

Factors Influencing Support for Insider Threat Behaviours: Anger Rumination, Job Satisfaction, Right-Wing Authoritarianism and Depression/Anxiety

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Abstract

The research on insider threats is largely limited to reactive security measures, with little consideration given to the psychological profile of insider threats and those that support these types of attacks against different industries and government bodies. In two studies, we examined the roles of anger rumination, job satisfaction, depression/anxiety, and right-wing authoritarianism as predictors of insider threats. In Study 1, we considered the role of anger rumination and job satisfaction as predictors of support for insider threat activities as presented through scenarios. As predicted, results indicated that both variables were strong predictors of organisational resentment and insider threat justification, with anger rumination also acting as a predictor of insider threat proclivity. In Study 2, we examined right-wing authoritarianism and depression/anxiety as predictors of insider threats. A multiple regression analysis revealed that right-wing authoritarianism negatively correlated with support for insider threats. There was no significant relationship between either depression and/or anxiety when considering support for insider threat activities. These findings suggest that a lack of authoritarian tendencies may play a role in justifying insider threat behaviours, whereas depression and anxiety do not appear to have a direct influence.

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What is an Insider Threat?

When considering what constitutes an *insider threat* and the risk that they pose the National Protective Security Authority (NPSA), formerly the Centre for the Protection of National Infrastructure (CPNI), which is the UK's lead for protective security provides the following definitions:

- Insider: Any person who has, or previously had, authorised access to or knowledge of the organisation's resources, including people, processes, information, technology, and facilities.
- Insider risk: The likelihood of harm or loss to an organisation, and its subsequent impact, because of the action or inaction of an insider.
- Insider Threat: An insider, or group of insiders, that either intends to or is likely to cause harm or loss to the organisation.
- Insider Event: The activity, conducted by an insider (whether intentional or unintentional) that could result in, or has resulted in, harm or loss to the organisation.

(NPSA, 2023)

As such, an insider threat is considered a grave security concern for organisations as it involves an individual/s who is a member of that organisation exploiting or allowing their privileges and knowledge (whether knowingly or not) to be exploited for malicious purposes. This can include insiders conducting attacks themselves or facilitating external agents who seek to cause harm to the organisation's assets and resources. Insider threats can take various forms, from leaking confidential information to third-party actors to committing acts of violence. These threats can be premeditated, with the person joining the organisation with the sole intention of causing harm, or they can arise due to personal and workplace issues, such

as anger towards the organisation. Additionally, insider threats may occur unwittingly, where an insider's action or inaction inadvertently provides external actors with access to sensitive knowledge or resources. According to research, nearly 50% of all data breaches within organisations are caused by insider threats (CISA, 2020). Insider threats can cause significant financial and reputational damage to organisations, and the exploitation of information technology system vulnerabilities is the most common form of such threats (CPNI, 2013). Employees engaging in insider threat activities often seek financial gain by stealing and selling intellectual property to external organisations or foreign actors (CPNI, 2013; Nurse et al., 2014). Yet, despite being a significant security risk, insider threats are under-researched, especially in terms of understanding the psychological factors that may drive an employee to engage in such activities.

When considering what constitutes an insider threat, it is generally accepted that there are four types:

1. **Accidental Insider Threat:** This type of insider threat tends to occur when an individual unintentionally exposes sensitive information or poor working practises due to a lack of general security awareness and/or training, or through simple mistakes such as responding to scam emails.
2. **Malicious Insider Threats:** an insider who is deliberately using their position to cause harm to an organisation and/or other employees. Some of these insiders may have specifically gained access to the organisation (for example state actors or protest groups). However, most tend to be employees who have worked for the organisation and have been motivated to conduct an insider attack due to the desire for financial

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gain, revenge against the organisation and/or other employees, or, in extreme circumstances, to conduct terror-related activities.

3. **Compromised Insider Threats:** An insider who has been targeted by external agents and is being forced and/or coerced to conduct insider threat activity. This includes, but is not limited to, individuals who have accepted a bribe, are being threatened, or have been the victim of a cyber-security-related attack such as ransomware.
4. **Negligent Insider Threats:** often occur due to employees failing to adhere to security protocols or due to an employee exposing a weakness due to poor working practises.

(CPNI, 2013; CISA, 2020).

Further to this, the NPSA has outlined several findings concerning insider threats. They have categorised the main insider incident types as follows: unauthorised disclosure of sensitive information, process corruption (defined as illegitimately altering an internal process of the system to achieve, a non-authorized objective), facilitation of third-party access, physical sabotage, and electronic or IT sabotage (CPNI, 2013).

There have been a significant number of incidents worldwide relating to insider attacks, with many accidental insider threats having released sensitive information due to genuine mistakes. In 2021, for instance, an employee of the UK Ministry of Defence sent an email to the wrong recipient, leaking sensitive information relating to over 250 Afghan translators that had been working with the UK government, potentially endangering their lives (BBC, 2021). An insider threat can also pose a threat to life, whether through sabotage or the exploitation of the trust afforded to them. An example of this can be seen in the case of Harold Shipman. Shipman, a general practitioner working for the UK National Health Service (NHS) was believed to have been purposefully responsible for the deaths of over 250

of his patients, using his position of trust as a cover to commit his heinous crimes. This largely contributed to a wider understanding of how a malicious insider threat can pose substantial risks within industries such as the NHS and other healthcare settings. (Pounder, 2003).

When considering other significant insider attacks, one might consider the murder of Sarah Everard by Wayne Couzens, a serving police officer. The act caused significant reputational damage to the Metropolitan Police. Couzens abused his position of power and took advantage of the increased powers granted to police officers during the COVID-19 pandemic to rape and murder his victim. This prompted a number of campaigns both within and outside of the force in order to root out police staff who were unfit to work within the police and the NHS, respectively (Pounder, 2003; Lowerson, 2022). When considering what constitutes an insider threat, the harm caused can be direct, such as data theft or sabotage, or indirect, such as reputational damage resulting from the misuse of one's position. For example, although Wayne Couzens did not commit his crime with the intention of harming the Metropolitan Police Service, the abuse of his position had severe reputational repercussions for the organisation. This highlights how insider threats can manifest through the misuse of power and trust, even if the primary intention was not to harm the organisation directly.

Research has suggested that certain behavioural and psychological factors can influence the likelihood of someone committing insider threat activity. This is particularly true when considering individuals with a higher disposition to anger, disgruntlement, depression/stress, narcissism, and general job dissatisfaction (CPNI, 2013; Greitzer et al., 2013; Dupuis & Khadeer, 2016; Whitty, 2018). Despite these indications of an increased risk, many studies suffer due to their reliance on secondary sources. This is primarily because

direct interactions with confirmed insiders are often impossible since many go undetected or are difficult to engage with directly once the act has been committed. The motivations for an individual to conduct insider threat activities are varied and, therefore, provide difficult barriers for researchers to overcome. Some research that has been conducted has identified that shared behaviours and psychological factors appear to exist regardless of whether someone is a malicious or non-malicious insider threat. Thus, understanding further the psychological factors that underpin insider threat behaviour is an important step towards early detection and deterrence (Greitzer et al., 2013; Dupuis & Khadeer, 2016). Additionally, existing studies have primarily focused on the cyber security perspective. Although there is a significant risk to cyber-related assets and data that an insider could exploit, this sole focus again limits the scope of the research conducted. Therefore, most solutions thus far have focused on reactive security measures as opposed to pre-emptive countertactics that could stop an individual from becoming an insider threat in the first place.

Although most research conducted on insider threats has focused on cyber solutions that can be implemented in order to deter and detect would-be insiders, research has highlighted that other identifying factors do exist. These include psychological and behavioural indicators that could lead to the early identification of high-risk individuals. For instance, in their research, the NPSA highlighted several factors that they believe contribute to the likelihood of an individual conducting insider activity, with financial gain being the most predominant (47% of cases), ideology (20%), desire for recognition (14%), loyalty to friends, family, and/or country (14%) and revenge (6%) following, respectively (CPNI, 2013). It should be noted, however, that although revenge was identified as the least prominent reason to conduct insider activity, general disgruntlement towards the organisation was a common theme amongst the case studies featured within this research, and it was also

found to be a driving factor behind most insider attacks (CPNI, 2013). Crucially, the NPSA identified several personality traits that were shared by the insiders within their case studies. These traits included low self-esteem, immaturity, amoral and unethical behaviour, a superficial personality (i.e. an individual who tends to be shallow, lacking depth in their thoughts, emotions, and relationships), being prone to fantasising, restless and impulsive behaviour, a lack of conscientiousness, manipulative behaviour, emotional instability, and, in some cases, exhibiting evidence of psychological or personality disorders (CPNI, 2013).

The motivations behind insider attacks vary significantly depending upon the type of insider conducting the attack, thereby making it difficult to identify common characteristics among insider threats. However, while the motivations for insiders are multifaceted, there is some evidence suggesting that psychological factors associated with job satisfaction, such as disgruntlement, depression, stress, and a sense of failure, can lead to an increased risk of individuals becoming insider threats (CPNI, 2013).

Another relevant variable may be anger rumination. This is because rumination, which involves continuous and pervasive thinking about anger-inducing events, can prolong and increase negative affect and revenge fantasies (Denson et al., 2013; Borders et al., 2020). Anger rumination also increases the desire for revenge and the tendency to commit acts of violence (Maxwell et al., 2004; Denson et al., 2013; Borders et al., 2020). Some research suggests that insiders who were at least somewhat driven by a desire for revenge account for more than 80% of all insider threats that committed cyber-sabotage (Cappelli et al., 2007; Maasberg et al., 2020). Thus, anger rumination is potentially a key predictor of insider threats. This review underscores the need for further examination of the psychological factors, including anger rumination, that may be associated with an increased likelihood of engaging in insider threat activities. Understanding these factors may inform interventions for

individuals at risk of becoming insider threats before they become a problem within their workplace.

The Challenges in Researching Insider Threats and Associated Factors

Insider threats encompass a large range of motivations and may vary from one person to another, depending on their reasons for engaging in an insider attack. This becomes even more complex when considering malicious and non-malicious insiders. For example, a malicious insider may exhibit different psychological processes from someone who is being coerced; this is further confounded when considering accidental or negligent insiders, as they may not exhibit any negative behaviours at all. However, that is not to say that shared behaviours don't exist between different types of insiders. For example, a malicious insider who engages in anger rumination may seek revenge against an employer for whom they have a grievance, and although rumination might not be the sole motivator, such as in the case of a negligent or accidental insider threat, it can result in a lack of judgement, potentially leading to someone unwittingly engaging in insider threat activity (Dupuis & Khadeer, 2016).

While research has considered correlations between behavioural factors associated with anger rumination (i.e., thoughts of revenge and disgruntlement) and insider threat activities, no research to date has examined rumination as a core predictor. Far more focus has been given to job satisfaction within current research. As such, given that research has identified attributes that are normally correlated with anger rumination as an underlying cause for insider activity, we must consider the role of anger rumination in greater depth, as this could help to underline a potential detection methodology for various types of insider threats. Research into the motivations and mitigation of insider threats has been limited by the diverse nature of these threats. While some psychological factors have been identified as relevant to

insider threats (e.g., disgruntlement, depression, stress), more in-depth studies are needed to address the specific role of anger rumination. Researchers must also consider the variations in psychological behaviours among different insider threat categories (e.g., malicious, non-malicious, accidental, and negligent). By understanding the intricate psychological factors that drive insider threats, organisations can better detect and prevent them, complementing the existing cybersecurity-focused approach (CPNI, 2013; Dupuis & Khadeer, 2016).

Difficulties arise when conducting data collection associated with insider threats, often because many insiders go undetected, and those that are detected may be unwilling to engage with researchers directly. Some research has attempted to mitigate this by engaging with people who are associated with known insiders, such as colleagues, managers, or human resources personnel. However, several issues can be found with this method of data acquisition. For example, most of the people from whom data was collected are likely to be unaware of unusual psychological factors and therefore would struggle to provide researchers with an accurate representation of the behaviours exhibited by the insider threats prior to them committing an attack (Greitzer et al., 2013). Some research has been able to conduct similar analysis using case studies of identified insiders; however, this is often limited due to the difficulties involved in identifying and engaging with insider threats (Whitty, 2018).

The study of insider threats is complex due to the broad range of insiders, their characteristics, and their motivations. Research has pointed to similarities in psychological characteristics when analysing cases of insider threats, which can inform detection and prevention strategies. Early identification and engagement could reduce the probability of insider threats, providing an additional layer of security on top of the reactive security approach currently employed by most organisations through cyber-security solutions.

Job Satisfaction and its Influence on Insider Threat Activity

Job satisfaction is a significant factor likely associated with insider threat activity. Research has shown that individuals with low job satisfaction are more likely to engage in deviant workplace behaviours (Hollinger & Clark, 1982; Abbasi & Ismail, 2019). While there is a distinction between what constitutes an insider attack and general deviant workplace behaviour, correlations can be found in the behaviours exhibited by individuals in both cases. For example, disgruntlement towards an organisation has been identified as a factor within insider threat case studies, and similarly, a lack of job satisfaction in employees can lead to behaviours such as theft and general disruptiveness (Hackman & Oldham, 1976; CPNI, 2013; Abbasi & Ismail, 2019). Many behaviours identified in research associated with insider threats indicate poor job satisfaction and/or workplace values. These include disregard for authority, non-acceptance of criticism, poor performance, and absenteeism. This demonstrates that job satisfaction is an important underlying factor that should be considered when researching the motivations behind insider activities (Greitzer et al., 2013; CPNI, 2013).

Dupuis and Khadeer (2016) attempted to address the issue of comparing psychological factors that may influence malicious versus non-malicious insiders, identifying several key findings. They found that individuals with lower agreeableness and conscientiousness were more likely to engage in both malicious and non-malicious insider activities. Additionally, individuals displaying higher levels of negative emotions such as fear, hostility, guilt, sadness, shyness, and fatigue, and who were less attentive, were more likely to engage in insider activities. This research highlights how job dissatisfaction and associated stressors can make individuals more prone to behaviours that could harm their organisation.

Crucially, Dupuis and Khadeer (2016) employed psychological theories such as the Social Bond Theory (SBT) to explain insider threats. SBT emphasises the importance of individuals feeling part of a positive environment within their organisations, as this can deter them from engaging in criminal or insider activities. Promoting positive relationships can lead to the prevention of negative psychological outcomes such as rumination and depression, reducing the risk of both malicious and non-malicious insiders. While this research is a positive step, it has limitations, such as not fully accounting for the individuality of participants and their specific circumstances.

Research by Shaw and Stock (2011) considered the cause of insider attacks relating to the illegal acquisition of organisational IP, using case studies to identify psychological issues related to insider threats. They found that poor job performance and lack of support from colleagues or management, often tied to job dissatisfaction, were significant factors. Psychological factors such as stress and disgruntlement towards colleagues, management, and the organisation were also identified as significant (Shaw & Fischer, 2005).

Moore et al. (2011) examined motivations behind IP theft by insiders, focusing on the entitled independent model. They found that individuals driven by a sense of entitlement and poor job satisfaction were likely to commit IP theft, with 33% displaying signs of poor job satisfaction leading up to the insider attack. This further underscores the link between job satisfaction and insider threat behaviours.

Psychological Factors Beyond Job Satisfaction

Dupuis and Khadeer (2016) noted the importance of considering psychological factors beyond job satisfaction when examining insider threats. For instance, working outside of normal hours has been considered malicious insider behaviour but could also be due to

personal reasons such as a presentism culture or tight client deadlines. This highlights the need to account for specific circumstances and individuality in research.

While job satisfaction is a critical factor, it is essential to examine other psychological predictors and their interactions to fully understand insider threat behaviours. Future research should aim to integrate multiple psychological factors, ensuring a comprehensive understanding of the motivations behind insider activities.

The Role of Anger Rumination on Insider Threats

Rumination is the process by which an individual repeatedly or continuously thinks about distressing or upsetting thoughts, generally involving past events and negative emotions (Soo & Sherman, 2015). Research in the area of rumination has shown that the process itself can have a significant impact on an individual's mental health and well-being, having been linked to issues related to borderline personality disorder, depression, and anxiety (Joormann, 2005; Selby et al., 2008; Selby et al., 2009; Selby & Joiner 2013; Smith et al., 2018). This in turn can lead to physical ailments such as eating disorders, substance abuse, and cardiovascular issues related to heightened blood pressure due to an increase in stress (Joormann, 2005; Aldao et al., 2010; Busch et al., 2017; Smith et al., 2018).

Rumination can manifest itself in several ways: through positive cognitive processes such as reflective thinking, negatively through acts of brooding, and, most importantly within the context of this study, emotionally. Examples of negative types of rumination include depressive, anxious, interpersonal, and anger rumination (Cavicchioli & Maffei, 2021). Research has shown that anger is causally related to insider threat activities (CPNI, 2013; Greitzer et al., 2013).

An under-examined variable in the context of insider threats is *anger rumination*.

Anger rumination is understood as the tendency to repetitively think about and dwell on anger-inducing incidents, which can intensify and extend feelings of anger (Sukhodolsky et al, 2001). Anger rumination can lead to individuals experiencing anger for extended periods, becoming hostile, and exhibiting higher levels of aggression relative to not ruminating, particularly in individuals with mental health concerns and social anxiety disorders (Sukhodolsky et al, 2001; Bushman et al, 2005; Pedersen et al., 2011; Pugliese et al, 2014). Anger rumination can cause a decrease in self-control in individuals, thereby augmenting aggression in provoked individuals (Denson et al., 2012). As a result, anger rumination increases retaliatory behaviour, particularly in those individuals who have engaged in provocation-focused rumination as opposed to self-focused rumination (Bushman et al 2005; Pedersen et al., 2011). Whilst other forms of rumination may have some influence on insider threat behaviour, anger rumination would likely act as a greater predictor when compared. Anger rumination has been shown to prolong and intensify negative emotions, particularly anger, which can lead to aggressive behaviours and a desire for retaliation (Denson et al., 2013; Borders et al., 2020). Anger rumination involves continuous and pervasive thinking about anger-inducing events, which can increase the likelihood of engaging in revengeful acts, including insider threats. This makes it a critical variable to study in understanding the psychological underpinnings of such threats as it has implications for insider threats that are motivated by a desire for revenge.

This persistent focus on anger can escalate negative emotions such as resentment (Ray et al., 2008), This could be particularly true in workplace scenarios where perceived injustices or financial strains are involved. By magnifying these feelings, anger rumination may increase the likelihood of an individual engaging in insider threat activities as a form of

retribution, similar to how anger rumination can lead to other forms of aggression (Bushman, 2002; Bushman et al., 2005; Pedersen et al., 2011; Pugliese et al, 2014). Recognising the pivotal role of anger rumination is essential for early intervention strategies aimed at preventing insider threats. By understanding how rumination fuels the desire for retribution, we can better predict and mitigate the risk of insider threats.

In the context of insider threats, some research has shown that a precursor event is likely to have taken place prior to an insider conducting an attack (CPNI, 2013; Nurse et al., 2014). These precursors can range from disciplinary proceedings to confrontations with co-workers or management, and in the context of the workplace, they may be considered provocative, thereby leading to an increased likelihood of reprisal, particularly among those who engage in anger rumination (Nurse et al., 2014). Thus, the link between rumination and support for insider threat behaviours is an important topic of research because many associated behaviours found in people who have engaged in insider activity and conducted attacks have often been correlated with behaviours associated with anger rumination (Denson et al., 2012; Greitzer et al., 2013; CPNI., 2013). Research has indicated that individuals are at a heightened risk of engaging in insider threat activities when partaking in cognitive processes associated with anger rumination, such as thoughts of seeking revenge and poor workplace performance (CPNI, 2013; Maasberg et al., 2020).

Anger rumination often encompasses revenge fantasies, which can significantly influence insider threat behaviours (Kowalski et al., 2008; CPNI, 2013; Borders, 2020). Although research specifically linking anger rumination to insider threats is limited, studies do suggest a connection. For example, Kowalski et al. (2008) found that revenge, a key component of anger rumination, motivated 56% of individuals in their study to commit insider attacks, making it the most significant factor. Similarly, while the NPSA's research

identified financial gain as a more prevalent motivator, they also observed that revenge and general disgruntlement were common among the case studies, even if not the primary drivers (CPNI, 2013). This underscores the need to consider how elements like revenge fantasies within anger rumination can precipitate insider threats.

Several studies have considered the link between rumination and revenge. In their research, Barber et al. (2005) explored the relationships between anger rumination and forgiveness in oneself and others. What they found was that anger rumination acted as a direct barrier to individuals being able to positively engage with negative thoughts of revenge, and rather than seek forgiveness, they would ruminate on the act of revenge as a way of repentance. In the context of insider threats, it could be argued that this inability to forgive may increase the risk of an attack taking place in situations where the individual believes revenge to be a justified means of retribution. This is further supported when considering the profiles of certain well-known insiders. For example, Edward Snowden conducted an insider attack due to the perceived over-observance of the US government and its allies by members of the public (Lowe, 2016; Pujol, 2020). This data leak in itself could be seen as a justified act of vengeance against the security services involved and possibly was identified as a solution to any self-blame that Snowden attributed to himself for his involvement up until that point (Lowe, 2016; Pujol, 2020). The inability to deal with thoughts of revenge has been found to lead to other emotional responses, such as depression and a general lack of job satisfaction (Law, 2013). While this research has identified the risk of revenge as a motivator, it has failed to consider to what extent an individual is willing to go in their pursuit of revenge and whether this could lead to an insider attack.

When considering the connection between insider threats and anger rumination, current research has shown anger rumination to be directly linked to desires for revenge and

disgruntlement, as well as the tendency to commit acts of violence (Bushman et al, 2005; Borders et al, 2020). Despite this, research examining the link between anger rumination and insider threat behaviour is limited. This is especially true when considering that individuals who become insider threats are often driven by emotional reactions to perceived injustices towards them, and those suffering from rumination are often unable to regulate emotions healthily, resulting in emotionally driven decisions and outbursts of anger (Kligyte et al, 2013).

Within their research, Nurse et al. (2014) created an insider threat detection framework using a thematic analysis of 99 case studies. What they found in their research was that after a catalyst event had occurred (i.e., disciplinary proceedings, loss of finances) this was directly followed by an emotional response from the subject. This would often materialise as anger and/or disgruntlement due to a perceived sense of injustice or ill-treatment (Nurse et al., 2014). They noted several other relevant themes; for example, they noted that the psychological state of the insider contributed to their framework of requirements. These included traits relevant to this study, such as those seen within the dark triad of personality types and, more specifically, disgruntlement, depression, and stress. Furthermore, they identified the theme of narcissism as a contributing factor to insider threat behaviour. Narcissism has been shown to be directly related to authoritarian personalities, as has been shown in research focusing on authoritarianism and dark-triad traits (Moss & Connor, 2020). Significantly, Nurse et al. (2014) have identified an important factor relating to insider threats, namely that there are clear precursors to an insider committing an attack and that certain psychological indicators may be present prior to an attack taking place. In the context of insider threat detection and deterrence, this represents an opportunity for early intervention should organisations and employees within be made aware of characteristics

relating to an increased likelihood of attack, particularly in situations where an employee has undergone a precursor event (CPNI, 2013; Nurse et al., 2014). This highlights the importance of the current study, as early identification and engagement could result in a reduction of the risk of insider threats, providing an additional layer of security on top of the reactive approach currently employed by most organisations through cyber-security solutions.

Research on insider attacks has revealed various motivational factors, including revenge and disgruntlement. However, these are not always the primary drivers. Willison (2006) found that, in cases of confidential information theft, financial gain and a sense of entitlement were more prevalent motivations than revenge or disgruntlement (Willison & Siponen, 2009). Similarly, Capelli et al. (2007) noted that insider fraud often lacks a clear, direct motivation. This diversity in insider threat motives highlights the challenges of researching insider motivation and underscores the need for ongoing observation of psychological behaviours. Such a study is crucial for the early detection of potential insider attacks, as evidenced by NPSA research emphasising the impact of anger rumination on various insider threats (CPNI, 2013).

Research that has considered psychological factors relating to insider threats has noted a number of correlations between disgruntlement towards an employee's organisation and a personal view of failure within themselves, with the former acting as an example of how anger can influence someone to engage in insider threat activity and the latter considering depression as a trigger (Shaw & Fischer, 2005; Greitzer et al, 2019; 2021). In the context of job satisfaction and disgruntlement, Shaw & Fischer (2005) highlighted that of all the case studies that they considered involving insider threats, nine out of ten of those who carried out an attack were preceded by serious employment issues and in almost every case exhibited disgruntlement towards their organisation and/or serious personal issues.

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Furthermore, Greitzer et al. (2021) through the use of a psychosocial model, attempted to determine behavioural indicators that may correlate with the likelihood of an individual conducting insider threat activity, having noted that the most prevalent was a disregard for authority, disgruntlement, and anger management issues, all of which can be highly correlated with both anger rumination and job satisfaction. However, this research is once again limited in scope due to its heavy focus on cyber-security while only briefly considering non-cyber-related threats. Research that has considered psychological factors has often relied on methods such as thematic analysis, normally through the use of interview transcripts provided by individuals who have engaged with known insiders such as human resources professionals and colleagues who worked alongside the case studies identified through research (Greitzer et al., 2013).

While it has been determined that both poor job satisfaction and anger rumination may increase the likelihood of an individual engaging in insider threat activities, it is the view within this research that anger rumination would act as the stronger predictor. Many people will likely suffer some level of grievance within their career during their lifetime, with the expectation being that most individuals will be able to resolve these issues healthily. Those who suffer from anger rumination, however, may find it more difficult to find a resolution and therefore may be inclined to engage in more serious methods of retribution. As such, the aim of Study 1 was to propose two hypotheses. The first hypothesis was that anger rumination would be positively correlated with insider threats and support for them. The second hypothesis was that anger rumination would significantly predict insider threats and support for them over and above other predictors, such as job satisfaction.

Authoritarianism and Insider Threats

Right-wing authoritarianism (RWA) can be described as a social and political ideology that is largely characterised by conventionalism (abiding by conventional values), authoritarian submission (high degree of respect for those in authority and adherence to the rules) and authoritarian aggression (aggressive attitude to individuals who deviate from the norm/rules) (Manson, 2020). Authoritarianism, in general, is an under-examined variable in the context of insider threats but has shown evidence of a potential relationship, especially when considering insider threats within organisations where individuals have been shown to abuse positions of trust (Pounder, 2003; BBC, 2021; Lowerson, 2022).

Research that has examined authoritarianism and its relationship with criminal activity has found that highly authoritative individuals are more likely to “act out” and pursue aggressive means of reprisal when they feel that their perceived “norms” are being violated (Rickert, 1998; Mentor & Dome, 1998). Furthermore, research has indicated that authoritarians are more likely to engage in hostile actions against those they perceive to have wronged them. This is particularly true for individuals who score higher on the Right-Wing Authoritarianism Scale (RWA) and who are also inclined towards physical aggression and anger (Altemeyer, 1998; Mentor & Dome, 1998; Yamawaki et al., 2022). For example, an employee may be inclined to conduct an insider attack due to a perceived disruption of their workplace norms caused by internal factors or individuals. Furthermore, organisations that promote inclusive values may be less at risk of an insider threat than those of more restrictive authoritarian regimes. Further research is needed to understand the relationship between authoritarianism and insider threat behaviours.

While no research exists that has considered the relationship between authoritarianism and insider threats directly, there have been studies conducted that have examined the link between authoritarianism and other relevant variables. For instance, research has suggested that individuals who show evidence of higher authoritarianism are generally more likely to support acts of revenge and aggression, particularly where there has been a perceived attack against an individual or a group for which they are associated and a clear out-group for which they can attribute blame (Mentor & Dome, 1998; Yamawaki, 2022). Highly authoritative individuals are more likely to be protective of what they consider the status quo; therefore, any perceived threat to their normality could lead to what they would consider ‘fair’ retribution, with some research suggesting that authoritative personalities tend to be more supportive of aggressive reprisal if they believe that their accepted norms have been compromised (Mentor & Dome, 1998; Yamawaki, 2022). When considering violent actions concerning right-wing authoritative personalities, Yamawaki et al. (2022) found that right-wing authoritarianism, anger, and physical aggression were all indicators when determining the likelihood that someone would commit violence against Asian-Americans during the COVID-19 pandemic, due to the perception that COVID was a “Chinese virus”. Within the context of insider threats, this could indicate that highly authoritative individuals are more likely to act with hostility when a perceived injustice has taken place, especially if there is a specific group or person to attribute the blame. Notably, some of the most notorious insider attacks have been perpetrated by individuals in positions of power (Pounder, 2003; BBC, 2021; Lowerson, 2022). Research on insider threats would benefit from examining the link between authoritarianism and insider threat activities. Thus, the current research aimed to examine the psychological predictors of insider threat support, focusing on anger rumination, job satisfaction, right-wing authoritarianism, and depression and anxiety.

High-Profile Insider Threats from Authoritative Positions

Many of the most high-profile insider threats have operated from positions of authority, such as police officers, healthcare workers, and government officials. When considering specific examples, one might consider individuals such as Chelsea Manning (formerly Bradley) who used her position to leak sensitive information regarding the U.S. military operations in Iraq and Afghanistan. Chelsea cited her depression and anxiety, which she attributed to her gender dysphoria, as part of the reason for conducting the insider attack (National Public Radio, 2022). In examining case studies of severe insider aggression and violence, notable examples include Wayne Couzens, a former police officer convicted of Sarah Everard's rape and murder in London, and Harold Shipman, a general practitioner (GP) in the UK National Health Service. Shipman, convicted of murdering fifteen elderly patients with suspected higher victim counts, exhibited traits of an authoritative personality, such as a need for control and challenges in collaborating with those he considered inferior, earning him the label of a 'control freak' (Pounder, 2003). High-profile insider threats highlight real-world examples of how individuals in positions of authority can abuse their power, leading to significant organisational harm. These cases illustrate the severe repercussions that insider actions can have, even if not intended to harm the organisation directly. Understanding these examples provides context for the current research, emphasising the need to study psychological factors that contribute to such behaviours.

Perceived Norm Deviation and Authoritarianism

Research on the role of authoritarianism in supporting insider threat activities is limited, but existing studies provide valuable insights. Individuals with right-wing authoritarian personalities often react strongly to perceived norm deviations. Kauff et al.

(2015) examined how right-wing authoritarianism influenced perceptions of misbehaviour among immigrant groups in Germany. They found that individuals with high scores on the Right-Wing Authoritarianism (RWA) Scale (Altemeyer, 1998) were more likely to support aggressive reprisals to enforce conformity on immigrants whose behaviours they deemed unacceptable.

This relevance extends to insider threats. The rise of right-wing extremist organisations highlights the importance of understanding whether authoritarianism can drive individuals to conduct insider threat activities, especially when perceived threats to social norms are involved. Research indicates that perceived organisational injustices can lead to deviant workplace behaviour, suggesting that perceived non-conformity or injustice within an organisation can prompt malicious actions (Sabokro & Tavakoli, 2020).

Study 2 tested the hypothesis that highly authoritarian right-wing individuals might be inclined to engage in insider threat activities. Despite the lack of direct research linking authoritarianism to insider threats, many convicted insiders have exploited their authoritative positions to conduct attacks (Pounder, 2003). It is crucial to note that authoritarianism is not exclusive to the right wing; it can be present across the political spectrum. Both left-wing and right-wing authoritarians have shown a willingness to go to extreme lengths to enforce conformity with their beliefs (Conway et al., 2017; Moss & Connor, 2020).

By exploring the intersection of authoritarianism, perceived norm deviation, and insider threats, this research aims to fill a gap in the literature and enhance our understanding of the psychological factors driving insider threat activities.

Anger Rumination and Right-Wing Authoritarianism and Their Relevance to Insider Threats

The relationship between anger rumination and right-wing authoritarianism (RWA) is complex. Anger rumination involves the persistent focus on anger-inducing events, which can exacerbate feelings of resentment and a desire for retaliation (Sukhodolsky et al, 2001). This cognitive process can intensify authoritarian tendencies, as individuals with high RWA scores often exhibit strong reactions to perceived threats against their societal norms and values (Altemeyer, 1998). By examining these two factors sequentially, this thesis aims to determine whether anger rumination and/or right-wing authoritarianism, each lead to a higher propensity for insider threats. Understanding this interaction can provide deeper insights into the psychological mechanisms driving such threats. Within this research, anger rumination and authoritarianism were examined as part of two separate studies to better understand their individual impacts on support for insider threats. By examining these factors in isolation, the research aimed to provide a clearer understanding of how each predictor uniquely contributed to the risk of insider threats.

The Role of Depression and Anxiety on Insider Threat Behaviours

Depression and anxiety, which are linked to poor workplace performance and deviant workplace behaviours (Haslam et al., 2005; Radzali et al., 2013; Amyx et al., 2019) may also act as precursors to insider threat activities, as depressed individuals may become vulnerable to coercion and blackmail (CPNI, 2013). Research exploring the dark triad—psychopathy, narcissism, and Machiavellianism—has revealed links with insider threats. Studies suggest that such insiders often exhibit behaviours, particularly those associated with narcissism, which includes elements of depression and anxiety. This connection is evident in various case

studies that investigate insider threats, underscoring the relevance of these personality traits in such contexts (Alexrad et al., 2013; Greitzer et al., 2013; Dupuis & Khadeer, 2016). This link between general job satisfaction and signs of depression or stress has been highlighted in research as a contributing factor towards insider activity within several case studies, implying that a poor attitude towards work, signs of stress, and being open to financial exploitation due to monetary issues could all lead to an increased likelihood of an individual committing an insider attack (CPNI, 2013). Research has consistently demonstrated that insider threats are often driven by financial incentives, such as the exploitation of intellectual property (IP) for sale or gaining advantages with competing organisations for monetary rewards or job prospects. Additionally, it's crucial to acknowledge the connection between financial well-being and mental health conditions like depression and anxiety, as there is substantial evidence indicating a strong correlation between these factors (Kersten et al., 2015).

The link between depression and support for insider threat activity in general is under-examined. However, unlike authoritarianism, research suggests that depression may play a role in behaviours associated with insider threats (Haslam et al., 2005; Radzali et al., 2013; Amyx et al., 2019). Within the workplace, depression has been linked to negative productivity, and in extreme cases where an individual has undergone psychological distress or is suffering from emotional exhaustion, it has led to an increased likelihood of engaging in deviant workplace behaviours and a general lack of regard for workplace safety measures (Siegrist & Wege, 2020; Jung et al., 2020; Nisar et al., 2021).

Many insider attacks are precipitated by unusual and, in some cases, deviant workplace behaviour. Thus, many current detection systems implement algorithms to detect unusual user access to workplace systems, such as the access of restricted information or documents that are important but irrelevant to the person who's accessing the job role

(Rashid et al., 2016; Legg et al., 2017). While this considers individuals who may be enticed to commit deviant workplace behaviour and, as such, act as a precursor to insider threat activity, it is also worth considering that not all insiders conduct attacks maliciously, and as such, it is important to understand how depression could lead to non-malicious or accidental insider activity. For example, depression can lead to decreased cognitive performance and motivation for following proper protocols and procedures, increasing the risk of error. These mistakes could be innocent but have wide-reaching consequences, such as the accidental disclosure of sensitive information due to an incorrect email recipient.

The correlation between depression and financial well-being is crucial in the context of insider threats, as financial gain is a significant motivator (CPNI, 2013; Nurse et al., 2014; CISA, 2020). Research indicates that individuals with lower income, single marital status, and limited financial support are more prone to depression (Steptoe et al., 2020). Financial insecurity may lead to high-risk behaviours, including insider attacks, as individuals seek to alleviate their financial challenges.

Furthermore, depression influenced by financial instability can be a precursor to insider threat behaviours. This is compounded by rumination, which may lead to severe depression and more malicious insider activities. For instance, while financially struggling individuals without rumination tendencies might seek external support, those prone to rumination might dwell on their negative circumstances, potentially leading to resentment and insider attacks. Dupuis & Khadeer (2016) note the varying awareness among insiders about the repercussions of their actions, ranging from partial recognition to complete unawareness of wrongdoing.

Factors Influencing Support for Insider Threat Behaviours: Anger Rumination, Job Satisfaction, Right-Wing Authoritarianism and Depression/Anxiety

In summary, this research will examine specific psychological processes that research has indicated may be correlated to insider threat behaviour. Perhaps the only exception to this is authoritarianism, which to date has received minimal consideration in the research of insider threat behaviour, even though many of the most dangerous insiders abused positions of power within organisations such as the Police and NHS. As such, the aim of Study 1 was to test two hypotheses. The first is that anger rumination will be positively correlated with insider threats and support for them. The second hypothesis is that anger rumination significantly predicted insider threats and support for them over and above other predictors, such as job satisfaction. Study 2 examined whether depression/anxiety and right-wing authoritarianism were significant predictors of support for insider threat behaviours. As such, there were two hypotheses. The first hypothesis was that individuals who score higher on the Right-Wing Authoritarianism Scale (RWA) (Altemeyer, 1998) would be more likely to support insider threat activity than those who score lower. The second hypothesis was that those who score higher on the Hospital Depression and Anxiety Scale (HADS) (Zigmond & Snaith, 1983) would be more likely to support insider threat activity than those who score lower.

Research Methodology

This thesis employed two studies to examine psychological predictors of insider threat behaviours. Study 1 examines the role of anger rumination and job satisfaction, using surveys administered to participants to measure these variables and their correlation with insider threat justification, resentment, and proclivity. Study 2 extends this investigation to include right-wing authoritarianism and depression/anxiety, using similar survey methods to assess their impact on insider threat behaviours. Both studies utilise cross-sectional correlational and regression analyses to interpret the data.

Methodology – Study 1: Anger Rumination and Job Satisfaction

Participants

A total of 432 participants took part in the study, with 49 excluded due to not having completed all survey sections. Therefore, the analysis was based on 383 participants. Most participants were recruited via the University of Kent Research Participation Service (RPS) or social media platforms, including Facebook and LinkedIn. Participants recruited through the RPS were awarded a single credit for completing the survey. Of those who participated, Study 1 included 86 males (22.5%), 292 females (76.2%), and 5 non-binary/third gender (1.3%). Most participants were aged between 16-29 (296), followed by participants aged 30-49 (54), then participants aged 50-69 (32), and finally participants who were over the age of 70 (1). The mean age of the participants across different age categories was approximately 28.1 years ($M = 28.1$). The standard deviation for the ages within these categories was approximately 11.45 years ($SD = 11.45$).

The sample size for Study 1 was determined based on several practical considerations. Firstly, it aimed to ensure sufficient diversity and representativeness of the participant pool, encompassing various demographics and professional backgrounds relevant to the study's focus on insider threats. Previous research in the field, which typically employs similar or slightly smaller sample sizes to investigate psychological predictors of insider threat behaviours, also informed the chosen sample size (Kowalski, 2008; CPNI, 2013; Alexrad et al., 2013; Greitzer et al., 2013; Nurse et al., 2014; Dupuis & Khadeer, 2016; McCormac et al., 2016). For Study 1, 432 participants were recruited to achieve reliable and meaningful statistical analyses while accounting for incomplete responses. This larger sample size helped

enhance the robustness and generalisability of the findings across different demographic groups.

Design

A cross-sectional correlational and regression analysis was conducted, with participants having completed all survey parts and questions. The independent variables consisted of Anger Rumination Scale (ARS) and Job Satisfaction Survey (JSS) scores, age, and gender. The dependent variables consisted of insider threat justification, resentment, and proclivity scores, as measured through insider threat-related questions and scenarios (see Appendix A).

Materials

Anger Rumination Scale (ARS)

We employed the ARS (Sukholodsky et al., 2001) to assess levels of anger rumination in participants. The ARS (Sukholodsky et al., 2001) contains 19 questions and is split into four sub-scales (angry after-thoughts, thoughts of revenge, angry memories, and understanding of causes). Examples of questions include “I re-enact the anger episode in my mind after it has happened” and “I have long living fantasies of revenge after the conflict is over”. Participants responded to the items using a 4-point scale ranging from 1 (*almost never*) to 4 (*almost always*). Research has shown the ARS to be a reliable tool, having produced an internal consistency coefficient of $\alpha = 0.93$, based on the present data. The tool has been used to examine anger rumination in participants and has been used in several studies to great effect (Sukholodsky et al. 2001; Barber et al. 2005).

Job Satisfaction Survey (JSS)

The JSS, developed by Paul Spector (1985) is a 6-point Likert scale consisting of 36 questions with responses ranging from 1 (*disagree very much*) to 6 (*agree very much*). The JSS is broken down into nine subscales that examine several different factors related to job satisfaction (i.e. pay, coworkers, career progression). Questions include, “I feel I am being paid a fair amount for what I do” and “Many of our rules and procedures make doing a good job difficult”. Negatively worded items are 2, 4, 6, 8, 10, 12, 14, 16, 18, 19, 21, 23, 24, 26, 29, 31, 32, 34, 36, and are all reverse scored. The higher the score in each of the subscales and the model overall, the higher the job satisfaction among participants. The JSS has been used within organisations and in various research studies as a reliable means to test job satisfaction in participants, with an average internal consistency coefficient of $\alpha = 0.70$, calculated from the current sample (Spector, 1985).

Insider Threat Questions/Scenarios (ITS)

For this research, participants were presented with several questions and scenarios that were developed to assess support for various types of insider threat behaviours. The ITS was broken down into two separate sections, the first containing three questions relating to the same organisation that participants considered while completing the JSS (Spector, 1985). The second section contained three scenarios, followed by three subsequent questions for each of the insider threat scenarios (see Appendix A for ITS scenarios). The first two questions measured the perceived resentment towards the participants' organisation and included the following: “Do you hold a high level of resentment towards this organisation?”, and “Do you find yourself getting angry about this organisation regularly?”. The third question examined perceived justification towards an insider attack towards the organisation:

“Could you see yourself acting against the best interests of this organisation if you felt you were justified in your actions?”. These questions were measured via a 6-point Likert scale, ranging from 1 (*disagree very much*) to 6 (*agree very much*). The first three questions of the ITS were designed to be used as a continuation of the JSS (Spector, 1985). The ITS contains three scenarios (Appendix A) and subsequently asks participants three questions relating to each. The first two questions measured perceived justification and included “How justified do you think Person # was in committing these actions?”, and “Based on Scenario # do you feel Person #'s anger towards their organisation was justified?” Responses were measured via a 5-point Likert scale, with scores ranging between 1 (*unjustified*) and 5 (*justified*). The third question in the scenario measured participant proclivity: “To what degree could you see yourself acting like Person # in such a situation?”, the third scenario question was measured via a 4-point Likert scale, with a range of 1 (*not at all*) and 4 (*to a great extent*). significant harm they can cause to organisations, providing a focused and relevant context for examining psychological predictors.

The Insider Threat Score (ITS) was categorised into three sections. Questions 1 and 2 assessed Insider Threat Resentment (ITR) and were combined, scoring from 2 to 12. Lower scores implied lower resentment, while higher scores indicated increased resentment towards the organisation, aligning with the evaluation within the Job Satisfaction Survey (JSS) framework (Spector, 1985). Question 3 and scenario questions 1 and 2 gauged perceived justification (ITJ) and are scored together with results ranging from 7 (*not justified*) and 36 (*highly justified*). Scenario question 3 focused on proclivity (ITP), scoring from 3 (*low proclivity*) to 12 (*high proclivity*). Higher scores across these categories suggested stronger support for insider threat behaviours. Notably, none of the questions were reverse-scored. The questionnaire design involved careful considerations. Extreme acts of insider activity

were unlikely to elicit meaningful responses, so the scenarios, though fictitious, mirrored real-life insider threat activities, focusing on those considered minor to moderate in the damage caused. The scenarios used in this research were designed to reflect various types of insider threats summarised on page 6. Although not all threat types are covered, the scenarios were chosen to represent the most common and impactful types, such as malicious insider threats and compromised insider threats. This prioritisation was based on their prevalence and the significant harm they can cause to organisations, providing a focused and relevant context for examining psychological predictors. Scenarios excluded acts of terrorism, loss of life, or serious injury for ethical and practical reasons.

Procedure

Before commencing the survey, participants were informed that the study would be examining the role of anger rumination and job satisfaction and the effects each could have on support for behaviours associated with insider threats. Participants were informed that no personal identifying information would be collected. Participants were made aware of their right to withdraw and that they were under no obligation to complete the survey once it started. All participants were required to consent before continuing past this point. On completion of the survey, a debrief was provided that reaffirmed what the survey data would be used for as well as the participant's right to withdraw.

Participants were asked to confirm whether they had worked in industries that were considered to be at higher risk of significant insider threat activity, including security, police/law enforcement, local/national government, health sector (NHS, private), and travel/transport. In total, 180 participants confirmed that they had worked in one of the identified industries, whereas 203 participants stated they had not. Additionally, participants

were asked whether they had been subject to or had witnessed disciplinary proceedings of a colleague for which they felt they (or the colleague) had been treated unfairly, with 91 participants confirming they had and 292 responding that they had not. Participants were also asked whether they had ever been subject to any investigation or misconduct for reasons relating to financial, reputational, and/or physical damage to their organisation, with 2 participants confirming they had and 381 stating they had not. Participants were asked whether they had ever been dismissed from a job role, with 22 confirming they had and 361 stating they had not.

The research hypothesis was disclosed to participants as part of the informed consent process, ensuring transparency about the study's aims and procedures. This approach aligns with ethical guidelines to provide participants with a clear understanding of what the research entails, allowing them to make an informed decision about their participation.

All participants were treated in accordance with the British Psychological Society's (BPS) code of conduct, ethical principles, and guidelines. The study was agreed upon by the ethical committee of the University of Kent prior to participant engagement. Participants were briefed prior to commencing the surveys and were informed of the research aims and what information the study would be looking to draw upon from each candidate. Participants were informed of their right to withdraw at any time and that their personal information would remain anonymous, with no identifying information having been gathered.

Results – Study 1

Data was collected via the survey development website Qualtrics and analysed using R-Studio software. A correlation analysis (see Table 1) was conducted to determine the relationships between the predictors and the dependent variables: resentment towards the

organisation (ITR), justification for insider threat activity (ITJ) and proclivity towards insider threat activities (ITP). As predicted, significant correlations existed between ARS (Sukholodsky et al., 2001) scores and each of the outcome variables. Anger rumination was positively correlated with ITR scores ($r = .28, p = <.001$), implying that those who engaged in higher levels of anger rumination were more likely to hold increased levels of resentment towards the organisation that they considered throughout the JSS (Spector, 1985). Anger rumination was also positively correlated with both ITJ ($r = .41, p = <.001$) and ITP ($r = .40, p = <.001$). These results imply that participants who scored higher on the ARS felt that the individuals portrayed in each of the scenarios were justified in their actions and that they would be more likely to act in the same way had they found themselves in similar circumstances. When considering the JSS, a moderate to strong negative correlation was found with ITR scores ($r = -.67, p = <.001$), implying that higher job satisfaction results in reduced resentment towards participant organisations. A weak to moderate negative correlation was found between JSS and ITJ scores ($r = -.20, p = <.001$) and no significant correlation was found between JSS and ITP scores ($r = -.09, p = .408$).

With regards to other predictor variables, age was found to have a significant weak to moderate negative correlation towards ITJ ($r = -.37, p = <.001$) and ITP ($r = -.38, p = <.001$), with no significant correlation existing between ITR ($r = -.08, p = .173$). These results imply that as people age, they are less likely to accept the justifications set within the scenarios, nor would they act similarly in the situations depicted within the scenarios. Gender was found to have a significant low to moderate correlation with ITJ ($r = .20, p = <.001$) but no significant correlation with ITR ($r = -.03, p = .507$).

Table 1

Descriptive Statistics and Correlations for Study 1

Factor	<i>n</i>	α	Mean	<i>SD</i>	Correlations		
					1	2	3
1) ITR (Resentment)	383	-	5.28	2.7	-	-	-
2) ITJ (Justification)	383	-	23.2	5.05	-	-	-
3) ITP (Proclivity)	383	-	6.2	1.95	-	-	-
4) ARS	383	0.93	44.73	11.55	0.28*	0.41*	0.40*
5) JSS	383	0.70	133.3	25.2	-0.67*	-0.20*	-0.09
6) Age	383	-	28.13	11.45	-0.08	-0.37*	-0.38*
7) Gender	383	-	1.79	0.43	-0.03	0.20*	0.08

Note. ARS = Anger Rumination Scale; JSS = Job Satisfaction Survey

* Significant at $p < .001$

A hierarchical multiple regression analysis was conducted to determine whether anger rumination was a significant predictor of support for insider threat behaviour over and above the other predictors. Model 1 of the regression analysis took the following predictor variables: job satisfaction (JSS) (Spector, 1985), age, and gender, with Model 2 adding ARS (Sukholodsky et al., 2001) scores to the regression analysis. In both models, each predictor variable was compared to each of the outcome variables (i.e. ITR, ITJ and ITP).

ITR (Resentment) Study 1 – Hierarchical Regression Results

The results indicated that Model 1 was able to significantly predict ITR scores (see Table 2), $F(3, 379) = 103.6, p < .001, R^2 = .451$, with the model explaining approximately 45.1% of the variance in ITR scores. JSS (Spector, 1985) scores were found to be a significant predictor for ITR scores within this model. For every one-unit increase in JSS

Factors Influencing Support for Insider Threat Behaviours: Anger Rumination, Job Satisfaction, Right-Wing Authoritarianism and Depression/Anxiety

(Spector, 1985) scores, the ITR decreased by 0.072 units ($B = -.72$) ($\beta = -.07$, $t = -17.50$, $p = <.001$). Age ($\beta = -.02$, $t = -.46$, $p = .645$) and gender ($\beta = -.02$, $t = -.50$, $p = .618$) were not significant in predicting ITR scores within this model.

In Model 2, anger rumination scores were added to the regression analysis. This led to an improvement in the model (see Table 2), $F(4, 378) = 84.31$, $p < .001$, $R^2 = .472$, with the final model accounting for approximately 47.2% of the variance in ITR scores. Within this final model, both job satisfaction ($\beta = -.64$, $t = -16.68$, $p = <.001$) and anger rumination ($\beta = .15$, $t = 3.90$, $p = <.001$) were significant predictors for ITR, with each one-unit increase in ARS scores equating to an increase in ITR scores by approximately .04 units ($B = .04$). Age ($\beta = .02$, $t = .51$, $p = .610$) and gender ($\beta = -.04$, $t = -1.06$, $p = .291$) remained non-significant to ITR scores within the final model.

Factors Influencing Support for Insider Threat Behaviours: Anger Rumination, Job Satisfaction, Right-Wing Authoritarianism and Depression/Anxiety

Table 2

Hierarchical Regression Results for Insider Threat (Resentment)

Variable	B	95% CI for B		SE B	β	R^2	ΔR^2
		LL	UL				
Model 1						0.45	0.45***
Constant	15.12***	14.01	16.23	0.72			
Job Satisfaction (JSS)	-0.07***	-0.08	-0.06	0.00	-0.67***		
Age	-0.08	-0.40	0.25	0.17	-0.02		
Gender	-0.12	-0.59	0.35	0.23	-0.02		
Model 2						0.47	0.47***
Constant	13.11***	11.38	14.83	0.88			
Job Satisfaction (JSS)	-0.07***	-0.08	-0.06	0.00	-0.64***		
Age	0.09	-0.24	0.42	0.17	0.02		
Gender	-0.25	-0.71	0.22	0.23	-0.04		
Anger Rumination (ARS)	0.04***	0.02	0.05	0.01	0.15***		
Model 1: $F(3, 379) = 103.6^{***}$							
Model 2: $F(4, 378) = 84.31^{***}$							

Note. CI = confidence interval; LL = lower limit; UL = upper limit; JSS = Job Satisfaction Survey; ARS = Anger Rumination Scale

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

ITJ (Justification) Study 1 – Hierarchical Regression Results

The results indicated that Model 1 was able to significantly predict ITJ scores (see Table 3), $F(3, 379) = 28.03, p < .001, R^2 = .182$, with the model explaining approximately 18.2% of the variance in ITJ scores. JSS (Spector, 1985) scores were found to be a significant predictor for ITJ scores within this model. For every one-unit increase in JSS (Spector, 1985) scores, the ITJ decreased by approximately 0.035 units ($B = .04, \beta = -.02, t = -3.71, p = <.001$). Age ($\beta = -.32, t = -6.86, p = <.001$) and gender ($\beta = -.16, t = 3.45, p = <.001$) were significant predictors within this model, with each additional year increase in age equating to a decrease in ITJ scores by approximately 2.59 units ($B = 2.59$) and female participants scoring approximately 1.86 units ($B = 1.86$) higher than male participants.

In Model 2, ARS (Sukholodsky et al., 2001) scores were added to the regression analysis. This led to a significant improvement in the model (see Table 3), $F(4, 378) = 33.28, p < .001, R^2 = .26$. with the model explaining approximately 26% of the variance. Within this final model, JSS (Spector, 1985) ($\beta = -.12, t = -2.55, p = .011$) and ARS scores ($\beta = .30, t = 6.35, p = <.001$) were both significant predictors for ITR scores, albeit with ARS the more significant of the two. Age ($\beta = -.25, t = -5.39, p = <.001$) and gender ($\beta = .30, t = 2.68, p = .008$) both remained significant within this model.

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Table 3

Hierarchical Regression Results for Insider Threat (Justification)

Variable	B	95% CI for B		SE B	β	R^2	ΔR^2
		LL	UL				
Model 1						0.45	0.45***
Constant	27.90***	24.67	31.13	1.65			
Job Satisfaction (JSS)	-0.03***	-0.05	-0.01	0.00	-0.67***		
Age	-2.58***	-3.32	-0.84	0.17	-0.02		
Gender	1.86***	0.80	2.92	0.23	-0.02		
Model 2						0.47	0.47***
Constant	20.55***	16.73	24.37	0.88			
Job Satisfaction (JSS)	-0.02**	-0.04	0.00	0.00	-0.12**		
Age	-1.99***	-2.72	-1.26	0.17	-0.25		
Gender	1.39***	0.37	2.41	0.23	0.12		
Anger Rumination (ARS)	0.13***	0.09	0.17	0.01	0.30***		

Model 1: $F(3, 379) = 28.03$ ***

Model 2: $F(4, 378) = 33.28$ ***

Note. CI = confidence interval; LL = lower limit; UL = upper limit; JSS = Job Satisfaction Survey; ARS = Anger Rumination Scale

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

ITP (Proclivity) Study 1 – Hierarchical Regression Results

The results indicated that Model 1 was able to significantly predict ITP scores (see Table 4), $F(3, 379) = 21.45, p < .001, R^2 = .145$ with the model explaining approximately 14.5% of the variance in ITP scores. JSS (Spector, 1985) scores were not a significant predictor for ITP scores within this model ($\beta = -.06, t = -1.36, p = .176$). Age ($\beta = -.36, t = -7.58, p = <.001$) was found to be a significant predictor of ITP scores, with every year gained leading to a decrease of approximately 1.13 units ($B = 1.13$) in ITP scores. Gender ($\beta = -.21, t = .738, p = .461$) was not a significant predictor within this model.

In Model 2, ARS (Sukholodsky et al., 2001) scores were added to the regression analysis. This led to a significant improvement in the model (see Table 4), $F(4, 378) = 28.57, p < .001, R^2 = .232$, with the model explaining approximately 23.2% of the variance. Within this final model, ARS score ($\beta = .32, t = 6.54, p = <.001$) and age ($\beta = -.29, t = -.09, p = <.001$) were both significant predictors for ITP scores, with a one-unit increase in ARS scores equating to approximately a 0.05 increase in ITP scores ($B = .05$). JSS (Spector, 1985) scores ($\beta = -.00, t = -.086, p = .931$) and gender ($\beta = -.01, t = -.17, p = .865$) both remained non-significant within this model.

Factors Influencing Support for Insider Threat Behaviours: Anger Rumination, Job Satisfaction, Right-Wing Authoritarianism and Depression/Anxiety

Table 4

Hierarchical Regression Results for Insider Threat (Proclivity)

Variable	B	95% CI for B		SE B	β	R^2	ΔR^2
		LL	UL				
Model 1						0.15	0.15***
Constant	8.06***	6.79	9.33	0.65			
Job Satisfaction (JSS)	-0.01	-0.01	-0.01	0.00	-0.06		
Age	-1.13***	-1.42	-0.84	0.15	-0.36		
Gender	0.16	-0.25	0.57	0.21	0.04		
Model 2						0.23	0.23***
Constant	5.07***	3.56	6.58	0.77			
Job Satisfaction (JSS)	-0.00	-0.01	0.00	0.00	-0.00		
Age	-0.89***	-1.18	-0.60	0.15	-0.29***		
Gender	0.03	-0.42	0.36	0.20	-0.01		
Anger Rumination (ARS)	0.05***	0.03	0.07	0.01	0.32***		

Model 1: $F(3, 379) = 21.45^{***}$

Model 2: $F(4, 378) = 28.57^{***}$

Note. CI = confidence interval; LL = lower limit; UL = upper limit; JSS = Job Satisfaction Survey; ARS = Anger Rumination Scale

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

The results of the hierarchical regression analyses show that ARS (Sukholodsky et al., 2001) scores consistently predicted support for insider threat behaviours as depicted within each of the scenarios. This was true of each of the behaviours examined within the subscales (i.e. resentment, justification, and proclivity). Furthermore, while job satisfaction was found to be a significant indicator of support for insider threat behaviours in both resentment and justification, this was not true in the case of proclivity. The results indicated that ARS (Sukholodsky et al., 2001) had a significantly stronger predictive power for insider threat proclivity than JSS (Spector, 1985), as evidenced by non-overlapping confidence intervals. Specifically, in Model 2, the beta coefficient for ARS ($\beta = 0.32$, 95% CI [0.03, 0.07], $p < 0.001$) was both significant and substantial, whereas the beta coefficient for JSS ($\beta = -0.00$, 95% CI [-0.01, 0.00]) was non-significant. This lack of overlap between the confidence intervals highlights the greater impact of anger rumination on insider threat behaviours compared to job satisfaction. The addition of ARS (Sukholodsky et al., 2001) to the model significantly increased the explained variance from 15% to 23%, further underscoring the superior predictive power of ARS over JSS (Spector, 1985). These findings demonstrate that anger rumination is a critical factor in understanding and predicting insider threat proclivity, while job satisfaction has a minimal impact.

The findings from Study 1 indicate a significant relationship between anger rumination and various aspects of insider threat behaviour, including resentment, justification, and proclivity. These results support the hypothesis that individuals who engage in anger rumination are more likely to justify and potentially engage in insider threat activities, therefore allowing us to reject the null hypothesis. This sets the stage for Study 2, which aims to explore additional psychological predictors such as right-wing authoritarianism and depression/anxiety.

Methodology – Study 2: Right-Wing Authoritarianism, Depression and Anxiety

Participants

A total of 460 participants took part in the study, with 109 being excluded due to the non-completion of all survey sections. Therefore, the analysis was based on 351 participants. Most participants were recruited via the University of Kent Research Participation Service (RPS) or social media platforms, including Facebook and LinkedIn. Participants recruited through the RPS were awarded a single credit for completing the survey. Of those who participated, Study 2 included 65 males (18.5%), 270 females (76.9%), and 16 non-binary/third gender (4.6%). Most participants were aged between 16-29 (289), followed by participants aged 30-49 (32), and then participants aged 50-69 (30). There were no people over the age of 70 who participated in this study. The mean age was 27.2 ($M = 27.21$) with a standard deviation of 11.02 ($SD = 11.02$).

The sample size for Study 2 was determined to ensure robust statistical analyses and the generalisability of findings. Informed by practical considerations and previous research that has focussed on insider threats (Kowalski, 2008; CPNI, 2013; Alexrad et al., 2013; Greitzer et al., 2013; Nurse et al., 2014; Dupuis & Khadeer, 2016; McCormac et al, 2016). The target sample size aimed to include a diverse and representative participant pool. Study 2 recruited 460 participants; a number deemed sufficient to account for incomplete responses. This larger sample size was considered adequate to investigate the psychological predictors of insider threat behaviours, specifically right-wing authoritarianism and depression/anxiety, ensuring that the study's findings would be reliable and applicable across various demographic groups.

Design

A cross-sectional correlational and regression analysis was conducted, with participants completing all survey parts and questions. The independent variables consisted of the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) and Right-Wing Authoritarianism Scale (RWA) (Altemeyer, 1998) scores, age, and gender. The dependent variables consisted of insider threat justification and proclivity scores, as measured through insider threat-related questions and scenarios (see Appendix A).

While Study 1 included Insider Threat Resentment as a dependent variable to explore its relationship with anger rumination and job satisfaction, Study 2 focused on different psychological predictors, namely right-wing authoritarianism and depression/anxiety. The exclusion of Insider Threat Resentment in Study 2 was a deliberate design choice. This is because Study 1 asked participants to consider resentment towards the specific organisation they were evaluating (as part of the JSS), making resentment an inappropriate variable for Study 2, which aimed to investigate broader psychological factors without the same organisational context.

Materials

Right-Wing Authoritarianism Scale (RWA)

The RWA (Altemeyer, 1998) is a 9-point Likert scale, with responses ranging from 1 (*very strongly disagree*) to 9 (*agree very strongly*). The RWA scale contains 22 statements; however, only the last 20 are scored, with the original author stipulating that the first two questions are merely a ‘warm-up’ (Altemeyer, 1998). Examples of the questions within the RWA include “This country would work a lot better if certain groups of troublemakers would just shut up and accept their group’s traditional place in society” and “Our country

desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us” (Altemeyer, 1998). Questions 1 and 2 are not scored; questions 3, 5, 7, 10, 12, 14, 16, 17, 19, 22 are scored normally, whereas questions 4, 6, 8, 9, 11, 13, 15, 18, 20 and 21 are all reverse scored. 20 is the lowest possible score, indicating an extremely liberal personality, whereas 180 the highest score, indicating an extremely authoritarian personality. Research has shown that the RWA scale is a reliable tool when used to examine right-wing authoritarianism in participants and has been used in several studies to great effect. The latest version of the scale achieved an internal consistency coefficient of 0.90 ($\alpha = 0.90$) (Altemeyer, 2006).

Hospital Anxiety and Depression Scale (HADS)

The HADS, developed by Zigmond & Snaith (1983) is a 4-point Likert scale consisting of 14 questions with responses ranging from 0 (*no response to positive/negative stimuli*) to 3 (*good response to positive/negative stimuli*). The HADS is predominately used to identify signs of depression or anxiety in patients during hospital visits but has been used effectively outside of these settings, such as in groups suffering from alcohol dependency issues (Mcperson & Martin, 2011). The questions are split into two subscales, each examining depression and anxiety, respectively; the internal consistency coefficient for the depression subscale within the HADS is 0.79 ($\alpha = 0.79$) and for the anxiety subscale is 0.78 ($\alpha = 0.78$) (Bjelland et al., 2002).

Questions 3, 4, 7, 10, 13 and 14 are all scored normally, whereas questions 1, 2, 5, 6, 8, 9, 11 and 12 are all reverse-scored. When gathering results, depression and anxiety are treated as two separate measures, with the total scores of each ranging between 0-21. A score of 0-7 indicates normal levels of anxiety/depression, 8-10 indicates borderline abnormal

(borderline case) and 11-21 indicates abnormal levels of depression/anxiety (Zigmond & Snaith, 1983). Questions include, “I still enjoy the things I used to enjoy” and “I get a sort of frightened feeling as if something awful is about to happen” (Zigmond & Snaith, 1983).

Insider Threat Questions/Scenarios (ITS)

As with Study 1, the results of the RWA scale (Altemeyer, 1998) and HADS (Zigmond & Snaith, 1983) were compared against the ITS to assess whether RWA and HADS scores impact the likelihood of support for insider threat behaviour (see Appendix A for details). Unlike Study 1, however, no additional questions relating to a person's organisation were asked, as this was not being measured as part of Study 2. Therefore, only the scenario questions were considered. Justification (ITJ) scores ranged from 7 (*not justified*) and 36 (*highly justified*), whereas proclivity scores ranged from 3 (*low proclivity*) to 12 (*high proclivity*).

Procedure

Before commencing the survey, participants were informed that the study would be examining the role of right-wing authoritarianism and depression/anxiety and the effects each could have on support for behaviours associated with insider threats. Participants were informed that no personal identifying information would be collected. Participants were made aware of their right to withdraw and that they were under no obligation to complete the survey once it started. All participants were required to consent before continuing past this point. On completion of the survey, a debrief was provided that reaffirmed what the survey data would be used for as well as the participant's right to withdraw.

Participants were asked to confirm whether they had worked in industries that were considered to be at higher risk of significant insider threat activity, including security,

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police/law enforcement, local/national government, health sector (NHS, private), and travel/transport. In total, 70 participants confirmed that they had worked in one of the identified industries, whereas 281 participants stated they had not. Additionally, participants were asked whether they had been subject to or had witnessed disciplinary proceedings of a colleague for which they felt they (or the colleague) had been treated unfairly, with 78 participants confirming they had and 273 responding that they had not. Participants were also asked whether they had ever been subject to any investigation or misconduct for reasons relating to financial, reputational, and/or physical damage to their organisation, with 5 participants confirming they had and 346 stating they had not. Participants were asked whether they had ever been dismissed from a job role, with 25 confirming they had and 326 stating they had not.

All participants were treated in accordance with the British Psychological Society's (BPS) code of conduct, ethical principles, and guidelines. The study was agreed upon by the ethical committee of the University of Kent prior to participant engagement. Participants were briefed prior to commencing the surveys and were informed of the research aims and what information the study would be looking to draw upon from each candidate. Participants were informed of their right to withdraw at any time and that their personal information would remain anonymous, with no identifying information having been gathered.

Results – Study 2

Study 2 examined the relationship between right-wing authoritarianism, depression or anxiety, and support for insider threat behaviour. To achieve this, a multiple-regression analysis was conducted using the results of two pre-existing questionnaires: the Right-Wing Authoritarianism Scale (RWA) developed by Altemeyer (Altemeyer, 1998) and the Hospital

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Anxiety and Depression Scale (HADS) developed by Zigmond and Snaith (1983). We have once again used the support for insider threat scale as was used in Study 1. Contrary to predictions, there was a significant negative correlation between RWA and ITJ ($r = -.40, p = <.001$). Contrary to predictions, there was no significant correlation between RWA (Altemeyer, 1998) and ITP scores ($r = -.08, p = .352$). Whilst there was no significant correlation between the depression and the HADS, ITJ ($r = .03, p = .571$) or ITP scores ($r = .12, p = .140$), there was a significant correlation between anxiety (HADA) scores and ITJ ($r = .24, p = <.001$), with a higher score indicating increased justification towards the insider threats depicted within the scenarios (see Table 5).

With regards to other predictor variables, weak to moderate negative correlations existed between age and both ITJ ($r = -.33, p = <.001$) and ITP scores ($r = -.27, p = <.001$), implying that both justification and proclivity concerning the insider threat activities depicted in the scenarios decreased as participants ages increased. Gender was found to have a weak but significant positive correlation to ITJ scores ($r = .18, p = .004$) but not to ITP scores ($r = .04, p = .958$) (see Table 5).

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Table 5

Descriptive Statistics and Correlations for Study 2 Variables

Factor	n	α	Mean	SD	Correlations	
					1	2
1) ITJ (Justification)	351	-	21.2	4.36	-	-
2) ITP (Proclivity)	351	-	6.32	1.88	-	-
3) HADA	351	0.78	10.95	4.51	0.24*	0.14
4) HADD	351	0.79	6.02	3.9	0.03	0.12
5) RWA	351	0.90	65.74	24.75	-0.40*	-0.08
6) Age	351	-	27.21	11.02	-0.33*	-0.27*
7) Gender	351	-	1.86	0.46	0.18*	0.04

Note. HADA = Hospital Anxiety Subscale; HADD = Hospital Depression Subscale; RWA = Right-Wing Authoritarianism Scale

* Significant at $p < .001$

ITJ (Justification) Study 2: Multiple Regression Results

Data was collected via the survey development website Qualtrics and analysed using R-Studio software. A multiple regression analysis was conducted to determine to what extent RWA (Altemeyer, 1998) and HADS (Zigmond & Snaith, 1983) scores explained the variance in ITJ scores within the insider threat scenarios. The model was statistically significant:

$F(5,345) = 23.11, p = < .001, R^2 = .25$, indicating that at least one of the predictor variables in

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the ITJ model was significant. Furthermore, the ITJ model explained approximately 25% of the variance in the scores, suggesting a moderately good fit.

The individual predictor variables demonstrated varying degrees of influence on the ITJ scores. Notably, RWA scale scores ($\beta = -.34, t = -7.11, p < .001$) and age ($\beta = -.24, t = -4.71, p = <.001$) produced a statistically significant negative relationship. This implies that those who scored higher on the RWA scale and as the age of participants increased, the less likely they were to feel the insider threat activities were justified. When considering HADS scores (Zigmond & Snaith, 1983), there was no significant relationship found between ITJ scores and either the anxiety (HADA) ($\beta = .10, t = -1.17, p = .244$) or the depression (HADD) subscales ($\beta = -.07, t = 1.56, p = .119$). There was no significant relationship between gender and ITJ scores ($\beta = .07, t = 1.53, p = .127$) (see Table 6).

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Table 6

Multiple Regression Analysis Results for Insider Threat (Justification)

Variable	<i>B</i>	<i>SE</i>	95% CI		β	<i>t</i>	<i>p</i>	R^2	ΔR^2
			LL	UL					
ITJ (Justification) Model								0.25	0.24***
Intercept	25.46	1.35	22.81	28.11	-	18.87	.000***		
HADA	0.10	0.06	-0.02	0.22	0.10	-1.17	.244		
HADD	-0.07	0.06	-0.19	0.05	-0.07	1.56	.119		
RWA	-0.06	0.01	-0.08	-0.04	-0.34	-7.11	.000***		
Age	-1.73	0.37	-2.46	-1.00	-0.24	-4.71	.000***		
Gender	0.71	0.46	-0.19	1.61	0.07	1.53	.127		

Note. CI = confidence interval; LL = lower limit; UL = upper limit; HADA = Hospital Anxiety Subscale; HADD = Hospital Depression Subscale; RWA = Right-Wing Authoritarianism Scale

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

ITP (Proclivity) Study 2 – Multiple Regression Results

A multiple regression analysis was conducted to determine to what extent RWA, depression, anxiety, age, and gender explained ITP scores within the insider threat scenarios. The model was statistically significant: $F(5,345) = 6.46, p = <.001, R^2 = .09$, indicating that at least one of the predictor variables in the ITP model was significant. Furthermore, the ITP model explained approximately 9% of the variance, indicating a weak fit.

The individual predictor variables demonstrated varying degrees of relationship with ITP scores. Within this model, the only predictor to produce a statistically significant result was age ($\beta = -.24, t = -4.75, p = <.001$), indicating a significant negative relationship with ITP scores. This implies that as participants' ages increased, their proclivity towards insider threat scenarios diminished. RWA scale scores (Altemeyer, 1998) ($\beta = -.34, t = -1.09, p = .275$), HADA (anxiety) ($\beta = .10, t = -.40, p = .686$), HADD (depression) ($\beta = -.07, t = 1.81, p = .071$) and gender ($\beta = .07, t = -.60, p = .548$) were not statistically significant (see Table 7).

Factors Influencing Support for Insider Threat Behaviours: Anger Rumination, Job Satisfaction, Right-Wing Authoritarianism and Depression/Anxiety

Table 7

Multiple Regression Analysis Results for Insider Threat (Proclivity)

Variable	<i>B</i>	<i>SE</i>	95% CI		β	<i>t</i>	<i>p</i>	<i>R</i> ²	ΔR ²
			LL	UL					
ITP (Proclivity) Model								0.09	0.07***
Intercept	7.70	0.64	6.45	8.95	-	11.98	.000***		
HADA	-0.01	0.03	-0.07	0.05	0.10	-0.40	.686		
HADD	0.06	0.03	0.00	0.12	-0.07	1.81	.071		
RWA	-0.00	0.00	-0.00	0.00	-0.34	-1.09	.275		
Age	-0.83	0.18	-1.18	-0.48	-0.24	-4.75	.000***		
Gender	-0.13	0.22	-0.56	0.30	0.07	-0.60	.548		

Note. CI = confidence interval; LL = lower limit; UL = upper limit; HADA = Hospital Anxiety Subscale; HADD = Hospital Depression Subscale; RWA = Right-Wing Authoritarianism Scale

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

There was no significant relationship found between RWA (Altemeyer, 1998) and ITP scores. Furthermore, no significant relationships were found on either the HADS anxiety (HADA) or depression subscales (HADD) in relation to either ITJ or ITP scores. Therefore, we cannot reject either of the null hypotheses for Study 2.

Study 2 extended the investigation by examining the roles of right-wing authoritarianism and depression/anxiety in predicting support for insider threat behaviours. Contrary to the hypothesis, right-wing authoritarianism showed some predictive value, but individuals with higher scores were less likely to support insider threat behaviours. Depression and anxiety were not significantly correlated with support for insider threats. These findings suggest that while authoritarian tendencies are intertwined with behaviours exhibited through anger rumination, they have the opposite effect on support for insider threat behaviours. The results from both studies highlight the multifaceted nature of insider threats and underscore the importance of considering multiple psychological factors in understanding and preventing such behaviours.

Discussion – Study 1

This study aimed to determine whether anger rumination and/or job satisfaction played a significant role in determining whether individuals were more susceptible to supporting behaviours associated with insider threats and whether anger rumination was a greater predictor when determining this. As predicted, anger rumination was the greater predictor when compared to job satisfaction. While the hypothesis has been proven, both variables have been shown to have a significant impact on support for insider threat behaviour, as many of the behavioural and psychological factors associated with each of them are often similar and/or overlapping.

Dupuis & Khadeer (2016) identify traits common to insider threats, including those linked to anger rumination, which negatively impact job satisfaction. These traits, such as hostility, sadness, fatigue, and neurotic behaviours (Alexrad et al., 2013; Greitzer et al., 2013; Dupuis & Khadeer, 2016), suggest that individuals prone to anger rumination, especially due to workplace issues, might exhibit extreme behaviours like seeking revenge. Studies have confirmed revenge as a motive behind insider attacks (Kowalski, 2008; CPNI, 2013; McCormac et al, 2016). The research indicates that while job dissatisfaction fosters resentment and justification for insider threats, anger rumination consistently correlates with these factors and the likelihood of aggressive actions. This study's significance lies in understanding how anger rumination escalates from resentment to an active insider threat, highlighting the need for preventative measures.

Anger rumination, while not directly linked to insider threats, has been associated with increased hostility and aggression. In the workplace, this could manifest in behaviours that are aggravated by factors like job dissatisfaction, as studies have shown a connection between workplace disgruntlement and insider activities (Greitzer et al., 2013; CPNI, 2013). Research also suggests a strong relationship between anger rumination, job satisfaction, and insider threat behaviours. Often, individuals at high risk for insider threats exhibit anger rumination symptoms, such as disgruntlement and confrontational attitudes, triggered by personal and work-related issues (Shaw & Fischer, 2005; Greitzer et al., 2013). Moreover, anger rumination is linked to psychological disorders that may exacerbate these behaviours (Sukhodolsky et al., 2001; Bushman et al., 2005; Pugliese et al., 2014), indicating a potential pathway to insider attacks. While no significant relationship was found between disciplinary actions and support for insider threats, contrasting findings in other studies highlight the need for further research in this area (Nurse et al., 2014).

This study aligns with other research in recognising behaviours linked to anger rumination, such as disgruntlement, and their connection to workplace deviance. It suggests that these factors are interrelated in determining the likelihood of an individual engaging in inappropriate or even threatening behaviour at work. While studies like those by Moore et al. (2008) and Willison (2009) have primarily focused on cyber-security-related insider attacks, the relationship between job satisfaction and disgruntlement may extend to other forms of insider threats as well.

The correlation between anger rumination, job satisfaction, and their combined impact on supporting insider threats necessitates examining additional factors, especially financial gain or instability. Financial stability is often a key driver behind insider attacks, aimed at immediate monetary benefits or favouring rival organisations for better job prospects. However, underlying issues, such as organisational disgruntlement and personal or workplace stress, have also been consistently identified in case studies (Shaw & Fischer, 2005; Greitzer et al., 2013; CPNI, 2013). This suggests that poor financial conditions at work can lead to low job satisfaction and potentially escalate to anger rumination, increasing the odds of insider attacks.

A person's age also appeared to have a significant effect on whether a person was more likely to support insider threat behaviours within the hierarchical regression model, with the support for these types of behaviours generally reducing as participants' ages increased. There are several reasons why this may be the case. For example, when considering job satisfaction and age, research suggests that job satisfaction tends to improve with age (Clark et al., 1997). Crucially, research has suggested that financial wellbeing plays a significant role in general job satisfaction (Dobrow et al., 2016). As such, one could surmise that, generally, as people grow older, their salaries tend to increase in most cases.

Considering financial well-being has been identified as a major contributing factor within many insider threat case studies, this research highlights the importance of understanding the impact a person's age can have on support for these types of behaviours due to its correlations with job satisfaction and general financial wellbeing.

The hierarchical regression model within this study highlighted that both anger rumination and job satisfaction are important indicators when determining the likelihood of someone supporting behaviours or activities associated with insider threats, due to the fact that an already reasonably strong predictive model was found when considering job satisfaction as the main independent variable and was only further enhanced when considering anger rumination within the model. These findings are consistent with other research that has identified associated behaviours linked to both anger rumination and job satisfaction in case studies of known insider threats (Kowalski, 2008; CPNI, 2013; Alexrad et al., 2013; Greitzer et al., 2013; Nurse et al., 2014; Dupuis & Khadeer, 2016; McCormac et al., 2016). Despite anger rumination proving to be the main indicator within this study, no other research exists that focuses on rumination as its own unique variant, and therefore future studies should consider this. Furthermore, while previous research has considered the role of job satisfaction when determining insider risk, future research should consider the links it shares with other psychological behaviours such as anger and disgruntlement and how each of these, when combined, can potentially increase the risk of employees conducting insider activity.

Limitations – Study 1

Despite efforts to minimise limitations, this study faced certain challenges. While participants were sourced from diverse platforms, including social media and the University

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researcher participation scheme, a significant portion of the sample comprised University of Kent students. While their input was valuable, the study could have benefited from a wider range of participants with more varied and extensive work experience. This is especially relevant considering that questions related to the job satisfaction survey (Spector, 1985) and additional insider threat queries relied on participants having work experience. However, all participants who completed the JSS had some level of work experience.

Another limitation of this research, common in studies on insider threats, is the scarcity of case studies and participants who have engaged in insider activities. Recruiting participants with a history of insider attacks is challenging, and while the study attempted to address this by including supplementary questions about workplace conduct, the data gathered was too limited to draw substantial conclusions. Additionally, the insider threat scenarios created for the study may not have captured the most extreme or dangerous types of threats, such as those involving terrorism, due to concerns about being too extreme for participants.

One notable limitation is the skewed gender distribution, with a higher proportion of female participants. This imbalance may influence the generalisability of the findings, as gender differences can affect psychological processes such as anger rumination and authoritarianism. While previous research suggests that these factors are relevant across genders, future studies should aim for a more balanced gender distribution to ensure the robustness and applicability of the results across different demographic groups.

Discussion – Study 2

This study aimed to try and determine whether right-wing authoritarianism and/or depression/anxiety played a significant role in determining whether participants would be more supportive of insider threat behaviours. The study provided mixed results. Right-wing authoritarianism did correlate with support for insider threat behaviours, albeit not in the way that was predicted and only concerning insider threat justification, not proclivity. Higher RWA (Altemeyer, 1998) scores indicated less support for the insider threat scenarios presented, which contrasted with our prediction that higher scores would correlate with increased support. In HADS (Zigmond & Snaith, 1983), depression and anxiety scores were not found to be significant; however, this is contrary to other studies that have identified these factors as having influence within research that has considered insider threat case studies (Alexrad et al., 2013; Greitzer et al., 2013; Dupuis & Khadeer, 2016).

The correlation between right-wing authoritarianism (RWA) and insider threats, although not as predicted, was not entirely unexpected. Research indicates that those with higher RWA scores generally support the state and lean towards conservatism. Therefore, it was likely that in this study, participants with higher RWA scores would align more with organisations or government bodies than those committing the insider attack (Altemeyer, 1998). Although the results were opposite to what was expected, there are aspects of authoritarianism that correlate with insider threat behaviours.

In their study, Bird et al. (2022) explored the relationship between authoritarianism and aggressive behaviour. They found that while scores on the right-wing and left-wing authoritarianism scales could predict political ideology, they did not directly correlate with aggressive attitudes. However, using latent profile analysis (Spurk et al., 2020), they

identified subsets of authoritarians on both political spectrums who exhibited high levels of dark-triad personality traits and unhealthy emotionality, irrespective of their political ideology (Bird et al., 2022). This suggests that while RWA alone may not explicitly indicate a propensity for insider threat activities when combined with other indicators like the dark triad, the likelihood may increase.

Considering the negative correlation of RWA scores in predicting support for insider threats, it's noted that more liberal individuals tend to exhibit higher self-awareness and sensitivity. Given that the insider attack scenarios presented moral ambiguities, it's possible that those with lower RWA scores were more sympathetic towards the insiders' motives. Future research should explore the impact of authoritarianism combined with specific behavioural types to assess if authoritative personalities across the political spectrum are more likely to support insider threat activities and whether they view such acts as justified retribution.

When taking into account depression and anxiety, it was unexpected that no significant correlation was found within the overall regression model, as this contradicts previous research that had identified these traits as being prominent in known insider threat case studies (CPNI, 2013). However, it could be determined that depression/anxiety on its own is not sufficient in determining insider threat support, whereas certain types of stimuli that could lead to depression/anxiety in individuals may be more appropriate when determining the likelihood of support. For example, it has been determined that financial well-being has played a significant role in many insider threat motivations, and whereas financial instability has a strong correlation to depression and anxiety, it cannot be said that everyone who suffers from these traits is struggling financially, with many explanations existing that are not related to money. The same can be said of individuals engaging in

deviant workplace behaviours. While a correlation exists between those who act inappropriately in the workplace and depression and anxiety, this does not necessarily mean that depressed people will always be inclined to act in a deviant manner within their organisation. As such, future research considering depression/anxiety as an indicator of the increased support of insider threat behaviours should consider other relevant factors that help to determine why an individual is suffering from depression/anxiety in the first instance, with this being further exemplified by the fact that those with higher job satisfaction were less likely to agree with insider threat activity as opposed to those who scored low on the JSS, as indicated in Study 1.

As with Study 1, The observed age effects in the data suggest that older participants were less likely to justify insider threat behaviours. While this might initially appear to be related to differences in right-wing authoritarianism (RWA), it is important to note that the effects of age and RWA emerged independently in the multiple regression analyses. Therefore, it is likely that other age-related factors, such as life experience and exposure to diverse perspectives, also contribute to these differences.

Limitations – Study 2

Like Study 1, efforts were made to minimise limitations in this study, but some issues were identified. Primarily, the focus was on right-wing authoritarianism, with less emphasis on the left-wing counterpart due to the absence of a measurement tool for both sides of the spectrum. The study used the right-wing authoritarian scale, interpreting lower scores to represent more liberal personality types. Future research would benefit from incorporating a left-wing authoritarianism measure, like the one developed by Conway et al. (2017).

Participants for this study were recruited through various channels, including the University of Kent Research Participation Scheme and social media. However, many were university students with limited employment experience. This could have influenced their responses to the insider threat scenarios, possibly due to a lack of understanding about employment practises. Additionally, the study used the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) designed for hospital settings, which may not be the most suitable tool for assessing depression and anxiety in the general public. Future research should consider developing a measure more appropriate for the working population, incorporating relevant behaviours identified in this research.

As with Study 1, there was a higher proportion of female participants again potentially influencing the generalisability of the findings.

Conclusion

In conclusion, this thesis has considered several traits that could be indicative of determining different levels of support for insider threat activity or behaviour. Anger rumination, job satisfaction, and right-wing authoritarianism were all found to be correlated when determining whether participants were supportive of the insider threat scenarios and behaviours presented within this research. With regards to anger rumination, a significant positive correlation was found when considering resentment, justification, and proclivity, indicating that those who scored higher on the ARS (Sukholodsky et al., 2001) were more likely to support insider threat behaviours. While job satisfaction was also found to be a strong indicator of this, anger rumination was superior in determining support and perceived proclivity. Future research would benefit from studying further the effects of anger rumination on insider threat activity and support for it, considering many underlying

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behaviours and psychological traits that are associated with anger rumination are also found in individuals who have conducted insider attacks in the past. Job satisfaction is another avenue that researchers should consider due to its high correlation with insider threat support. In particular, associated behaviours that can affect job satisfaction should be considered, such as financial welfare, due to their identified relationship with insider threats. Finally, higher levels of right-wing authoritarianism were found to have a negative effect on support for insider threats, as determined within this research. As such, researchers may want to consider why this relationship exists and determine whether left-wing authoritarianism too can have an impact on whether individuals are more likely to support these types of behaviours in the future.

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Appendix A:

ITS Scenarios

Person A - After working for the same company for several years, Person A had become dissatisfied with the work ethos present in the company. They were particularly unhappy that their organisation had backtracked on a policy of providing above-inflation pay rises on an annual basis. Due to this shift in policy Person A was struggling to pay household bills and found that their management was dismissive of their concerns. On requesting a pay rise and a pay advance Person A was rejected by their organisations' HR department. Person A, was then approached by a rival organisation who had offered them a new role with a substantial pay increase providing they were prepared to provide them with sensitive information relating to their current organisations ongoing projects. Person A, feeling disillusioned and ill-treated by their current organisation decided that this was the best course of action. As a result, Person A's current employer found themselves undermined by their competitor who was releasing their own version of their products. Despite the fact that Person A's previous employer suspected subterfuge, they were unable to prove it. As a result Person A's previous employer recorded a significant fall in profits that year.

Person B – is an employee of a large multinational pharmaceutical company. Due to legalities, the company was unable to test products on animals, so had stopped doing so several years prior. However, in recent months the law had changed, and this organisation had begun animal testing once again. Despite not having any previous concerns in relation to animal testing, Person B had found themselves spending more time researching animal testing, and animal cruelty in general. After several months Person B had become more enraged by what was happening at their organisation and spent hours at a time discussing the issue on online forums. They had also begun expressing their views to colleagues within the organisation. Person B then joined an anti-animal cruelty organisation who tasked them with causing major disruption to the organisation by any means necessary. Person B decided that the best course of action was to cause as much damage to the building that they were working in. Person B caused significant damage by tampering with the wiring of the building, this caused a number of systems to crash within the building costing the organisation a significant cost to rectify.

Person C - is an employee working for a government agency responsible for ensuring the security of the country from which they operate. In recent months, the government agency requested that its staff start collecting personal information relating to its civilians that went above what was normally expected of them. The government agency insisted that this was due to an increased risk of domestic terrorism, as such this information was being used to screen and identify civilians who pose a current risk to domestic security and those who may be at risk of becoming a threat in the future. Person C found themselves in a difficult position due to their strong beliefs that personal information should be protected and not so easily disclosed. After much deliberation Person C decided to whistle blow on the government agency to the national media, presenting them with evidence that showed what the government agency was doing, how they were collecting information and how they were sharing it with other agencies. Responding the Government stated that this breach had the potential to cause harm to the very people it was trying to protect, whilst supporters of Person C

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have stated that this was a grievous abuse of power by the Government and that Person C was right to whistle blow on the Government agency.