomy affect the control strategies of drone operators (Zhou et al., 2019) or that autonomy and job control are positively associated with information and communication technology use (Karimikia & Singh, 2019). Although research already suggests the relevance of needs and threats posed by autonomous technology, systematic investigation is lacking. Which characteristics in the design of autonomous technologies are associated with frustration should be systematically investigated in future research.

Furthermore, it may be fruitful to consider how to avoid threats by autonomous technologies not only in design but also in implementation phases. Workplace technologies are often used because they work faster, more precisely, and efficiently support work (Granulo et al., 2019). This is often accompanied by employees' feelings of uselessness and fear of losing their jobs (e.g., Granulo et al., 2019; Ford, 2015). According to our study results (Study 4), people's feeling of uselessness and fear of losing their job might be perceived as a kind of insufficiency (trigger), which is predominantly associated with frustrated needs for competence and control. As explained in the practical implications section, the supervisor must provide alternative tasks for employees to demonstrate expertise and experience meaning. For example, if a robot takes over a former human-specific task to place the cartons on a production line, to check the correct load and to press a button, this may result in the perception of incompetence ("I am so stupid that even a robot can accomplish my work") and a fear of losing one's job. However, if an employee experiences this robotisation of the work process as a

promotion, because he or she can now focus on more cognitive challenges and social tasks, it is much more likely that the robot implementation will be perceived as an opportunity, not an offence. To help the employee regain a sense of competence, the supervisor could also assign him quality control as a new task and, hence, a new area of experience to develop a sense of competence. Moreover, the assignment of the new task could satisfy the employees' need for status since the new task would make him a leader of the robot. The possibility that such compensation of frustrated needs by valuing other needs might work is confirmed in a study by Cha et al. (2020). They show that individuals compensate for a loss of human distinctiveness, which they regard as a basic human need (i.e., similar to our need for status), by valuing alternative dimensions under human-machine comparisons (e.g., emotional responsiveness). Future research should investigate possibilities of compensation for need frustration by the satisfaction of further needs with special regard to the implementation of autonomous technologies.

Conclusion

Stressful events that individuals face in their work environment are diverse (e.g., dealing with high workload, experiencing conflicts, facing critical adversity situations) and can potentially be appraised as challenges, hindrances, or threats (CHM, Horan et al., 2020). Threats are the stress dimension with the most serious consequences (e.g., emotional exhaustion; Searle & Tuckey, 2017). Threats are a topic of interest in interdisciplinary psychological research. The results of this thesis contribute to a cross-disciplinary understanding of triggers (*when*) and mechanisms (*why*) of threats in detail. Initially, the integration of different research areas, such as self and identity research and needs research, helps to specify the threat concept. By using a multimethod approach (i.e., literature review, interview study, survey study, laboratory experiment) in different samples, the results of this thesis show triggers and needs as crucial determinants of threats. The threat danger originates from the person, social interactions, and the environment if insufficiency or disrespect is perceived. This highlights the importance of the presented classification of triggers for different applications (e.g., team reflection, implementation of workplace technology). Furthermore, identifying frustrated needs as an underlying mechanism to explain the emergence of threats highlights that threats are the result of individual

perceptions and appraisals of stressful events. Becoming aware of one's own needs and assessing their appropriateness for specific contexts is an important step in avoiding threats.

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Affidavit

Nach §9, Abs. 1 der Promotionsordnung des Fachbereichs I der Universität Trier vom 25.05.2016.

Hiermit versichere ich:

Nach-/Vorname	Rynek, Mona
Geburtsdatum	06.01.1992
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dass ich die vorliegende Arbeit mit dem Titel**:**

Better Safe than Sorry - Spotlighting the When and Why of Threats

selbstständig verfasst und keine außer den angegebenen Hilfsmitteln und Referenzen benutzt habe.

Die Arbeit wurde bisher weder im Inland noch im Ausland in gleicher oder ähnlicher Form

einer anderen Prüfungsbehörde vorgelegt.

Trier, den 22.12.2022

Mona Rynek