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Theoretical article

VICTIM SELECTION: GAIT AS AN INDICATOR OF VULNERABILITY

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Abstract:
This article presents a systematic review of existing research on victim selection and the role of gait as a nonverbal indicator of vulnerability. Studies suggest that attackers, particularly those with psychopathic traits, assess victim vulnerability based on subtle movement patterns. Research findings indicate that unstable, hesitant, or asymmetric gait increases perceived vulnerability, while confident posture and steady movement reduce victimization risk.
Additionally, while empirical evidence is limited, some offenders may also consider physical characteristics such as hair and eye color, potentially influenced by cultural stereotypes of innocence and fragility.
The review highlights methodological approaches used in previous studies, including video analysis, participant evaluations, and experimental manipulations. Findings contribute to crime prevention, self-defense strategies, and law enforcement training. Future research should further explore how self-perceived vulnerability, cultural biases, and nonverbal cues interact in victim selection.

Keywords: *victim selection, vulnerability, gait, victimization*

Although people are not always aware of their subtle movements, nonverbal behavior plays a crucial role in social interactions, providing significant information and signals to which others react, both consciously and unconsciously (Prabaharan, 2015). This aspect of human communication is particularly relevant in the context of victim selection, where perpetrators assess potential targets based on nonverbal cues.

Attackers do not choose their victims randomly, rather select them based on a number of indicators of vulnerability. Research suggests that these indicators can be found in the specifics of their nonverbal behavior, including the way they move and walk (see Book et al., 2013; Grayson & Stein, 1981; Gunns et al., 2002). Studies have demonstrated that certain gait characteristics, such as uncoordinated or hesitant movements, may signal weakness or lack of confidence, increasing the likelihood of victimization.

Understanding how gait influences victim selection is essential for both crime prevention and criminal and forensic psychology. By identifying key movement patterns associated with vulnerability, researchers in this field and law enforcement can develop strategies to reduce victimization risks and enhance public safety. This paper explores the role of gait as an indicator of vulnerability, reviewing existing research on how attackers perceive and select their victims.

Vulnerability

The widespread application of the term "vulnerability" can be observed in a variety of fields, including medicine and public health (Bracken-Roche et al., 2016; Diderichsen et al., 2019; Nicodemo et al., 2020), environmental studies (Lieberman-Cribbin et al., 2020; Peng et al., 2019), sociology (Mitchell, 2020), and philosophy (Boldt, 2019; Weissman, 2019). While vulnerability is a widely used concept across multiple disciplines, its relevance in criminology and victimology is particularly significant. In the context of crime, vulnerability influences both an individual's likelihood of being targeted and the psychological effects associated with victimization.

Before considering the significance and specificity of nonverbal behavior and gait in the victim selection process by perpetrators of crimes, it is essential to consider the concept of "vulnerability." This term can describe individuals who lack full physical, psychological, and social well-being (Numans et al., 2021). In the context of crime, certain demographic groups such as women (Ferraro, 1996; Franklin & Franklin, 2009), children (LaGrange & Ferraro, 1987; Chadee, 2015), and the elderly (Hale, 1996) are perceived as more vulnerable due to their physical limitations, lower levels of self-defense abilities, and social positioning. These factors may also manifest in an individual’s nonverbal cues, such as gait characteristics, which offenders might interpret as signs of weakness or lack of confidence.

Psychological aspects of vulnerability play crucial role in how individuals perceive their own safety and how they are perceived by others, including potential offenders. Perloff (1983) defines “perceived vulnerability” as *“the belief that one is susceptible to future negative outcomes and is unprotected from danger or misfortune”* (p. 43). This perception is often accompanied by emotional responses such as anxiety, fear, and concern. Furthermore, demographic factors such as age, gender, race, income, education, and marital status have been examined in relation to perceived vulnerability and fear of crime (Schafer et al., 2006; Taylor & Hale, 2017).

Since perceived lack of control contributes to heightened fear and vulnerability (Renn et al., 2007), it is plausible that individuals who move in an uncoordinated or hesitant manner may unknowingly signal this very lack of control to potential offenders.

Vulnerability is a criterion for perpetrators to choose their victims (Book et al., 2013). Among the key nonverbal indicators of perceived vulnerability are gait, body language, and facial expression (Prabaharan, 2015). This suggests that movement patterns, including how a person walks, may serve as cues that offenders use to assess potential victims. Some research reveals evidence of a relationship between body language and perceived

dominance/assertiveness. For instance, a study conducted by Richards et al. (1991) demonstrated that men were more inclined to choose women perceived as "submissive" after observing brief video clips of them in conversation. Judges who assessed these videos noted that the women identified as submissive often exhibited "smaller" and more restrained gestures with their hands and feet. Conversely, women who were seen as dominant displayed more assertive and expansive movements involving their arms and legs (Richards et al., 1991).

Similarly, these findings align with research on gait, where individuals who display hesitant or irregular walking patterns are often perceived as weaker and more vulnerable (Book et al., 2013). Moreover, psychopathic individuals, often referred to as "social predators," are particularly adept at interpreting these nonverbal cues. They can quickly assess an individual's vulnerability based on their body language and gait, which allows them to target those they perceive as easier victims (Book et al., 2013). This ability to read subtle physical signals is not just a skill but an adaptive mechanism that enhances their effectiveness in selecting victims.

In his study, Stevens (1994), involving 61 sexual offenders, discovered that rapists tend to target females whom they perceive as vulnerable. The offenders in this study reported that they were more likely to select victims who exhibited signs of submission or weakness, which they interpreted through various cues, including nonverbal body gestures. This underscores the importance of behavioral indicators in the victim selection process.

In sum, vulnerability is not only a psychological and social construct but also a behavioral cue that offenders are attuned to. Nonverbal signals such as body language and gait may provide important clues about an individual's perceived strength or weakness, influencing their likelihood of being targeted for victimization. Given that vulnerability is shaped by individual traits and societal perceptions, it is essential to explore how these factors manifest through nonverbal behavior - mainly how individuals walk. The following section will examine gait as a potential indicator of vulnerability and its role in victim selection by offenders.

Types of Vulnerability

According to Brown et al. (2017), vulnerability can be categorized into four distinct types:

(1) Situational vulnerability arises from specific social or political circumstances that create a perception of certain individuals or groups as needing protection.

(2) Innate vulnerability is linked to individual characteristics associated with various developmental stages.

(3) Social disadvantage, where exposure to harmful environments - whether natural, social, or economic - results in an inability to manage adverse effects.

(4) Risk, a term often used interchangeably with vulnerability, focuses on the management and control of behaviors and threats that could lead to adverse life outcomes.

Beyond these classifications, vulnerability can also be analyzed on two levels – individual and social – each influencing how people perceive and respond to crime (Garofalo, 1981; Grinshteyn, 2013). Garofalo (1981) discusses the components that contribute to perceived risk of victimization. He identifies four key factors: the prevalence of feared crimes, the likelihood of those crimes occurring to individuals, their vulnerability, and the

consequences they would face if victimized. These elements often subconsciously shape an individual's fear response, reinforcing the perception that some individuals are more at risk than others, even when objective statistics suggest otherwise.

In a similar vein, Grinshteyn (2013) explores the concept of vulnerability in the context of fear of crime, defining it as a fearful perception that individuals or society have regarding the potential for crime to occur, regardless of actual statistical risks. This subjective vulnerability is often influenced by demographic factors such as gender and age, leading to behavioral changes such as withdrawal from social interactions, heightened caution, and avoidance of certain places or activities.

These distinctions between structural, individual, and perceived vulnerability highlight how external conditions and internal perceptions interact to shape one's experience of risk and victimization. Given that nonverbal cues such as body language and gait are integral to this perception, the next section explores their role in the victim selection process.

Gait as a Cue to Vulnerability

Gait refers to an individual's manner and walking pattern, which can be characterized by speed, hip sway, stride length, arm swing, knee bend, and bounce (Gunns et al., 2002). Research suggests that gait is a crucial nonverbal cue that conveys information about an individual’s personality, physical condition, confidence, and even vulnerability (Book et al., 2013). Nonverbal behavior plays a dominant role in human communication, as it has been estimated that only 30-35% of the social meaning in an interaction is conveyed verbally, while nonverbal cues carry the greatest weight in shaping perceptions (Birdwhistell, 1970).

Ekman and Friesen (1969) further emphasizes that nonverbal signals, particularly facial expressions, body language, and movement patterns, are essential for interpreting emotions and social intentions. While much of his research focuses on facial microexpressions, his work underscores the broader significance of nonverbal cues in assessing dominance, submission, confidence, and fear. In this context, gait functions as an involuntary behavioral cue that can indicate a person's emotional and psychological state. Offenders, either consciously or subconsciously, analyze these cues when selecting potential victims, often relying on subtle kinesthetic signals to assess a person’s level of self-assurance or physical vulnerability.

Neurological and Psychological Basis of Gait Perception

The human brain is highly attuned to biological motion, particularly walking patterns, which provide social and survival-related information. The superior temporal sulcus (STS) is a key brain region responsible for recognizing and interpreting movement, including gait (Grossman et al., 2004). The amygdala, known for its role in emotional processing, works alongside the STS to assess whether a person appears strong, weak, confident, or fearful (Allison et al., 2000).

From a psychological perspective, gait perception is influenced by subconscious biases and social conditioning. Studies show that individuals who exhibit irregular, hesitant, or unstable movements are more likely to be perceived as vulnerable (Johnson et al., 2007). This

phenomenon has evolutionary roots, as predators in nature often target animals that display signs of injury, weakness, or impaired mobility (Troje, 2002). Similarly, offenders may rely on these subtle signals when selecting their victims.

Empirical Evidence on Gait and Victim Selection

One of the earliest studies to explore the link between gait and vulnerability was conducted by Grayson and Stein (1981). Their research found that prisoners convicted of sexual assault were able to identify vulnerable individuals solely based on their walking patterns. The specific gait characteristics associated with vulnerability included:

- Unusually long or short strides (indicating a lack of coordination or balance).
- Lack of lateral weight shifting (suggesting instability or hesitation).
- Discrepancies between gestural and postural movements (e.g., arm and leg movements that do not synchronize properly).
- How the feet were lifted while walking (with shuffling or dragging motions linked to perceived weakness).

A more recent study, "Psychopathy and Victim Selection: The Use of Gait as a Cue to Vulnerability" (Book et al., 2013), built on these findings. The researchers examined how individuals with psychopathic traits assess victim vulnerability based on gait. Their results indicated that prisoners with higher scores on Factor 1 of psychopathy (interpersonal and affective traits) were more accurate in identifying vulnerable individuals based on gait alone. Moreover, these prisoners were more likely to explicitly mention gait as a key determinant in their assessment of vulnerability.

However, Book et al. (2013) did not provide detailed specifics on which gait characteristics signaled vulnerability most strongly. Wheeler et al. (2009) extended this research by examining how psychopathic traits influence the perception of vulnerability through nonverbal cues, including gait. They found that offenders with high levels of psychopathy were significantly better at distinguishing vulnerable individuals based on movement patterns.

The Dark Tetrad and Victim Selection Based on Gait

Building on this body of research, Ritchie, Blais, and Forth (2019) explored how individuals with traits associated with the Dark Tetrad (psychopathy, narcissism, Machiavellianism, and sadism) assess vulnerability based on gait. Their findings indicate that individuals with high levels of psychopathy and sadism exhibit an enhanced ability to detect subtle nonverbal vulnerability cues, particularly hesitant or uncoordinated walking styles.

This suggests that some offenders may not only be predisposed to antisocial behavior but may also possess an advanced ability to interpret gait-related vulnerability cues, making them more effective at selecting targets. Furthermore, the study highlighted that individuals with high Dark Tetrad traits displayed a preference for selecting those who exhibited physical or postural signs of submissiveness, reinforcing the connection between gait and perceived victim potential.

Key Gait Characteristics Linked to Perceived Vulnerability

Other studies have identified specific gait features that signal vulnerability, making an individual more likely to be targeted by offenders:

- ***Uncoordinated or Disjointed Movements*** - Murzynski and Degelman (1996) found that **asymmetrical or uncontrolled limb movements** can be interpreted as signs of weakness or insecurity. Gunns et al. (2002) confirmed that erratic walking patterns reduce perceptions of strength and increase perceived vulnerability.
- ***Short, Hesitant, or Dragging Steps*** - Book et al. (2013) found that individuals who take small, hesitant steps and fail to shift their weight naturally while walking are perceived as less confident and more physically fragile. Similarly, Sakaguchi and Hasegawa (2006) found that individuals, particularly women, who walked with slower speeds and shorter strides were more likely to be perceived as vulnerable and targeted for unwanted advances or aggression
- ***Lack of Arm Swing*** - A natural, rhythmic arm swing is associated with confidence and balance. A stiff or restricted arm movement can indicate anxiety, reduced physical coordination, or fear—all of which contribute to a perception of vulnerability (Gunns et al., 2002).
- ***Postural Instability or Lack of Fluidity*** - Smooth, controlled movements signal confidence, while rigid, stiff, or jerky transitions in gait suggest nervousness or physical limitation (Wheeler et al., 2009).
- ***Avoidant or Downward Gaze During Walking*** - Richards et al. (1991) found that gaze direction plays a crucial role in how individuals are perceived in terms of dominance and assertiveness. Their study demonstrated that individuals who walk with their heads down, avoid eye contact, or exhibit visible tension are more likely to be perceived as submissive or anxious. These behavioral cues can contribute to an increased risk of victimization, as offenders may interpret them as signs of insecurity or lack of confidence

Implications for Crime Prevention and Victim Selection

Since offenders often assess potential victims within seconds, gait serves as a crucial factor in their decision-making process. Psychopathic individuals, in particular, demonstrate an enhanced ability to detect vulnerability through gait cues (Book et al., 2013). Furthermore, individuals with Dark Tetrad traits (particularly those high in psychopathy and sadism) are more adept at recognizing and exploiting these cues (Ritchie et al., 2019).

Interestingly, some research suggests that modifying one's gait can influence how they are perceived. Book et al. (2013) highlight that specific interventions, such as cognitive-behavioral therapy (CBT), may help reduce victimization risk by addressing self-perceptions of vulnerability (Theriot et al., 2005). Past victimization does not necessarily predict future victimization unless individuals perceive themselves as vulnerable and exhibit nonverbal signals associated with submissiveness or insecurity.

Furthermore, Johnston et al. (2004) found that gait training aimed at making individuals appear more confident (e.g., adopting an upright posture, taking longer strides, and maintaining a steady arm movement) effectively reduced perceived vulnerability. However, the effects of such training diminished over time, suggesting that a more sustainable approach may involve addressing the cognitive and psychological factors underlying self-perceptions of vulnerability rather than focusing solely on altering physical movement patterns (Book et al., 2013).

These findings have important implications for personal safety strategies, self-defense training, and crime prevention initiatives, as they suggest that a combination of physical and psychological interventions may be the most effective way to reduce victimization risk.

Overall, gait is a powerful nonverbal cue that conveys critical information about an individual's physical and psychological state. Research consistently shows that offenders use gait characteristics to assess victim vulnerability, focusing on irregular movement patterns, instability, and hesitant behavior. Given that gait is largely automatic, many individuals may not realize that they are projecting vulnerability through their walking style. Future research could explore how training individuals to walk with greater confidence might reduce their risk of victimization.

Methodology Overview

This article presents a systematic review of existing research on victim selection, focusing on the role of gait as a nonverbal indicator of vulnerability. To examine the relationship between victim selection and gait as a vulnerability cue, researchers have utilized various methodological approaches, combining experimental, observational, and statistical analyses. These methodologies allow for a comprehensive understanding of how subtle movement patterns contribute to perceived vulnerability and influence offender decision-making.

Study Designs

Video Analysis

One of the most common research methods involves analyzing video recordings of individuals walking to assess gait characteristics and their impact on perceived vulnerability. Participants in these studies are often asked to evaluate short clips of individuals with different walking styles, allowing researchers to determine which movement patterns signal weakness or confidence.

Grayson and Stein (1981) pioneered this approach, showing that prisoners convicted of sexual assault were able to identify vulnerable individuals based solely on their gait. This controlled video-based methodology provided early empirical evidence that movement is a key nonverbal cue in victim selection.

Blaskovits (2015) expanded on this research by utilizing point-light displays, a technique that isolates gait motion by removing all other identifying features. This method confirmed that certain movement irregularities, such as asymmetric limb motion or reduced stride length, increased perceived vulnerability.

Participant Evaluations

Many studies use subjective vulnerability ratings, where participants including inmates and community members evaluate individuals' gait styles and assess how likely they would be to become a target. Wheeler et al. (2009) examined how individuals with varying psychopathy scores rated vulnerability based on gait cues, finding that those with higher psychopathy traits were more accurate in identifying vulnerable individuals. Book et al. (2013) used similar methodology with inmate populations, revealing that Factor 1 psychopathy traits (interpersonal

and affective) were associated with higher accuracy in identifying vulnerability through gait analysis.

Experimental Manipulation

To isolate specific gait characteristics, some studies have employed experimental manipulations, altering walking speed, posture, and balance in controlled settings. Sakaguchi and Hasegawa (2006) conducted experimental variations in walking conditions to determine which gait traits were most strongly associated with perceived vulnerability. Their findings indicated that slower speeds, shorter strides, and reduced weight shifting contributed to increased vulnerability ratings. Similarly, Johnston et al. (2004) tested whether training individuals to walk with a more confident stride could reduce perceptions of vulnerability. Their findings suggested that while confident gait training was initially effective, the impact diminished over time, highlighting the potential role of cognitive-behavioral interventions in altering victim self-perception.

Sample Populations

Inmate Populations

A significant portion of research on victim selection and gait is conducted within inmate populations, due to the high prevalence of psychopathy and antisocial traits within this demographic. Book et al. (2013) assessed male inmates for psychopathy using the Hare Psychopathy Checklist-Revised (PCL-R) before engaging them in victim assessment tasks. Studies suggest that offenders with higher psychopathy scores demonstrate superior accuracy in identifying vulnerable individuals compared to non-offenders.

Diverse Participant Groups

While much of the research is inmate-focused, some studies incorporate university students and general community members to compare how different populations perceive vulnerability. Ritchie et al. (2019) explored how individuals with high Dark Tetrad traits (psychopathy, narcissism, Machiavellianism, and sadism) differed from the general population in their ability to recognize gait-based vulnerability cues. Including non-criminal participants provides insight into whether these perceptual skills are exclusive to offenders or more broadly present in human cognition.

Data Analysis Techniques

Statistical Correlation

Researchers often employ statistical analyses to examine relationships between psychopathy scores, gait features, and accuracy in judging vulnerability. Regression models and correlation analyses are commonly used to determine the strength and significance of these associations. Studies such as Wheeler et al. (2009) and Book et al. (2013) demonstrate strong positive correlations between psychopathic traits and the ability to accurately assess gait-based vulnerability.

Qualitative Assessments

In addition to quantitative scoring, some studies utilize qualitative data, gathering verbal explanations from participants regarding why they perceive certain individuals as vulnerable.

Johnston et al. (2004) recorded participants' justifications for their vulnerability ratings, revealing patterns in how people interpret nonverbal cues related to gait. This dual approach (quantitative and qualitative) provides a richer understanding of how vulnerability is perceived and processed.

Discussion

The studies reviewed above on the relationship between gait, vulnerability, and victim selection provide valuable insights into the role of nonverbal communication in crime and victimology. They reinforce the idea that attackers, whether consciously or subconsciously, assess nonverbal cues when selecting potential victims.

One of the primary contributions of this body of research is a more nuanced understanding of the victim selection process. Studies such as Grayson & Stein (1981), Book et al. (2013), Wheeler et al. (2009), and Blaskovits (2015) have demonstrated that certain gait patterns can significantly influence perceived vulnerability. These findings support the argument that movement characteristics, rather than purely demographic factors, play a crucial role in an individual's risk of victimization.

For instance, Grayson & Stein (1981) identified specific gait characteristics associated with perceived vulnerability, including:

- Unusually long or short strides
- Lack of lateral weight transfer
- Discrepancies between gestural and postural movements
- Shuffling or improper lifting of the feet

Similarly, Wheeler et al. (2009) found that unsteady, hesitant, or uncoordinated gait patterns increase the likelihood of being selected as a victim. Book et al. (2013) expanded on these findings by exploring how psychopathy influences the ability to detect vulnerability through gait analysis, demonstrating that individuals with high psychopathy scores are particularly adept at identifying nonverbal indicators of weakness.

In addition, Sakaguchi & Hasegawa (2006) and Blaskovits (2015) reinforced these results by demonstrating that slower walking speeds, shorter strides, and asymmetric limb movements are reliably associated with higher vulnerability ratings.

A notable theoretical implication of these studies is that vulnerability is not solely determined by past victimization but also by self-perception. As suggested by Theriot et al. (2005) and Book et al. (2013), individuals who perceive themselves as vulnerable are more likely to project nonverbal signals that reinforce this perception, making them more likely to be targeted. This insight has significant implications for victimology and intervention strategies.

Furthermore, although there is no widely recognized empirical evidence supporting this, the authors of this paper observe a tendency among some offenders to consider external physical attributes when selecting victims. In cases involving girls or children, perpetrators have been observed to more frequently target individuals with blonde hair, fair skin, and light-

colored eyes. This phenomenon may be influenced by cultural stereotypes and their impact on perception, particularly the long-standing association of blonde hair and blue eyes with innocence, fragility, and perceived vulnerability.

While these factors have not been systematically analyzed in the same way as gait-related cues, they raise important questions regarding how societal norms shape both victim and offender behavior. Future research should examine whether these biases have a measurable effect on victim selection and whether they intersect with established predictors of vulnerability, such as nonverbal behavior and self-perception.

Practical Applications

The findings from these studies can be applied in multiple fields, including crime prevention, self-defense training, and law enforcement strategies.

1. Victim Education and Prevention Programs - Vulnerable populations (e.g., individuals living in high-crime areas or those with a history of victimization) can benefit from training that focuses on confident movement patterns. Research suggests that adopting an upright posture, maintaining a steady gait, and making assertive eye contact can reduce the likelihood of being perceived as vulnerable (Johnston et al., 2004). However, as noted by Book et al. (2013), such behavioral modifications may not be sufficient in the long term unless they are paired with cognitive interventions that address self-perception of vulnerability.

2. Law Enforcement and Criminal Profiling - Police officers and forensic psychologists can utilize these findings to better understand offender decision-making processes and improve crime prevention strategies. Profiling tools that assess nonverbal cues in public surveillance footage may assist in identifying potentially high-risk interactions before a crime occurs. Blaskovits (2015) suggests that forensic biometrics and gait analysis technologies could be implemented in urban security systems to detect individuals displaying movement patterns linked to distress or heightened vulnerability.

3. Self-Defense and Personal Safety Training - Self-defense programs can incorporate nonverbal communication training, teaching individuals not only physical techniques but also how to present themselves as less vulnerable targets. This aligns with findings from Sakaguchi & Hasegawa (2006), which suggest that walking style adjustments can significantly alter perceptions of confidence and resilience.

Conclusion

The studies reviewed in this paper provide a comprehensive understanding of how gait influences victim selection. By identifying key gait characteristics that signal vulnerability, researchers have demonstrated that criminals rely heavily on nonverbal cues when assessing potential targets. Moreover, the research suggests that vulnerability is not solely an inherent trait but is influenced by self-perception and nonverbal expression. This highlights the potential for both physical and psychological interventions to reduce victimization risk.

Future research should further explore long-term strategies for mitigating vulnerability signals, particularly by combining movement-based interventions with cognitive-behavioral approaches. By integrating these findings into victim education, law enforcement training, and

personal safety programs, we can develop more effective prevention strategies and contribute to reducing overall victimization rates.

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