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Emotion in Motion: An Experimental Study on Walking Speed Under Anger and Sadness in Women

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ABSTRACT

This experimental study aimed to investigate the impact of two negative emotions – anger and sadness – on the walking speed of women. Forty-seven females volunteered to be part of the experiment. Each participant was randomly assigned to either the anger or the sadness condition. Participants also completed a baseline walking speed measure and reported their affective state using the Positive and Negative Affect Schedule (PANAS). The paired samples t-tests showed that the within-group effects were different for each emotion. Results from the Anger group demonstrated lowered walking speed; however, Positive Affect was decreased, and Negative Affect was increased. While Sadness group, participants walked significantly slower after induction and showed a statistically significant increase in Negative Affect, while Positive Affect remained unchanged. Independent samples t-tests of the change in walking speed between groups did not reveal significant differences. Therefore, it seems that both emotions changed motor behavior, but the degree of change was similar. On the other hand, the Anger group showed a significantly greater reduction in Positive Affect than the Sadness group, while the increases in Negative Affect were statistically similar across emotions. These findings indicate that anger and sadness not only have a noticeable impact on women's mood but also bring about different changes in their manner of walking. This confirms the theory that emotions are embodied and that walking speed can be considered a valuable observable behavioral indicator of emotional change.

INTRODUCTION

An emotion can be represented as a complex physiological and psychological response. It is the converged state of psychological, physiological, and neural activities that impact human experience and behaviours, such as facial expressions and speech (Dong *et al.*, 2022). Recent work in affective and behavioral psychology suggests that gait provides additional information for deciphering a person's body state (Randhavane, 2022). That emotion in gait is a represented affect.

Although anger and sadness are both valenced negatively, anger is more closely associated with approach motivation and physiological arousal. Humans are more likely to walk faster and exhibit higher gait synchrony when they feel angry than when they feel sad (Kadoya *et al.*, 2021). Sadness, on the other hand, has been linked to withdrawal motivation and a low-arousal state with slow, restricted movements (Northoff, 2024). These results support embodiment theories and the suggestion that motor action is associated with emotion and can influence and be reflected in each other (Léonard *et al.*, 2025).

In view of these established relationships, it is interesting to ask whether the effects of different emotional states on gait responses and recovery differ between men and women. There are well-documented gender differences in emotional experience and expression. Women's heightened emotional expressiveness, stronger feedback to negative affect, and increased attention to emotional cues are thought to be influenced by hormonal, cognitive, and sociocultural factors (Lin *et al.*, 2021. Moreover, the use of indirect, model-based procedures to analyze emotional processing tasks shows that, compared to males, females tend to score higher in self-reported emotions, indicating easier and stronger emotional experiences (Givon *et al.*, 2023). Although there exists some evidence that men are perceived as having equivalently high competency in dealing with their emotions, or at least in care work or professional capacities (Martínez-Morato *et al.* 2021), the existing body of research suggests that, on average, women generally tend to be more sensitive and responsive emotionally. Also, in research conducted by Pang *et al.* in 2023, it was found that women tended to have high scores over those of their male counterparts in terms of both questionnaire-based as well as EEG assessments of empathy.

Such properties are obviously pertinent to scientific studies about movement and the emotions associated with this phenomenon. Since women who rate high in emotional reactivity and awareness of emotions would likely manifest observable patterns of gait modification following the induction of emotions, this further supports why the approach could be narrowed down to women, as it fulfills various purposes in relation to more precise scientific goals: first, it reduces gender-related variance associated with gait experiments, second, increases the detectability of emotional-motor patterns introduced during gait, and third, adds to scientific validity in domains like clinical psychology, which target women.

Thereby, restricting to women enhances both methodological rigor and applied significance. However, despite this comparative advantage relative to the rest

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of the field of emotion and physical activity in research studies, there is little extant work that has focused directly on how specific discrete negative emotions, such as anger or sadness, influence women's walking behavior – a notable empirical void that the current study seeks to fill.

Internationally, the relationship between emotion and walking has also been investigated in other studies. For example, Alvarez *et al.* (2025) demonstrated that anger and joy are somewhat effective at increasing gait speed and influencing stride length, whereas sadness slows gait speed dynamics and reduces cadence. (The language of gait: interpreting emotional states through gait videos, 2025) Additionally, Riemer *et al.* (2023) found reliable signals of happiness, fear, and sadness, as well as relaxation, in walking behavior and body posture. Their results imply that bodily movements can be valid indicators of affective state, and that machine learning algorithms can classify based on gait—and thus support the body of related international research, which has indeed shown that emotional experience is represented in mainly physical terms and expressed through bodily motion movements and gait have also been examined nationally in the Philippines from a physical and biological perspective. Walking speed, stride length, step length, stance time, swing time, cadence, and other variables recorded using a three-dimensional motion capture system were among the spatiotemporal factors of normal gait in Filipino adults that Fidel *et al.* (2021) cross-sectionally researched and offered some values for. Among the conclusions were that walking speed and stride length variables were impacted by rising age values, and that several gait variable values varied with age and gender.

Locally, Pasanting *et al.* (2023) also focused on the contribution of emotional awareness to academic well-being among science students of MSU-IIT and suggested that perceiving, naming and regulating feeling predicted better psychological as well as educational performance. Students' emotional abilities correspond as well to some of their behavioral execution elements. Students with better emotional self-awareness and the ability to identify personal emotions and others' feelings exhibit more adaptive behaviour as well as better well- being. This then suggests that some behavioural deviations may reflect the mood of an individual (e.g., gait or stride lengths).

Finally, in the literature such kind of emotion-based gait detection research is mostly concentrated on performing emotion detection by means of sensors. Gait biomechanics and emotional awareness have been examined locally in non-walking scenarios (i.e., not form a walking experiment) but without a speed manipulation. Structural equation modeling was used to derive a causal model evaluating the effects of discrete negative emotions (anger and sadness) on women's walking. While the gender differences in terms of emotional expression have been widely studied, few studies have addressed the specificities regarding motor activity. The unawareness of any studies that have tested or manipulated emotion induction, measured individuals' affective state, and quantified walking speed in a controlled experimental environment on women.

Research Objectives

The general objective of this study is to determine whether anger and sadness differ in their influence on walking speed and PANAS scores Post-emotion induction.

1. To examine whether participants within each emotional induction condition (sadness and anger) exhibit statistically significant Pre-emotion induction to Post-emotional induction changes in walking speed and affective states, as measured by the PANAS.
2. To compare the calculated difference of Pre-emotion induction and Post-emotional induction walking speed between the anger and sadness groups.
3. To compare the changes of the Sum of Positive Affect (PA) and Sum of Negative Affect (NA) between anger and sadness groups.

Conceptual Framework

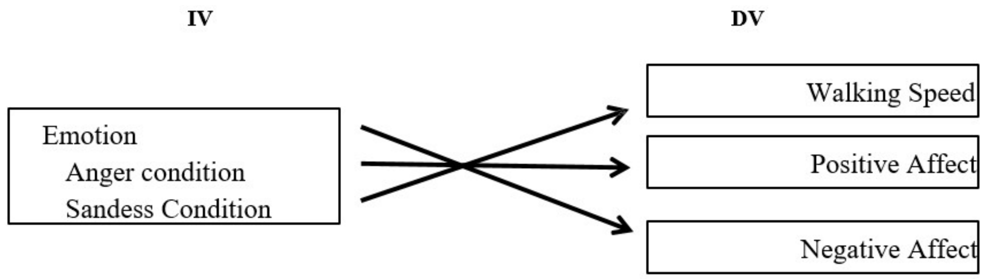

Figure 1: Conceptual Framework of Emotional Influence on Walking Speed and Affect

Anger and Sadness condition may lead to an increase or decrease in walking speed, Positive Affect and Negative Affect.

MATERIALS AND METHODS

Research Participants

The participants in this research were only female students from the University of Mindanao – Digos College belonging to different year levels and academic programs. Overall, 47 women joined the study. Nearly half of the participants were First Year students (n = 23, 48.9%). The number of participants for Second Year made up (n = 16, 34.0%), Third Year (n = 7, 14.9%), and Fourth Year (n = 1, 2.1%) students respectively.

In terms of age, majority of the participants were 19 years old (n = 18, 38.3%) and 18 years old (n = 13, 27.7%), respectively. The rest of the participants were 20 years old (n = 9, 19.1%), 21 years old (n = 5, 10.6%), 22 years old (n = 1, 2.1%), and 24 years old (n = 1, 2.1%).

Table 1: Characteristics of Respondents (n=)

Profile	**f**	**%**
Gender		
Female	47	100
Age		
18	13	27.7
19	18	38.3
20	9	19.1
21	5	10.6
22	1	2.1
24	1	2.1
Year level		
1st	23	48.9
2nd	16	34.0
3rd	7	14.9
4th	1	2.1
Total	47	100

Research Sampling

The researchers determined the sample through a purposive sampling method where only female students were chosen to be the participants of the study. Afterward, they were given a random assignment to one of the two experimental groups - anger or sadness. Utilizing random assignment minimized the chances of a selection bias and improved the internal validity of the study.

The researchers considered the final sample of 47 participants sufficient to carry out their experimental study. According to Creswell (2014), in experimental research, the number of participants between 30 and 50 is usually sufficient to achieve reliable results when the procedures are controlled and clearly defined.

Considering the controlled environment, the homogeneity of the participants, and the simple behavioral measure of walking speed and Positive Affect Negative Affect schedule, the sample size is deemed compatible with the standard requirements for experimental studies.

Research Instrument

The main tool was a self, report questionnaire which was changed from the Positive and Negative Affect Schedule Short Form (PANAS-SF) by Watson *et al.* (1988). The questionnaire is intended to identify the participants' levels of positive affect (PA) and negative affect (NA). The PANAS- SF comes with the instances that define the mood of the participants, and the participants should rate them on a 5, point Likert, type scale, showing the degree to which they feel the particular emotions. The points on the scale are (1) very slightly or not at all, (2) a little, (3) moderately, (4) quite a bit, and (5) extremely.

The main reason for choosing the PANAS-SF was that it is an instrument widely used in numerous pieces of research and is known to have good psychometric properties with the studies reporting that it has excellent reliability and measurement precision in a variety of samples (Medvedev *et al.*, 2023).

Besides the PANAS-SF, the researchers also employed validated emotion, induction materials, which include two short films aimed at eliciting sadness and anger. After watching the film, the participants read a set of validated emotion, specific statements that were congruent with the emotional content of the video. The success of such statements is confirmed by the facts that mood, inducing sentences, including the adaptations of the Velten paradigm, are very effective in changing the emotional state of the participants (Monno *et al.*, 2024).

Likewise, the video, based induction is strongly supported by research that shows brief emotional films are very powerful in bringing specific moods and changing cognitive processes that follow. For example, emotionally charged videos have been found to significantly raise the level of ideational originality as compared to neutral videos (Khalil *et al.*, 2025).

Design And Procedure

The research employed a quantitative experimental design using independent-samples t-tests to examine possible variations in walking speed, positive affect, and negative affect under sadness and anger emotional conditions. Independent-samples t-tests were used to evaluate between-group differences in walking speed and affective scores using the Pre-emotion post-emotion induction differences. This design compared the behavioral and emotional changes resulting from the two different emotional stimuli.

Gathering of Participants

The researchers moving through the university campus came across potential participants, and after they explained the study, only female participants who met the inclusion criteria were recruited. The inclusion requirements were the capacity to walk independently, having had adequate sleep and nourishment before participation, and understanding that participation was entirely voluntary. A quick checklist was used for screening, and once done, participants were assisted to the psychology laboratory.

Collection of Informed Consent

First and foremost, participants were met and presented with an initial informed consent form explaining the general description of the activity, its academic purposes, and the simple physical activity required. It also highlighted the voluntary nature of the participation and the right to withdraw at any time.

Baseline Positive Affect and Negative Affect

After giving their consent, participants completed the baseline Positive and Negative Affect Schedule (PANAS) questionnaire to assess their initial affective state.

Baseline Walking Speed Data Collection

As a part of the neutral baseline walking speed, the participants were subsequently instructed to walk along an 18.288-meter path between the laboratory's entrance and exit doors. The participants were given proper instructions to walk comfortably and at their own pace. The time of the departure and the time of the arrival of the participants, down to the seconds, were recorded by a camera. The walking path was inspected for freedom of movement.

Emotion-Induction

After completing the baseline affective states and baseline walking, participants were shown a short film of about 5 minutes long. The film was related to their assigned emotional condition (sadness or anger). Right after finishing watching the short film, participants were given a set of validated emotion-specific statements relating to their group assignment, which also includes direction for repeating the same 18.288 meter walking distance.

Debriefing

After completing the experiment, the true nature of the experiment was revealed, clarifying the main purpose of the activity and the academic purposes. After that, through a brief personal conversation with the researcher, participants had the opportunity to reflect on their experience. As a final step, an informed consent form was distributed, reiterating their right to withdraw their data. To strictly ensure that participants had an adequate understanding of the procedures and purpose of the experiment, once again, participants were ask to raise questions or clarifications prior to dismissal. Each participant was given a pen and a refreshment as an act of appreciation for participating in the experiment.

Statistical Treatment

To examine the impact of induced emotions on the speed of walking along with the affective states, the researchers used t-tests to analyze the data. Paired-samples t-tests were performed separately for the Anger and Sadness groups in order to assess the changes in walking speed and affective states that occurred within each group. The sum of Pre-emotion induction and post-induction scores on the Positive and Negative Affect

Schedule (PANAS) was utilized for each group to reflect the total changes in Positive Affect (PA) and Negative Affect (NA).

The pre-to-post difference scores were then subjected to independent-samples t-tests in order to compare the extent of changes between the Anger and Sadness groups. This assessment was designed to find out if the emotional induction had resulted in significantly different effects on the walking speed, PA, and NA in different groups. The reason for choosing the t-tests was that there were two time points (Pre- and Post-induction) and two independent groups, thus making them statistically appropriate for these comparisons (Field, 2018; Gravetter & Wallnau, 2022). The level of statistical significance was set at $\alpha = .05$.

Ethical Considerations

The researchers observed the ethical requirements of the institution and all the materials utilized for the experiment was first reviewed and approved by the research advisor. Participants were provided the information regarding their ability to raise questions or clarification through an informed consent form that detailed the confidentiality, voluntary participation, and the right to withdraw from the study at any time without giving any negative implication. Throughout the emotion induction film watching and post induction walking, participants were kept under close supervision to facilitate safety experiment practices. A debriefing succeeded every session in providing participants a chance to reflect on their feelings, to get an explanation of any instruction or process they did not understand, and to know the real purpose of the study. Debriefing is a very important ethical measure in emotionally provoking experiments as it helps in lessening the negative emotional impact and providing psychological safety (Scott *et al*., 2022; Toews *et al*., 2021). To further facilitate emotional recovery, soothing background music was played, and participants were given enough time to regain a neutral state prior to their departure from the session.

Voluntary Participation

It was guaranteed that participation in this study was on a voluntary basis. Participants were verbally and in writing informed that they may discontinue their involvement at any time, or stop watching the film without any consequences.

Participants signed a general informed consent before they took part in the study. The form clearly explained the general procedures as well as participants' rights and mentioned that they could leave the study at any time without negative implications. A second final informed consent was given at the time of the debriefing, allowing participants to review the nature of the study and confirm or withdraw their data after understanding the real nature of the study. It also contained the contact information of the main researcher and the research adviser and encouraged participants to reach out if they needed more information or had any ethical concerns during the experiment. In addition, the contact information of the school's Guidance office was also made available to them. This means that, if participants feel uncomfortable seeking emotional support from the primary researcher, participants will have access to professional help.

Confidentiality

In order to maintain participants' anonymity and privacy, only minimal demographic information, such as age, year level, and a pseudonym, was collected. The entire data set was coded, and only the research team members had the authority to open and view the data files.

RESULTS AND DISCUSSION

To examine the changes in the walking speed of the Anger group before and after the emotion induction, a paired-sample t-test were utilized. The result demonstrated the significance of the change in the walking speed of the said group from the pre-induction stage (M = 1.11075, SD = 0.24648) to the post-induction stage (M = 0.9254, SD = 0.34882), since the difference between the two was found to be significant, t(23) = 2.200, p =0.038. Contrary to the initial assumption of the research that the emotion induction on the participants would lead to increased walking speed due to the experience of the emotion, the result implies that the participants walked more slowly after the emotion induction, since the post induction score was lower compared to the pre- induction score.

Table 2: Paired Samples T-test for Anger Group

Walking Speed	Mean	SD	t	df	p-value
Pre-emotion induction	1.1075	0.24648	2.200	23	0.038
Post-emotion induction	0.9254	0.34882	2.200	23	0.038

The result seems to suggest that the emotion was well-induced, since the changes in the Positive Affect and Negative Affect scales of the PANAS test were clearly shown, despite the apparent contradiction in the result that the emotion did not translate to the increased walking speed but the walking was slower, showing the partial dissociation between the subjective experience of the emotion and the consequent behavioral manifestation.

This result corroborates the work of Homagain and Ehgoetz Martens in 2023, stating that states of anger and associated emotions could interfere with optimal walking performance in a state of steady-state walking, promoting conditions of reduced speed or efficiency in walking patterns. Finally, Alvarez *et al.* in 2025 showed that the effect of emotions on gait parameters, including spatial and temporal parameters, had the attribute of showing how states of negativity described as anger influence walking performance even when using accurate inertial measuring devices. (Alvarez *et al.*, 2025) The work is relevant as it presents empirical support that emotions influence motor functions, thus justifying the result that the induction of anger influences walking speed even when it doesn't necessarily correspond to the experience.

Table 3: Paired Samples T-test for Anger Group

SUM of Positive Affect (PA)	Sum	SD	t	df	p-value
Pre-emotion induction	33.38	7.234	3.555	23	0.002
Post-emotion induction	28.71	5.328	3.555	23	0.002

To examine the difference in the sum of Positive Affect Pre- and Post Anger induction a paired-samples t-test was utilized. The t-test comparison showed a statistically significant difference between Pre-induction Positive Affect (M=33.38, SD=7.234) and Post-induction Positive Affect (M=33.38, SD=7.234; t(23)=3.555, p=0.002). This suggests that the anger induction successfully decreased individuals' experience of positive affect, indicating a legitimate influence on mood. This is also compatible with Ursu and Turliuc's (2025) findings of how anger induction consistently affects affective states, including decreases in positive affect, and follows what was noted by Turan (2021) that processes emotionally related to the experience of anger may strongly influence one's own affective experiences.

A paired sample t-test for Anger was used to compare the sum of Negative Affect before and after Anger induction. The test indicates that post-induction Negative Affect of the Anger group has significantly increased (M = 30.71, SD = 7.726) as compared to the pre-induction Negative Affect (M = 22.25, SD = 7.103), t(23) = −4.314, p = .000. The increase in sum of difference suggests that participants reported an increase of negative affect after the emotion induction.

Table 4: Paired Samples T-test for Anger Group

SUM of Positive Affect (PA)	Sum	SD	t	df	p-value
Pre-emotion induction	22.25	7.103	-4.314	23	.000
Post-emotion induction	30.71	7.726	-4.314	23	.000

The increase in Negative Affect observed is in line with the previous research showing that mood induction procedures lead to self-reported negative affect more than ever after exposure to anger-triggering or unpleasant stimuli (Fernández-Pérez *et al.*, 2025). It signifies that negative affect can be raised to a great extent while positive affect decreases. This provides a rationale for using experimental procedures such as PANAS to record the changes in affective states that result from anger induction. Also, it is in harmony with Roemer and Medvedev's (2025) findings about the sensitivity of PANAS to exacerbated negative emotional states.

Table 5: Paired Samples T-test for Sadness Group

Walking Speed	Mean	SD	t	df	p-value
Pre-emotion induction	0.8070	0.16655	3.719	22	0.001
Post-emotion induction	0.6304	0.22323	3.719	22	0.001

A paired samples t-test for the sadness group was used to examine the difference between Pre-emotion induction Walking Speed and Post-emotion induction Walking Speed. The outcome indicates that there is a statistically significant difference between the pre-induction (M=0.8070, SD=0.16655) and post-induction walking speed (M=0.6304, SD=0.22323, t(22)=3.719, with an alpha value of p=0.001). Indicating that participants walked significantly slower.

This result aligns with Snyder *et al.* (2025), who found that people change their walking patterns in a measurable way when they show or feel sadness, and with Homagain and Ehgoetz Martens (2023) who found that emotional states can have a significant effect on walking performance at a constant pace.

To examine the difference in the sum of Positive Affect Pre- and Post Sadness induction a paired-samples t-test was utilized. Results revealed no significant difference in Pre-emotion induction Positive Affect (M = 33.83, SD = 7.088) and Post-induction Positive Affect (M = 34.52, SD = 8.409225), t(22) = −0.461, p= 0.649. It follows that the sadness induction did not result in a significant change (as measured by self-reporting) of participants' experienced Positive Affect.

Table 6: Paired Samples T-test for Sadness Group

SUM of Positive Affect (PA)	Sum	SD	t	df	p-value
Pre-emotion induction	33.83	7.088	-0.461	22	0.649
Post-emotion induction	34.52	8.40925	-0.461	22	0.649

This result is consistent with that reported by Shiota *et al.* (2021), who stated that positive affect works as a specific emotional system and is not necessarily decreased by negative emotional experiences, an argument supported by Shirai and Kato (2025) who defined sadness as a complex emotion rather than one that inhibits the intensity of positive feelings.

Table 7: Paired Samples T-test for Sadness Group

SUM of Negative Affect (NA)	Sum	SD	t	df	p-value
Pre-emotion induction	19.39	6.493	-4.841	22	.000
Post-emotion induction	27.91	9.175	-4.841	22	.000

A paired samples t-test was used to determine if the sum of Negative Affect in the Sadness group changed significantly post-emotion induction. The results revealed a statistically significant increase in Negative Affect scores from pre-emotion induction (M=19.39, SD=6.49) to post-emotion induction (M=27.91, SD=9.175) with a p-value of 0.000, t(22)=-4.841.

These findings agree with the literature, which has demonstrated that negative affective experiences like frustration and sadness can be effectively induced by emotion induction paradigms (Starcke *et al.*, 2021). Moreover, the research implemented by Chen in 2023, concluded that negative affective experiences such as sadness and anger were associated with increased subjective intensity and authenticity of emotions, thus, corroborating the idea that elevating sadness can be an efficient way to increase negative affective experiences.

An independent samples t-test was utilized to compare the differences in changes in walking speed of Pre-emotion induction to Post-emotion induction difference between the Anger and Sadness groups. The results showed no statistically significant difference between the Anger group (M = −0.1587, SD = 0.42491) and the Sadness group (M = −0.1878, SD = 0.26092), t(45) = 0.281, p = 0.780. Both groups showed a statistically significant difference in walking speed, which implies that both groups' walking speed was reduced post-emotion induction. However, the lack of a significant difference between the groups indicates that the extent of slowing did not differ significantly between anger and sadness. Even if the two emotions are theoretically different and were induced by different methods, their

Table 8: Independent Samples T-test

Pre-emotion induction - Post- emotion induction Walking Speed difference						
Emotion	**Mean**	**SD**	**t**		**df**	**p-value**
Anger		-0.1587 0.42491 0.281		45		0.780
Sadness	-0.1878	0.26092 0.281	45		0.780	

Note: Mean is calculated as Post-induction walking speed - Pre-induction walking speed effect on walking speed did not produce a statistically significant difference. This result suggests that anger and sadness had a similar impact on walking behavior, thus resulting in the same level of reduction in walking speed.

This finding is in line with previous studies of gait-based emotion recognition, where negative emotions such as anger and sadness are also correlated due to being characterized by overlapped appearance in relation to motion cues (Bisogni *et al.*, 2024; Xu *et al.*, 2022).

Table 9: Independent Samples T-test

Pre-emotion induction - Post- emotion induction Positive Affect (PA) difference					
Emotion	**Difference**	**SD**	**t**	**df**	**p-value**
Anger Group	-4.63	6.426	-2.669	45	0.011
Sadness Group	0.70	7.233	-2.669	45	0.011

Note: Difference is calculated as Post-induction walking speed PA - Pre-induction PA

An independent samples t-test was utilized to compare the changes in Positive Affect of Pre-emotion induction to Post-emotion induction difference between Anger and Sadness groups. The results revealed a statistically significant difference. The Anger group (M=–4.63, SD = 6.426) as compared to the Sadness group (M=0.70, SD=7.233), t(45)= –2.67, p=0.011. Here, the comparison between the two emotion inductions suggests that anger induction led to a significant decrease in Positive Affect as opposed to sadness induction. Hence, the data indicate that the effect of anger in lowering positive emotions was more potent than the effect of sadness.

This assertion is in line with the study of Song, Curtis, and Aragón (2021), who point out that angry expressions, in general, have a stronger impact on affective states than sadness. Several recent studies also lend their support to this view: anger, a high-activation negative emotion, is likely to result in stronger drops in positive affect and more intense affective reactions than a lower-activation negative emotion such as sadness (Pop, Nechita, Miu, & Szentágotai-Tătar, 2025; Chen, 2023).

The independent samples t-test was used to examine the difference of Positive Affect from pre-emotion induction to post-emotion induction between the Anger and Sadness groups. The analysis indicates that the Sum of scores change in Negative Affect for the Anger group and the Sadness group did not differ, with a p-value of 0.981 and a mean of -8.46 and -8.52, and standard deviations of 9.605 and 8.442, respectively. The outcome indicates that the induction of anger and sadness emotion impact equally in reducing Negative Affect. Although the induction of sadness yielded lower scores than the induction of anger, the effect was not statistically significant. The outcome indicates that the explanation of the negative emotions led to relatively equivalent decreases in negative emotions. These findings are also in agreement with those found by Joseph *et al.* (2020), in which, via their meta-analysis, they were able to determine that affective induction techniques, whether it is aiming to induce anger or sadness, are indeed useful in terms of affect manipulation. Therefore, it is safe to say that effectiveness of the emotion induction technique is supported and that indeed, both anger and sadness are able to decrease Negative Affect.

Table 10: Independent Samples T-test

Pre-emotion induction - Post-emotion induction Negative Affect (NA) difference					
Emotion	**Difference**	**SD**	**t**	**df**	**p-value**
Anger	8.46	9.605	0.024	45	0.981
Sadness	8.52	8.442	0.024	45	0.981

Note: Difference is calculated as Post-induction walking speed NA - Pre-induction NA

CONCLUSION

The primary results demonstrated the influence of anger and sadness emotions on female walking speed, Positive Affect, and Negative Affect. At first, the findings indicate that both the emotion-induction procedures were effective in altering the emotional states and also had an impact on walking behavior. However, the extent and the direction of change of these differed for the emotional and behavioral measures.

Interestingly, it was assumed that anger, as a high-arousal emotion, would lead to increased walking speed. Anger Participants, however, after the induction, walked significantly slower. Similarly, the Sadness group also showed a decrease in walking speed. The reduction in the walking speed of the Anger group may, in fact, be partially due to the emotion-induction materials used in this study. In addition, a separate analysis of independent samples showed that the rate of decrease in walking speed in both the Anger and Sadness conditions was not significantly different. Therefore, it can be inferred that both emotions exerted a similar influence on walking rate. Moreover, Anger and Sadness induction differed in their effects on Positive Affect. Anger induction was successful in significantly decreasing Positive Affect; however, no significant difference in Positive Affect was found after the sadness induction. Anger was the only emotion that significantly reduced positive affect, but sadness caused a drop in walking speed, and both emotion groups increased in negative affect. The experiment's overall findings indicate that affective changes were more strongly associated with the particular emotion than behavioral changes.

To sum up, the results obtained support the idea that there are intricate relations between emotion, affect, and movement. The future studies might look at utilizing more robust or scientifically based emotion-induction. Additionally, incorporating camera-based heart rate monitoring could provide supplementary physiological data to support behavioral findings. These refinements may strengthen the interpretation of results in future research.

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REFERENCES

Alvarez, M., Stout, A., Fisanick, L., Tang, C. F., Wilson, D. G., Gray, L., & Kang, G. E. (2025). Gait variability and spatiotemporal parameters during emotion-induced walking: Assessment with inertial measurement units. *Sensors, 25*(19), 6222. https://doi.org/10.3390/s25196222

Anish Homagain., & Karen A. Ehgoetz Martens. (2023). Emotional states affect steady state walking performance. *PLOS ONE, 18*(9), e0284308. https://doi.org/10.1371/journal.pone.0284308

Andy Field. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications Ltd.

Bisogni, C., Cimmino, L., Nappi, M., Pannese, T., & Pero, C. (2024). Walk as you feel: Privacy preserving emotion recognition from gait patterns. *Engineering Applications of Artificial Intelligence, 128,* 107565. https://doi.org/10.1016/j.engappai.2023.107565

Chen, K. (2023). Does being angry feel authentic? A test of how affective valence impacts state authenticity. *Motivation and Emotion, 47*(1), 77–87. https://doi.org/10.1007/s11031-023-10026-1

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications.

D. Fernández-Pérez., B. Navarro-Bravo., A. Toledano-González., J. J. Ricarte., J. M. Latorre-Postigo., & L. Ros. (2025). Emotional impact of using different sensory modalities for autobiographical activation: A systematic review and meta-analysis. *Frontiers in Psychology, 16,* 1574855.

Dong, Z., Wang, G., Lu, S., Li, J., Yan, W., & Wang, S. J. (2022). Spontaneous facial expressions and micro-expressions coding: From brain to face. *Frontiers in Psychology, 12,* 784834. https://doi.org/10.3389/fpsyg.2021.784834

Fidel, M. B. C. C., Gonzalez-Suarez, C. B., dela Cruz, A. R., Roxas, E. A., Fernandez, M. R., & Cruz, C. G. (2021). Spatiotemporal parameters of gait in Filipino adults using the 3-D motion capture system. *Journal of Medicine, University of Santo Tomas, 5*(2), 744–754.

Frederick J. Gravetter., Larry B. Wallnau., Lori-Ann B. Forzano., & James E. Witnauer. (2021). *Essentials of statistics for the behavioral sciences* (10th ed.). Cengage Learning.

Gharra, A., Cheshin, A., & Krasovsky, T. (2025). Anger affects behavioral and physiological correlates of dual- task walking and texting in young adults. Gait & Posture. https://doi.org/10.1016/j.gaitpost.2025.104123

Givon, E., Berkovich, R., Oz-Cohen, E., Rubinstein, K., Singer-Landau, E., Udelsman-Danieli, G., & Meiran, N. (2023). Are women truly "more emotional" than men? Sex differences in an indirect model-based measure of emotional feelings. *Current Psychology, 42*(36), 32469–32482. https://doi.org/10.1007/s12144-022-04227-z

Joseph, D. L., Chan, M. Y., Heintzelman, S. J., Tay, L., Diener, E., & Scotney, V. S. (2020). The manipulation of affect: A meta-analysis of affect induction procedures. *Psychological Bulletin, 146*(4), 355–375. https://doi.org/10.1037/bul0000224

Kadoya, Y., Watanapongvanich, S., & Khan, M. S. R. (2021). How is emotion associated with driving speed? A study on taxi drivers in Japan. *Transportation Research Part F: Traffic Psychology and Behaviour, 79,* 205–216. https://doi.org/10.1016/j.trf.2021.04.007

Khalil, R., Frühholz, S., & Godde, B. (2025). Emotion induction modulates neural dynamics related to the originality of ideational creativity. *Human Brain Mapping, 46*(4), e70182. https://doi.org/10.1002/hbm.70182

Léonard, G., Vidal, P. P., & Lelard, T. (2025). Influence of psycho-emotional factors on motor control: Cerebral mechanisms and behavioral responses underlying (motiv) action. *Frontiers in Human Neuroscience, 19,* 1572614. https://doi.org/10.3389/fnhum.2025.1572614

Lin, Y., Ding, H., & Zhang, Y. (2021). Unisensory and multisensory Stroop effects modulate gender differences in verbal and nonverbal emotion perception. *Journal of Speech, Language, and Hearing Research. Advance online publication.* https://doi.org/10.1044/2021_JSLHR-20-00338

Manfredi, L., López-Pérez, B., Gregori, F., Lundie, D., Shannon, L., & Zuffianò, A. (2025). The inertia of anger and sadness among adolescents and adults: The role of self-efficacy in regulating negative emotions. *European Journal of Personality, 39*(3), 292–304. https://doi.org/10.1002/per.2293

Martínez-Morato, S., Feijoo-Cid, M., Galbany-Estragués, P., Fernández-Cano, M. I., & Arreciado Marañón, A. (2021). Emotion management and stereotypes about emotions among male nurses: A qualitative study. *BMC Nursing, 20*(1), 114. https://doi.org/10.1186/s12912-021-00641-z

Medvedev, O. N., Roemer, A., Krägeloh, C. U., Sandham, M. H., & Siegert, R. J. (2023). Enhancing the precision of the Positive and Negative Affect Schedule (PANAS) using Rasch analysis. *Current Psychology, 42*(2), 1554–1563. https://doi.org/10.1007/s12144-021-01556-3

Monno, Y., Nawa, N. E., & Yamagishi, N. (2024). Duration of mood effects following a Japanese version of the mood induction task. *PLOS ONE, 19*(1), e0293871. https://doi.org/10.1371/journal.pone.0293871

Northoff, G. (2024). Beyond mood—Depression as a speed disorder: Biomarkers for abnormal slowness. *Journal of Psychiatry and Neuroscience, 49*(5), E357–E366. https://doi.org/10.1503/jpn.230102

Pang, C., Li, W., Zhou, Y., Gao, T., & Han, S. (2023). Are women more empathetic than men? Questionnaire and EEG estimations of sex/gender differences in empathic ability. *Social Cognitive and Affective Neuroscience, 18*(1), nsad008. https://doi.org/10.1093/scan/nsad008

Pasanting, G. J., Barquilla, M. B., Malicuban, E. V., & Aberilla, O. (2023, June). Emotional attributes of MSU- IIT's science students: Basis for science programs and mental health enhancement. In *Proceedings of the 8th ACPES International Conference* (p. 178). European Alliance for Innovation. https://doi.org/10.5281/zenodo.1234567

Pop, G. V., Nechita, D.-M., Miu, A. C., & Szentágotai-Tătar, A. (2025). Anger and emotion regulation strategies: A meta-analysis. *Scientific Reports, 15,* Article 6931. https://doi.org/10.1038/s41598-025- 91646-0

Randhavane, T., Bhattacharya, U., Kabra, P., Kapsaskis, K., Gray, K., Manocha, D., & Bera, A. (2022, November). Learning gait emotions using affective and deep features. In *Proceedings of the 15th ACM SIGGRAPH Conference on Motion, Interaction and Games* (pp. 1–10). https://doi.org/10.1145/3557758.3560321

Riemer, H., Joseph, J. V., Lee, A. Y., & Riemer, R. (2023). Emotion and motion: Toward emotion recognition based on standing and walking. *PLOS ONE, 18*(9), e0290564. https://doi.org/10.1371/journal.pone.0290564

Roemer, A., & Medvedev, O. N. (2025). Positive and negative affect schedule (PANAS). In *Handbook of assessment in mindfulness research* (pp. 1863–1873). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-22196-0_82

Scott, Z., O'Curry, S., & Mastroyannopoulou, K. (2022). The impact and experience of debriefing for clinical staff following traumatic events in clinical settings: A systematic review. *Journal of Traumatic Stress, 35*(1), 278–287. https://doi.org/10.1002/jts.22736

Shiota, M. N., Sauter, D. A., & Desmet, P. M. (2021). What are 'positive' affect and emotion? *Current Opinion in Behavioral Sciences, 39,* 142–146. https://doi.org/10.1016/j.cobeha.2021.04.004

Shirai, M., & Kato, A. (2025). What does it mean for sadness to heal? A systematic review. *American Journal of Hospice and Palliative Medicine, 42,* 10499091251353203. https://doi.org/10.1177/10499091251353203

Snyder, S. J., Bell, E. M., Oh, S., Ehsani, H., Kambhamettu, A., Kim, B., & Shim, J. K. (2025). Walking while acting sad and happy emotions influences risk factors of knee osteoarthritis. *Journal of Applied Biomechanics, 41*(3), 233–240. https://doi.org/10.1123/jab.2025-0032

Song, S. Y., Curtis, A. M., & Aragón, O. R. (2021). Anger and sadness expressions situated in both positive and negative contexts: An investigation in South Korea and the United States. *Frontiers in Psychology, 11,* 579509. https://doi.org/10.3389/fpsyg.2020.579509

Starcke, K., Antons, S., Trotzke, P., & Brand, M. (2021). Cue-reactivity in behavioral addictions: A meta- analysis and methodological considerations. *Neuroscience & Biobehavioral Reviews, 124,* 18–34. https://doi.org/10.1016/j.neubiorev.2021.01.013

Toews, A. J., Martin, D. E., & Chernomas, W. M. (2021). Clinical debriefing: A concept analysis. *Journal of Clinical Nursing, 30*(11–12), 1491–1501. https://doi.org/10.1111/jocn.15636

Turan, N. (2021). An investigation of the effects of an anger management psychoeducation programme on psychological resilience and affect of intensive care nurses. *Intensive and Critical Care Nursing, 62,* 102915. https://doi.org/10.1016/j.iccn.2020.102915

Ursu, A., & Turliuc, N. M. (2025). Effects of the simultaneous use of acceptance and cognitive reappraisal on anger, positive and negative affect after experimental anger elicitation. *Psihologija, 56*(1), 26–36. https://doi.org/10.2298/PSI240805026U

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063

Xu, S., Fang, J., Hu, X., Ngai, E., Wang, W., Guo, Y., & Leung, V. C. (2022). Emotion recognition from gait analyses: Current research and future directions. *IEEE Transactions on Computational Social Systems, 11*(1), 363–377. https://doi.org/10.1109/TCSS.2022.3147682