

UNIVERSITY OF TWENTE.

**The Relation Between Body Image, Self-Esteem and Substance Abuse: a
Cross-Sectional Study**

Alicja Majer

s2367831

Supervisors: Dr. Jorge Piano Simoes and Dr. Stans Drossaert

Presented as a part of the requirement for an award within the Postgraduate Modular Scheme
at the University of Twente.

March 2024

Declaration

This Psychology Thesis is the product of my own work and does not infringe ethical principles set out by the University's Handbook for Research Ethics.

I declare that no language generation tools were utilized in the development of written works associated with this research. The purpose of this study was to uphold the authenticity and uniqueness of the generated textual content.

In submitting this thesis, I agree that it may be made available for reference via any media by any and all means now known or developed in the future at the discretion of the University.

Abstract

Background: Substance abuse is a significant public health issue, and understanding its underlying factors is crucial for effective prevention and intervention. While previous studies have explored the relationships between substance abuse, body image, and self-esteem, there's a notable gap in understanding these connections among adults, particularly regarding gender differences. Most existing research focuses on adolescents, leaving a void in the literature. This study seeks to address this gap by investigating these associations within an adult population. **Objective:** This research aims to investigate how body image, self-esteem, and gender influence substance abuse among adults. Specifically, it seeks to understand the relationship between these factors and identify any moderating effects, such as negative body image and gender, on the likelihood of engaging in substance abuse. **Methods:** A sample of 179 participants recruited from social media platforms participated in the study, including 91 females, 87 males, and 1 non-binary individual, with ages ranging from 18 to 59 ($M = 28.07$, $SD = 7.45$). Data were collected through self-report questionnaires assessing body image, self-esteem, and substance abuse behaviors. The analysis employed multiple regression to investigate the direct associations between body image, self-esteem, and substance abuse behaviours. Additionally, a moderation analysis using the MedMod module was conducted to explore whether gender moderated the relationships between self-esteem and substance abuse, as well as between body image and substance abuse. **Results:** Body Image and Substance Abuse: A significant negative relationship was found between body image satisfaction (BISS) and substance abuse (DAST). Self-Esteem and Substance Abuse: Self-esteem (RSES) demonstrated a significant negative association with substance abuse. Interaction Effect: The combined model including both body image and self-esteem explained 56% of the variance in substance abuse. Both body image and self-esteem were

significant predictors, and the study revealed a significant positive interaction effect, indicating that lower levels of body image satisfaction and self-esteem are associated with heightened tendencies toward substance abuse. Moreover, the combined impact of low body image satisfaction and low self-esteem was found to amplify their influence on substance abuse tendencies. In essence, the findings suggest that the coexistence of diminished body image satisfaction and self-esteem exacerbates the risk of engaging in substance abuse behaviours. **Gender Effects:** Moderation analysis revealed that gender did not significantly moderate the relationship between body image satisfaction and substance abuse, nor between self-esteem and substance abuse. However, an intriguing trend emerged, indicating that females displayed a slightly heightened vulnerability to substance abuse when influenced by negative body image and lower self-esteem compared to males. **Conclusion:** This study discloses meaningful correlations among body image satisfaction, self-esteem, and substance abuse in adults. While gender did not exhibit a significant moderating effect on these relationships, females demonstrated a slightly heightened susceptibility to substance abuse when influenced by poorer body image and lower self-esteem compared to males. These findings emphasize the importance of tailored interventions targeting substance abuse, considering gender-specific vulnerabilities and the role of body image and self-esteem.

Acknowledgements

First and foremost, I would like to thank my Thesis supervisor, Dr. Jorge Piano Simoes for his continuous help, support, and guidance throughout my Thesis.

Moreover, I would like to thank my Mom and my Dad for their unconditional love, supporting me emotionally and always believing in me. Even thousand miles away you were there on the other end of the phone whenever I needed you and had any questions or doubts.

I would like to thank my boyfriend Dani, for all the support, keeping me on track, focussed and determined to do my best and making me laugh in difficult situations.

Many thanks to all the people who participated in the research, without you it would not be possible.

Lastly, I would like to thank all of my friends for support, faith in me and the motivation that they gave me to accomplish my dissertation. You all helped me calm through the process and clear my head whenever I started to overthink and doubt in myself.

Table of Contents

Declaration.....	1
Abstract.....	2
Acknowledgements.....	4
List of Tables and Figures.....	6
Introduction.....	Error! Bookmark not defined.
Method.....	13
Results.....	19
Discussion.....	29
References.....	38
Appendices.....	46

List of Tables and Figures

Table 1. Descriptive Results and Questionnaire Scores for Participant Characteristics: Age, Body Image Satisfaction, Self-Esteem, and Substance Abuse, Separated by Gender (Total, Females, and Males).	20
Table 2. Regression Analysis for Hypothesis 1: Predicting Substance Abuse (DAST) from Body Image Satisfaction (BISS).	21
Table 3. Regression Analysis for Hypothesis 2: Predicting Substance Abuse (DAST) from Self-Esteem (RSES).	22
Table 4. Regression Analysis for Hypothesis 3: Predicting Substance Abuse (DAST) from Body Image Satisfaction (BISS), Self-Esteem (RSES), and Interaction (BISS * RSES).....	23
Table 5. Simple Slope Estimates- Body Image moderator between RSES and DAST.....	24
Table 6. Moderation Estimates- Gender as a moderator between RSES and DAST	25
Table 7. Simple Slope Estimates- Gender as a moderator between RSES and DAST	25
Table 8. Moderation Estimates- Gender as a moderator between BISS and DAST	27
Table 9. Simple Slope Estimates- Gender as a moderator between BISS and DAST.....	27
Table 10. Correlation Table- Substance abuse (DAST) and the independent variables- Body satisfaction (BISS) and Self-esteem (RSES) for the total group and separately for males and females.	29
Figure 1	11
Figure 2	12
<i>Figure 3. Moderation plot- Body image moderating relationship between self-esteem and substance abuse.</i>	<i>23</i>
Figure 4. Moderation plot for Hypothesis 4- Gender as a moderator between RSES and DAST.....	26
Figure 5.. Moderation plot for Hypothesis 4- Gender as a moderator between BISS and DAST.....	28

The Relation Between Body Image, Self-Esteem and Substance Abuse: a Cross-Sectional Study

Substance abuse refers to the harmful use of illegal substances leading to negative physical, psychological and social effects (Stevens et al., 2014). It remains a pressing concern, for health impacting both individuals and society at large. Recent studies indicate a growing pattern of substance abuse and its associated issues (Nahvizadeh et al., 2014). Substance abuse refers to problematic substance use that can result in harm while addiction or substance use disorder represents a condition characterized by compulsive drug seeking behaviour and significant changes in behaviour and brain function (American Psychiatric Association, 2014). Abused substances include opioids (like heroin or prescription painkillers such as oxycodone) stimulants (such, as cocaine or amphetamines) hallucinogens (like LSD or magic mushrooms) and sedatives (e.g., benzodiazepines) (Wang & Hoyte, 2021).

This problem goes beyond well-being; it also impacts family dynamics, public safety and the economy as a whole (Lander et al., 2013). Substance abuse significantly affects functioning by impeding ones ability to maintain relationships work effectively and take care of oneself (Roberts et al., 2019). Moreover, there is evidence linking substance abuse and criminal activity which raises the likelihood of both acts of violence and self-harm (Brown et al., 2020). Previous studies highlight the importance of implementing approaches to tackle substance abuse (Majcherczyk & Glowik, 2011). As societal norms continue to evolve, it becomes increasingly crucial to investigate how substance abuse intersects with body image and self-esteem among adults. These discoveries shed light on important dynamics that can inform prevention and intervention strategies.

The Influence of Self-Esteem on Substance Abuse

Self-esteem -defined as a person's sense of self-worth- plays a role, in ones well-being representing their sense of value and self-acceptance (Branden, 1995). Various factors, such as upbringing, experiences, relationships, achievements, societal norms and cultural influences can influence self-esteem. Positive experiences and supportive relationships tend to nurture levels of self-esteem while negative experiences and criticism can contribute to lower levels (Orth & Robins, 2014). Studies reveal a link between self-esteem and substance abuse, where it was found that negative self-perception at age 19 predicted relative increases in substance use problems at age 27. (Yan et al., 2020). Individuals with low self-esteem may resort to drugs as a way to cope with emotions and feelings of insecurity (Lee et al., 2018). Enhancing self-esteem acts as a measure against substance abuse (Yan et al., 2020). Contemporary research emphasizes the importance of recognizing the nature of self-esteem and its interaction with substance abuse. Recent studies highlight the significance of interventions that build resilience approaches and comprehensive mental health programs in addressing self-esteem issues as part of an overall strategy, for preventing substance abuse (Livingston, 2023; Flora, 2022).

The Role of Body Image in Substance Abuse

Body image, the perception of one's physical appearance, is a significant factor influencing self-esteem. satisfaction with one's body can lead to low self-esteem and, subsequently, substance abuse (Sagrera et al., 2022). Negative body image is associated with the desire to control one's weights (Carraça et al., 2011). This can contribute to the development of eating disorders, which are commonly associated with substance abuse (Wolfe & Maisto, 2000).

Research suggests that dissatisfaction with body image and low self-esteem interact in ways influencing the likelihood of substance abuse. This implies that addressing the issue of concern must go beyond focusing on substance abuse. Individuals who hold unfavourable views about their bodies may adopt substance use as a means of managing feelings of inadequacy or to seem accepted in social circles. Consequently, it is crucial to tackle body image concerns, self-worth challenges and any associated psychological disorders for preventing and addressing drug misuse complications. To safeguard those vulnerable individuals from harm's way requires devising coping mechanisms, fostering positive body image attitudes among them through self-acceptance advocacy while encouraging the pursuit of professional support (Nieri et al., 2005).

Consistent research affirms that negative body image functions as a moderator, strengthening the connection between self-esteem and substance abuse. Prior investigations have upheld the belief that in this relationship, body image plays a significant role. Multiple studies consistently indicate lower levels of self-esteem are correlated with an increased likelihood of turning to substances for coping purposes (Boden et al., 2014; Trucco et al., 2016). Furthermore, when combined with low self-esteem, negative body image seemingly amplifies its effect on inducing substance abuse. According to a study by Karazsia et al. (2017), feeling dissatisfied about one's body may prompt heightened distress, leading to the use of substances for self-treatment purposes. Additionally, these results align with earlier research conducted by Soponaru et al. (2016) that delved into the dissimilarities in coping techniques between genders. Their investigation underscored how body image impacts coping mechanisms and suggested possible differences amongst genders. This emphasizes the significance of exploring reciprocal interplays between self-esteem, body image, and substance abuse - especially in relation to gender-specific context.

Gender effects

The role of gender is significant when it comes to substance abuse, body image and self-esteem. Research consistently shows that substance abuse rates vary between genders with factors influencing how prevalent it is and how it manifests (Greenfield et al., 2018). For example, studies point out that males tend to have higher rates of substance abuse with alcohol and illicit drugs compared to females (Wilsnack et al., 2009). On the other hand, females may face vulnerabilities, like being more susceptible to certain substances and having different motivations for using them (Brady & Randall, 1999; Wilsnack et al., 2009). The societal expectations related to the way ones bodies should look can have an impact, on how females see themselves leading to low self-esteem and negative body image. As a result, some females may turn to substance abuse as a way to cope with these pressures and try to fit in society standards (Fulton et al., 2012). It is crucial to understand how gender intersects with self-esteem and substance abuse. Gender norms and societal expectations significantly impact self-esteem, which in turn leads to variations in coping mechanisms and patterns of substance use (Erol & Karpyak 2015). For instance, societal pressures related to appearance and achievement can affect self-esteem differently for males and females. This influence plays a role in their vulnerability to using substances as a way of coping (Storbjörk, 2011). The relationship, between body image, gender and substance abuse adds another layer of complexity. Society often sets beauty standards, for both men and women which influence how attractiveness is perceived and ones sense of self-worth (Tiggemann & Slater 2013). Studies indicate that females may face body image dissatisfaction, which can lead to pathways towards substance abuse (Karazsia et al., 2017).

While most research focuses on adolescents and the connection between self-esteem, body image and substance abuse this study aims to fill a gap by examining these dynamics among adults. The goal of this research is to gain insights into the relationship between body image, self-esteem and substance abuse in adults. By understanding these dynamics interventions

can be customized effectively to address and prevent substance abuse, within this population. In this research it was anticipated that gender may moderate the relationship between self-esteem, body image, and substance use, with females potentially showing a stronger association between negative body image, low self-esteem, and substance abuse compared to males.

Hypotheses

Based on the literature explored, it is hypothesised that:

H1: There is a there is a negative association between body image and substance abuse, such that individuals with more negative body image are more likely to engage in substance abuse.

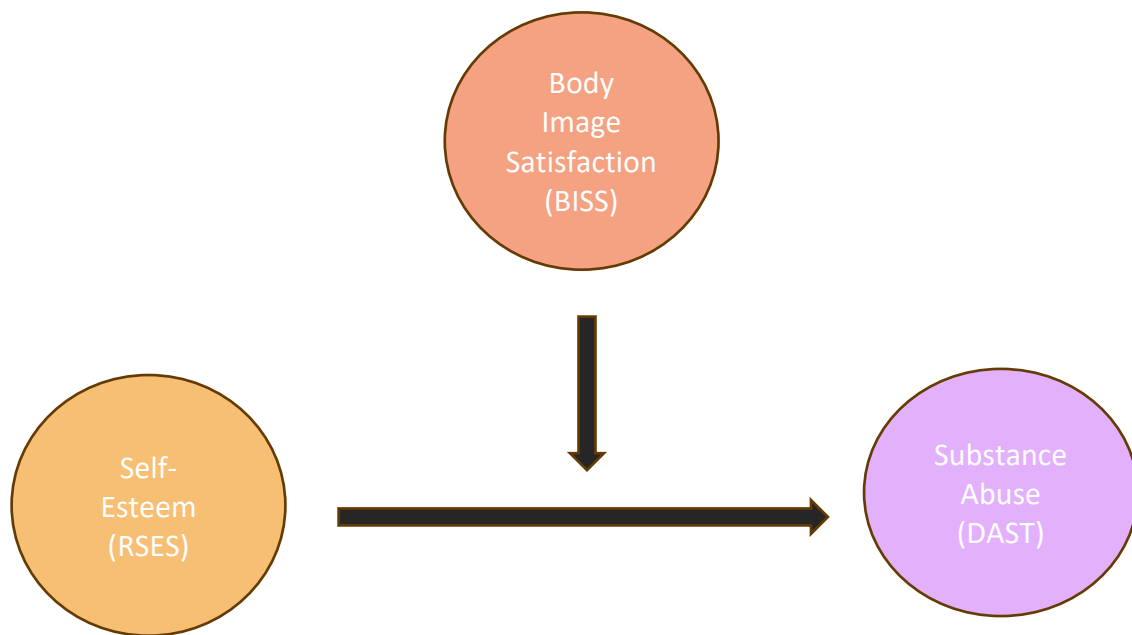
H2: There is a significant negative association between self-esteem and substance abuse, indicating that individuals with higher self-esteem are less likely to engage in substance abuse.

H3: Negative body image moderates the relationship between self-esteem and substance abuse, such that the negative impact of low self-esteem on substance abuse is stronger among individuals with more negative body image. (see figure 1)

H4: Gender moderates the relationship between self-esteem and substance abuse, as well as between body image satisfaction and substance abuse. With expectations that the associations between self-esteem and substance abuse as well as body image satisfaction and substance abuse will be stronger in females compared to males. (See figure 2)

Figure 1

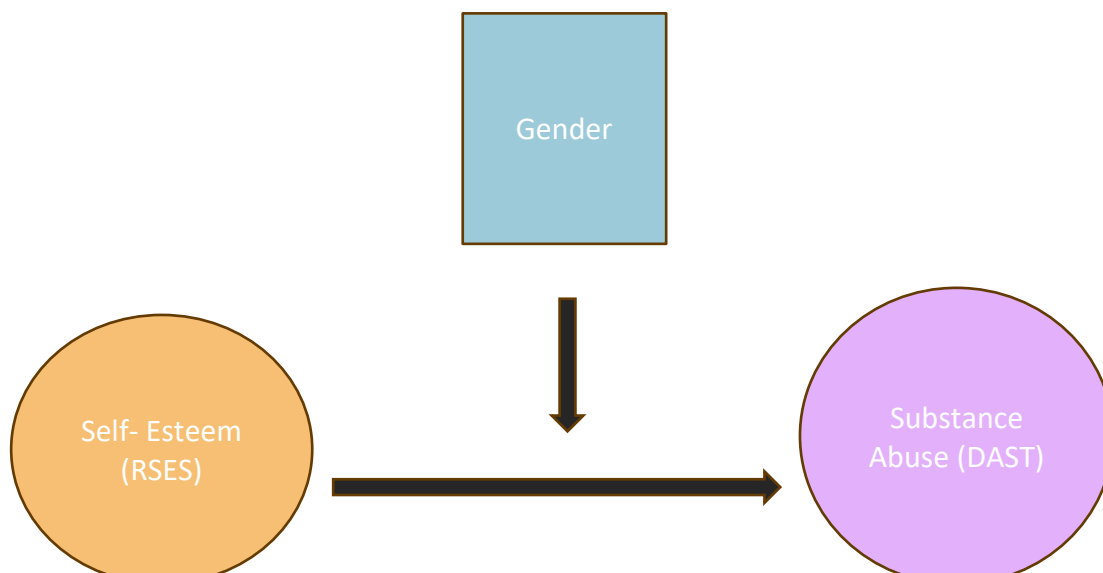
Moderation Graph for Hypothesis 3



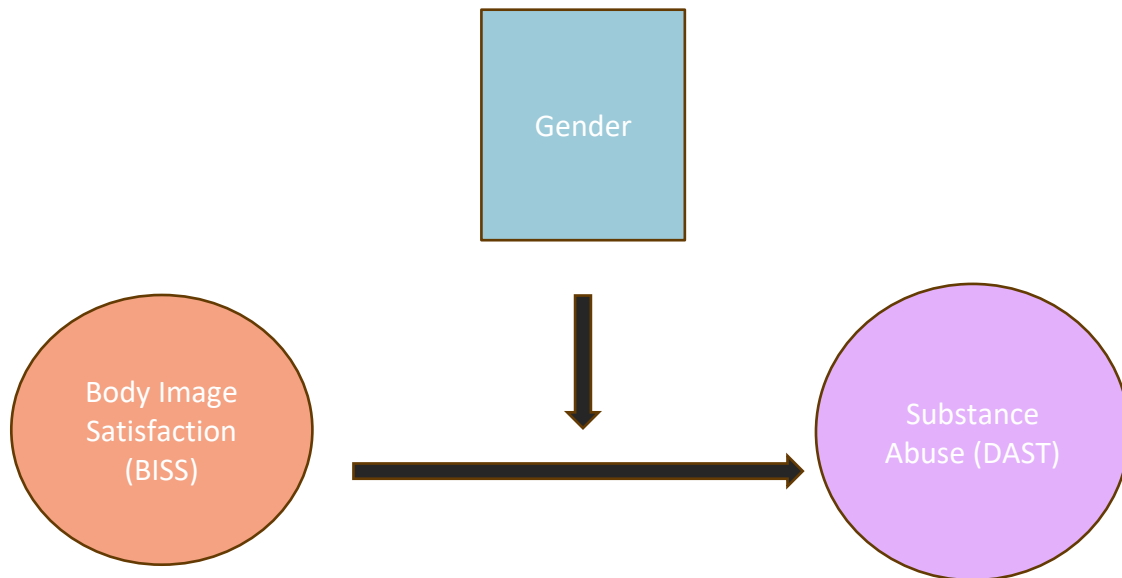
Note. Negative body image moderates the relationship between self-esteem and substance abuse, such that the negative impact of low self-esteem on substance abuse is stronger among individuals with more negative body image.

Figure 2

Moderation Graph 1 & Graph 2 for Hypothesis 4



1. *Note.* Gender moderates relationship between self-esteem and substance abuse.



2. *Note.* Gender moderates relationship between body image and substance abuse.

Method

Design

This study employed a correlational research design to scrutinize the relationships among body image, self-esteem, and substance abuse in the adult population. The research utilized a convenience sample strategy, recruiting participants through social media platforms.

Participants and procedures

A total of 179 participants, with diverse gender identities (91 females, 87 males, 1 non-binary), were recruited from the general public. The participants' ages ranged from 18 to 59,

with a mean age of 28.07 years ($SD = 7.45$). While this study employed an opportunity sampling method, chosen for its convenience and accessibility, it is important to acknowledge that this method may introduce some bias due to its non-random nature.

Participants were primarily recruited through online advertisements posted on various social media platforms, including Facebook pages, Reddit pages, as well as student dissertation and survey Facebook groups. The recruitment took place between 14.04.2023 to 20.05.2023. Potential participants were directed to the questionnaires through these online platforms. To uphold ethical standards, participants were fully informed about the research, including any potential side-effects, and provided explicit informed consent. The consent process involved a clear explanation of the study's purpose, procedures, and any foreseeable risks. Participants were assured that their involvement was entirely voluntary, and they were made aware of their right to withdraw at any stage without facing consequences. Consent was obtained before the commencement of the study, and the records were securely stored to ensure confidentiality. This ensured that participants were well-informed, their consent was voluntary, and their rights were respected throughout the research process. This research has been approved, with number 230365, by the BMS Ethics Committee.

In the absence of specific effect size data from existing literature, we assumed a medium effect size. This assumption was derived from Cohen's (1992) guidelines, which recommend a sample size of 180 participants for a power of 0.80 and a significance level of 0.05. This sample size of 179 falls slightly below this recommendation. In the data analysis and interpretation, any potential implications arising from this sample size will be addressed.

Upon clicking the provided link, potential participants were directed to an information sheet (See Appendix A) that comprehensively explained the study's purpose and procedures. To participate, individuals were required to complete a consent form (See Appendix B) affirming their willingness to take part. Each participant in the study accessed the survey

through Qualtrics XM (qualtrics.com) using an electronic device of their choice, including laptops, smartphones, or desktop computers. Participants were presented with instructions above each scale to guide them on how to accurately complete the questionnaires. Debriefing: Following their participation, each participant received a thorough debriefing (See Appendix C) that elucidated the study's objectives and the reasons for their involvement. The entire survey process typically took between 10 to 15 minutes to complete. Participation in the research was entirely anonymous and voluntary. Each participant held the right to withdraw their data at any point during the study, with instructions provided on how to do so (by emailing the unique identifier generated by the participant, which consisted of the first three letters of their maiden mother's name followed by the first two digits of their date of birth).

Importantly, participants were advised to seek support from medical professionals if they experienced any distress or emotional impact as a result of their participation in the study. Given the sensitive nature of the research topic, participants were also provided with the contact information for Mind Korrelatie, a national organization offering anonymous, professional, psychological, and psychosocial help. This support was available through both telephone and online means, ensuring that participants had access to resources for addressing any emotional or psychological concerns stemming from their participation.

Instruments/Questionnaires

The Drug Abuse Screening Test (DAST) (Skinner, 1982) is a structured instrument designed to assess drug use and abuse. First developed in 1982 by Harvey Skinner at York University, this questionnaire is highly valuable for practitioners as it assists in early diagnosis, personalized treatment planning, and therapy monitoring. The DAST is designed for quick self-administration, typically taking only about 2 minutes to complete due to its concise set of 10 items. The DAST questions inquire about an individual's involvement with

drugs, excluding alcoholic beverages, over the past 12 months. "Drug abuse" in this context encompasses two main elements: (1) the excessive use of prescribed or over-the-counter pharmaceuticals, and (2) nonmedical use of substances, including but not limited to cannabis, solvents, tranquilizers, barbiturates, cocaine, stimulants, hallucinogens, and opioids. The scoring involves awarding one point for each "yes" response to questions, except for question 3, which receives a point for a "no" answer. Sample questions from the scale are as follows: "Have you used drugs other than those required for medical reasons?" and "Have you neglected your family because of your use of drugs?". In the scoring of the DAST questionnaire, participants receive 2 points for each "Yes" response and 1 point for each "No" response for questions 1 to 2, 4 to 10. However, for question 3, a "Yes" response is scored as 1 point, and a "No" response is scored as 2 points. This scoring system is employed to calculate a total score for each participant, with higher scores potentially indicating a greater risk of drug abuse or dependence.

Each item of DAST questionnaire pertains to an individual's involvement with substances other than alcohol, encompassing non-medical drug use and excessive use of prescribed medications over the past 12 months. By excluding alcohol and tobacco, the DAST aims to provide a focused evaluation of drug abuse that goes beyond commonly consumed legal substances. It concentrates on substances that are often associated with more severe dependence and negative consequences, such as illicit drugs and prescription medications. The DAST can be administered in clinical settings or remotely, with written instructions ensuring uniform understanding and consistent responses among patients. Cronbach's alpha was computed for the DAST scale to measure its internal consistency, producing an alpha value of 0.87 for the current study.

The Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965) serves as a tool for assessing self-esteem. While initially designed to gauge self-esteem among high school pupils, this scale has been widely adopted for use across diverse populations, including adults (Wood et al., 2021). The RSE comprises 10 items aimed at evaluating an individual's overall self-worth by tapping into both positive and negative thoughts about oneself. The scale is commonly regarded as one-dimensional. Respondents are asked to rate their agreement with each item on a 4-point Likert scale, ranging from "Strongly Disagree" (1 point) to "Strongly Agree" (4 points). It is noteworthy that items 2, 5, 6, 8, and 9 are reverse scored. To calculate the total score, the points for all ten items are summed, thereby creating a continuous scale of scoring. Higher scores on the RSES indicate a higher level of self-esteem. The internal consistency of the RSES scale was evaluated using Cronbach's alpha, resulting in a coefficient of 0.71 for the current study.

The Body Image States Scale (BISS), introduced by Cash et al. in 2002, is a 6-item self-reported scale used to assess an individual's perception of their body image. Respondents rate their feelings about their physical appearance using a 9-point Likert scale.

Each item on the BISS begins with the phrase "Right now, I feel" and presents a unique range of responses. For instance, item 1 ranges from "Extremely Unsatisfied" (1) to "Extremely Satisfied" (6), while item 4 ranges from "Extremely Physically Appealing" (6) to "Extremely Physically Unattractive" (1). To calculate the BISS score, the average of all items is computed. Notably, half of the items (2, 4, 6) are reverse-scored. Higher scores on the BISS reflect greater satisfaction with one's body. Cronbach's alpha for the BISS scale was calculated to assess its internal consistency, yielding a value of 0.74.

Cronbach's alpha values above 0.70 indicate acceptable internal consistency, suggesting reliable measurement for the BISS (0.74) and RSES (0.71) scales. The DAST scale demonstrated high internal consistency in the current study, with a Cronbach's alpha of 0.87.

Data Analysis

The data analysis for this study was performed using RStudio (version 2023.03.0+386) and Jamovi (version 2.3.28). RStudio is an integrated development environment (IDE) for R, and Jamovi is a tool with a guided user interface, akin to SPSS, running R in the background. Both these platforms were utilized to conduct the statistical analyses, leveraging the functionalities of R. Multiple regression models were employed to investigate the research questions in accordance with four specific hypotheses (H1, H2, H3, and H4), with moderation analysis conducted using the MedMod module in Jamovi for hypothesis 4.

The primary focus of this study was to examine substance abuse. Substance abuse was measured using the Drug Abuse Screening Test (DAST), a widely recognized and validated instrument designed to assess substance abuse behaviours and their severity. The DAST provides a standardized means of quantifying an individual's level of substance abuse.

This study investigated two key independent variables:

Body Image (BISS): Assessed using the Body Image States Scale (BISS), capturing participants' perceptions and satisfaction with their own bodies.

Self-Esteem (RSES): Evaluated through the Rosenberg Self-Esteem Scale (RSES), a well-established tool gauging participants' overall self-esteem and self-worth.

The multiple regression models were designed to examine the relationships between these independent variables (BISS and RSES) and the dependent variable (DAST), as described in Hypotheses 1, 2, 3 and 3. The analysis aimed to determine the extent to which body image and self-esteem were predictive of substance abuse and whether any interaction effects existed between these variables. The analysis also incorporated the moderating effect of

gender, examining how gender influenced the associations between both body image and self-esteem on substance abuse (H4). Moderation analysis was conducted with gender as the moderator to explore potential gender-specific patterns and determine the relationships between the variables (BISS and DAST) and (RSES and DAST), and any interaction effects.

Results

Sample Characteristics

The sample consisted of 179 participants, including 91 females, 87 males, and 1 non-binary individual. Participants' ages ranged from 18 to 59, with a mean age of 28.07. Body image satisfaction scores averaged around 26.85, with females reporting slightly higher satisfaction compared to males. Self-esteem scores averaged approximately 24.76, with females again reporting slightly higher self-esteem compared to males. Regarding substance abuse, the mean score was 14.01, with females reporting slightly higher substance abuse compared to males (See Table 1.) The substance abuse scores are relatively high, indicating a notable level of substance use within the sample. Similarly, the body image satisfaction scores, particularly for males, are relatively lower compared to the ideal range, suggesting potential dissatisfaction with body image when compared to established norms or ideal levels.

After conducting independent samples t-tests, it was found that there were no significant differences in self-esteem scores ($p = 0.441$) or body image satisfaction scores ($p = 0.559$) between males and females. However, a statistically significant difference was observed in substance abuse scores ($p < 0.001$), indicating that females had significantly higher scores on the Drug Abuse Screening Test compared to males.

Table 1. Descriptive Results and Questionnaire Scores for Participant Characteristics: Age, Body Image Satisfaction, Self-Esteem, and Substance Abuse, Separated by Gender (Total, Females, and Males).

Characteristics	Total (n = 179)	Females (n = 91)	Males (n = 87)	Participants Ranges	Normative Ranges
Age (years)	28.07 (SD = 7.45)	28.35 (SD = 7.60)	27.78 (SD = 7.30)	18-59	-
Body Image Satisfaction					
Mean (BISS)	26.85 (SD = 4.37)	28.39 (SD = 4.37)	24.96 (SD = 4.11)	6-32	0-36
Self-Esteem					
Mean (RSES)	24.76 (SD = 2.26)	25.30 (SD = 2.19)	24.22 (SD = 1.96)	10-30	0-30
Substance Abuse					
Mean (DAST)	14.01 (SD = 3.79)	14.57 (SD = 3.21)	13.65 (SD = 4.10)	10-20	0-20

Hypothesis 1: There is a negative association between body image and substance abuse, such that individuals with more negative body image are more likely to engage in substance abuse.

The linear model used to predict substance abuse (DAST score) with body image satisfaction (BISS score) as the predictor variable showed a statistically significant negative association between body image and substance abuse. The model accounted for a substantial proportion of the variance in substance abuse scores ($R^2 = 0.43$), indicating that 43% of the

differences observed in substance abuse can be explained by differences in body image satisfaction. Additionally, the regression coefficients revealed that as body image satisfaction decreased (indicating more negative body image), the likelihood of substance abuse increased, with each decrease in BISS score corresponding to a decrease in substance abuse score by 0.22. Therefore, the evidence supports the hypothesis that there is a negative association between body image and substance abuse. Hypothesis 1 was confirmed, as the analysis indicates a negative association between body image satisfaction and substance abuse, suggesting that individuals with more negative body image are indeed more likely to engage in substance abuse. (See Table 2.)

Table 2. Regression Analysis for Hypothesis 1: Predicting Substance Abuse (DAST) from Body Image Satisfaction (BISS).

Predictor	B	95% CI	Beta	t	p
Variable					
Body Image Satisfaction (BISS)	-0.22	[-0.26, -018]	-0.66	-10.34	< .001

Hypothesis 2: There is a significant negative association between self-esteem and substance abuse, indicating that individuals with higher self-esteem are less likely to engage in substance abuse.

The linear model used to investigate the relationship between self-esteem (RSES) and substance abuse (DAST) scores demonstrated statistically significant results, explaining approximately half (49%) of the variance in substance abuse. This indicates a strong explanatory capacity in understanding factors associated with individuals' engagement in substance abuse. Furthermore, the regression coefficients revealed that as self-esteem

decreases, the likelihood of substance abuse tends to increase, with each point decrease in self-esteem corresponding to an increase in substance abuse score by 0.35. As such, the findings confirm the hypothesis that individuals with higher self-esteem are associated with lower levels of substance abuse. (See Table 3.)

Table 3. Regression Analysis for Hypothesis 2: Predicting Substance Abuse (DAST) from Self-Esteem (RSES).

Predictor	B	95% CI	Beta	t	p
Variable					
Self-Esteem (RSES)	-0.35	[-0.40, -0.29]	-0.70	-13.05	< .001

Hypothesis 3: Negative body image moderates the relationship between self-esteem and substance abuse, such that the negative impact of low self-esteem on substance abuse is stronger among individuals with more negative body image.

The multiple linear regression analysis conducted to assess the joint influence of body image satisfaction (BISS) and self-esteem (RSES) on substance abuse (DAST) demonstrated significant efficacy. The model accounted for a substantial amount of the variance in substance abuse scores ($R^2 = 0.56$), indicating a robust predictive utility in understanding susceptibility to substance abuse. Furthermore, the analysis revealed noteworthy patterns indicating that a decrease in body image satisfaction (BISS) and self-esteem (RSES) was associated with corresponding increases in substance abuse scores. Additionally, the significant interaction effect between body image satisfaction and self-esteem suggests that the joint impact of these factors contributes uniquely to the observed outcomes in substance abuse. This confirms the hypothesis that negative body image moderates the relationship

between self-esteem and substance abuse, with the negative impact of low self-esteem being stronger among individuals with more negative body image. (See Table 4.)

*Table 4. Regression Analysis for Hypothesis 3: Predicting Substance Abuse (DAST) from Body Image Satisfaction (BISS), Self-Esteem (RSES), and Interaction (BISS * RSES)*

Predictor	B	95% CI	Beta	t	p
Variable					
Body Image Satisfaction (BISS)	-0.40	-0.59, -0.22	-0.26	-4.26	< .001
Self-Esteem (RSES)	-0.61	-0.85, -0.38	-0.59	-5.16	< .001
Interaction (BISS * RSES)	0.01	[4.76e-03, 0.02]	0.21	3.37	< .001

Figure 3. Moderation plot- Body image moderating relationship between self-esteem and substance abuse.

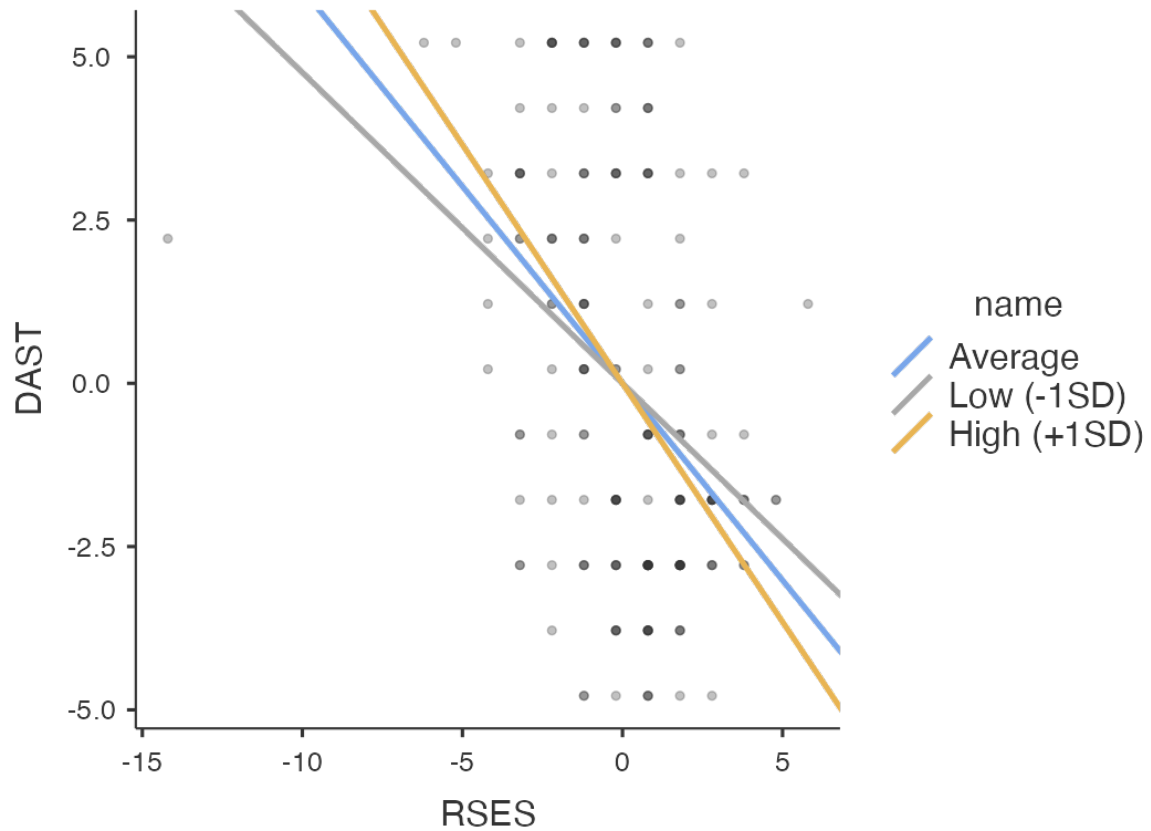


Table 5. Simple Slope Estimates- Body Image moderator between RSES and DAST

	Estimate	SE	Z	p
Average	-0.603	0.0999	-6.04	< .001
Low (-1SD)	-0.476	0.0894	-5.32	< .001
High (+1SD)	-0.731	0.1229	-5.94	< .001

Note. shows the effect of the predictor (RSES) on the dependent variable (DAST) at different levels of the moderator (BISS)

In line with the table of Simple Slope Estimates, the regression analysis revealed significant associations between the predictor variables (BISS and RSES) and the dependent variable (DAST). Specifically, decreases in body image satisfaction (BISS) and self-esteem (RSES) were both linked to increases in substance abuse scores. Additionally, The examination of the combined effects of body image satisfaction (BISS) and self-esteem (RSES) revealed a significant interaction effect. Specifically, the association between self-

esteem (RSES) and substance abuse (DAST) became stronger as individuals scored higher on body dissatisfaction (BISS).

Hypothesis 4: Gender moderates the relationship between self-esteem and substance abuse, as well as between body image satisfaction and substance abuse. With expectations that the associations between self-esteem and substance abuse as well as body image satisfaction and substance abuse will be stronger in females compared to males.

Regarding the relationship between self-esteem (RSES) and substance abuse (DAST), the moderation analysis did not confirm Hypothesis 4. While there was a significant main effect of self-esteem on substance abuse, indicating that higher self-esteem is associated with lower substance abuse, this relationship was not significantly influenced by gender. The lack of a statistically significant interaction effect between self-esteem and gender suggests that the strength of the association between self-esteem and substance abuse does not significantly differ between males and females. (See Table 6.)

Table 6. Moderation Estimates- Gender as a moderator between RSES and DAST

	Estimate	SE	Z	p
RSES	-0.4575	0.0877	-5.216	< .001
Gender	1.6445	0.3984	4.128	< .001
RSES * Gender	-0.0578	0.1636	-0.353	0.724

Table 7. Simple Slope Estimates- Gender as a moderator between RSES and DAST

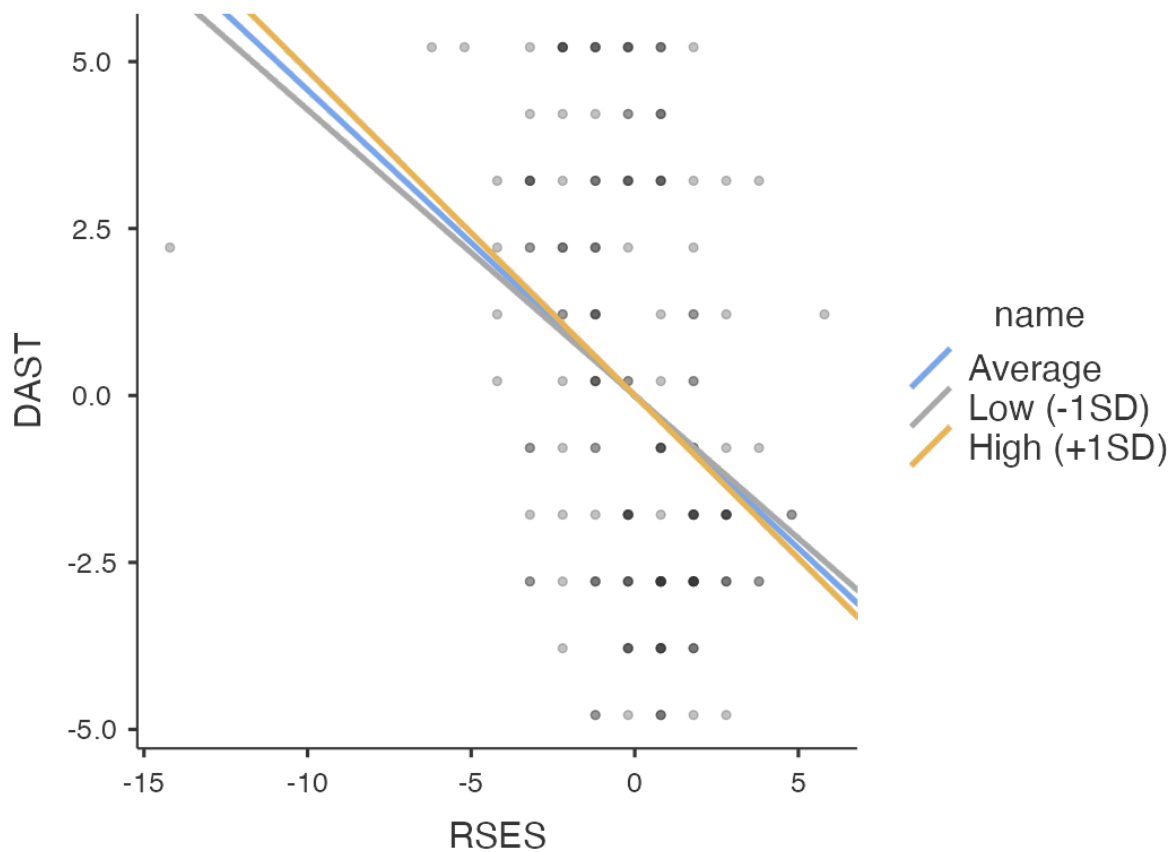
	Estimate	SE	Z	p
Average	-0.458	0.0877	-5.21	< .001

Table 7. Simple Slope Estimates- Gender as a moderator between RSES and DAST

	Estimate	SE	Z	p
Low (-1SD)	-0.428	0.1120	-3.82	< .001
High (+1SD)	-0.487	0.1297	-3.76	< .001

Note. shows the effect of the predictor (RSES) on the dependent variable (DAST) at different levels of the moderator (Gender)

Figure 4. Moderation plot for Hypothesis 4- Gender as a moderator between RSES and DAST



The moderation analysis results indicated that the interaction effect between body image satisfaction (BISS) and gender on substance abuse (DAST) was not statistically significant. This suggests that gender does not moderate the relationship between body image satisfaction and substance abuse as hypothesized. Additionally, while the main effect of gender on

substance abuse was statistically significant, indicating that gender has a direct influence on substance abuse, the main effect of body image satisfaction (BISS) was only marginally significant. This suggests that body image satisfaction may have a potential influence on substance abuse, but it falls just short of conventional significance levels. Furthermore, the analysis of simple slope estimates for body image satisfaction (BISS) revealed that its effect on substance abuse remained consistent across different levels of gender. Although lower body image satisfaction tended to be associated with slightly higher levels of substance abuse, these variations were not statistically significant between males and females. In interpretation, these findings suggest that while gender has a significant direct effect on substance abuse, the strength of the association between body image satisfaction and substance abuse does not significantly differ between males and females. Therefore, the results do not provide evidence to support the statement that the associations between body image satisfaction and substance abuse are stronger in females compared to males.

Hence, both aspects of Hypothesis 4, involving the moderation of the relationship between self-esteem and substance abuse as well as between body image satisfaction and substance abuse by gender, were not confirmed by the analysis results.

Table 8. Moderation Estimates- Gender as a moderator between BISS and DAST

	Estimate	SE	Z	p
BISS	-0.09251	0.0486	-1.9040	0.057
Gender	1.86029	0.4231	4.3971	< .001
BISS * Gender	0.00209	0.0929	0.0225	0.982

Table 9. Simple Slope Estimates- Gender as a moderator between BISS and DAST

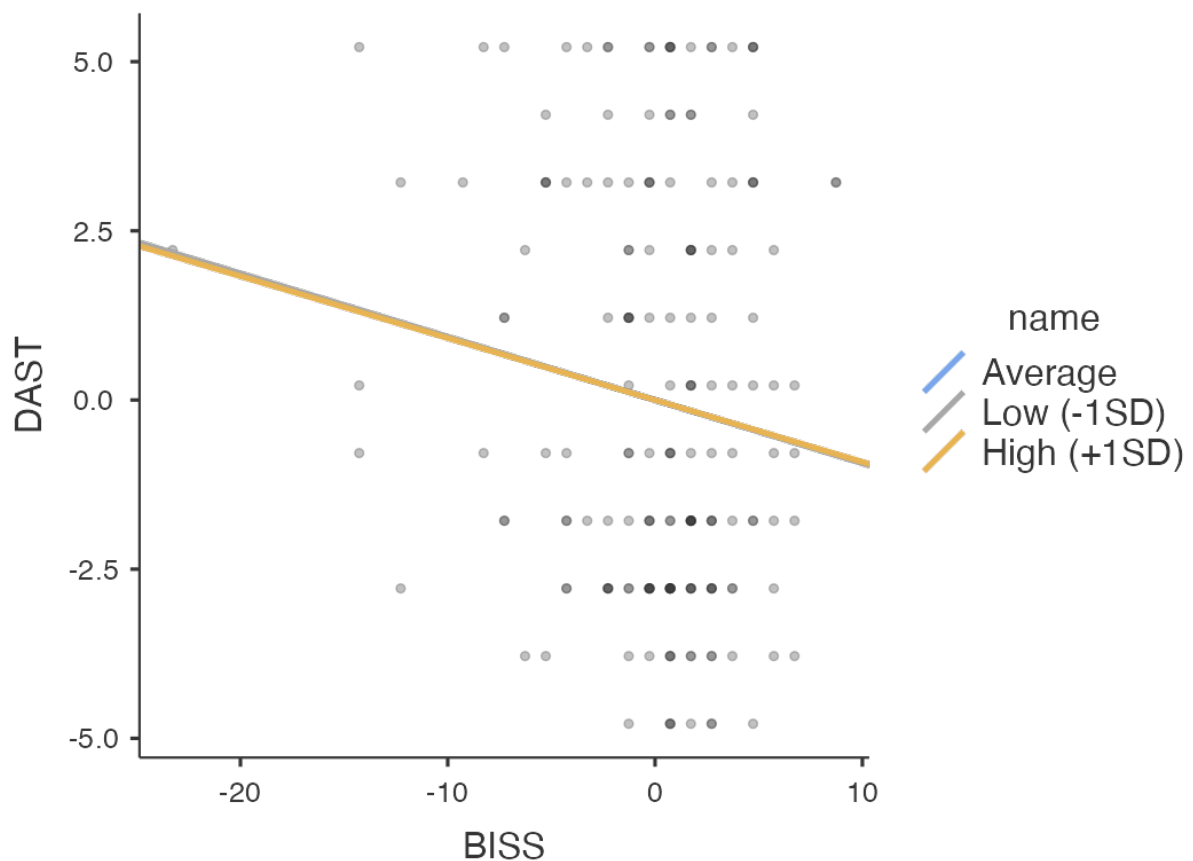
	Estimate	SE	Z	p
Average	-0.0925	0.0486	-1.90	0.057
Low (-1SD)	-0.0936	0.0680	-1.38	0.168

Table 9. Simple Slope Estimates-Gender as a moderator between BISS and DAST

	Estimate	SE	Z	p
High (+1SD)	-0.0914	0.0678	-1.35	0.177

Note. shows the effect of the predictor (BISS) on the dependent variable (DAST) at different levels of the moderator (Gender).

Figure 5.. Moderation plot for Hypothesis 4- Gender as a moderator between BISS and DAST.



The correlation between substance abuse (DAST) and the independent variables, body satisfaction (BISS) and self-esteem (RSES), was examined for the total group as well as separately for males and females. In the total group, body satisfaction (BISS) showed a negative correlation with substance abuse (DAST), while self-esteem (RSES) exhibited a negative correlation with substance abuse (DAST). For females, the correlation between body

satisfaction (BISS) and substance abuse (DAST) was stronger compared to males, and the correlation between self-esteem (RSES) and substance abuse (DAST) was also stronger compared to males.

Table 10. Correlation Table- Substance abuse (DAST) and the independent variables- Body satisfaction (BISS) and Self-esteem (RSES) for the total group and separately for males and females.

Correlation with	Total Group (n=179)	Females (n=91)	Males (n=87)
DAST:			
Body Satisfaction	-0.62	-0.65	-0.55
(BISS)			
Self-Esteem (RSES)	-0.48	-0.50	-0.42

Correlation is significant at the 0.05 level (2-tailed).

Discussion

Substance abuse is a complex social problem whose impact on society persists despite various concerted public health interventions, suggesting the researchers might have overlooked some critical antecedent factors. Consequently, the present cross-sectional study examined the relationships between body image satisfaction, self-esteem, and substance abuse including potential gender effects in a sample of 179 adult participants. The objective was to gain a deeper understanding of how these psychological factors may interact and influence substance abuse behavior.

As hypothesized, current findings demonstrated a significant negative relationship between body image satisfaction (BISS) and substance abuse (DAST). Participants with lower body image satisfaction were more likely to exhibit higher levels of substance abuse.

This is in line with prior research (Ganson et al., 2022) that suggests body image dissatisfaction can be a risk factor for substance abuse among adults.

Consistent with expectations, a significant negative relationship was found between self-esteem (RSES) and substance addiction (DAST). Participants with higher self-esteem were less likely to use substances. This is consistent with earlier research demonstrating the protective impact of self-esteem in substance abuse prevention (Hunt & Guidon, 2010).

These findings complement and extend Tam et al.'s (2020) findings on college students, indicating that high self-esteem is a protective factor for substance abuse behaviours, increasing the likelihood of abstaining from drug use. Individuals with high self-esteem are likelier to use adaptive coping mechanisms, including positively reframing a situation to manage environmental stressors, contrasted to maladaptive coping, such as self-blame, among individuals with lower self-esteem who turn to drugs to manage stress (Li et al., 2023).

There was a statistically significant relationship between individuals' perceptions of their body image, their levels of self-esteem, and their engagement in substance abuse behaviours, as measured by the DAST (See Table 10.). While both low body image satisfaction and low self-esteem were individually associated with higher substance use scores, their combined effect, as captured by their interaction, was more influential than just considering their separate impacts. Despite each factor separately explaining a moderate amount of variance (around 20% for body image satisfaction and 35% for self-esteem), when taken together with their interaction, they collectively explain over 60% of the variance in substance use scores. This suggests that individuals with low body image satisfaction and low self-esteem may be particularly vulnerable to substance abuse, emphasizing the importance of addressing both factors in prevention and intervention efforts. The current findings showed that satisfaction with body image moderates the effect of self-esteem on substance abuse, which extends Tam

et al. (2021) study that people who positively accept their bodies are unlikelier to engage in indiscriminate use of drugs. Therefore, since high self-esteem is associated with a positive sense of oneself and a positive appraisal of competencies, it could be a valuable resource for inclusion in current public health interventions to manage substance abuse. In contrast, substance abuse serves as a temporary escape from the negative thoughts and feelings associated with low self-esteem and poor body image (Bachman et al., 2013). Additionally, individuals often turn to substances as a way to cope when they experience distress due to their negative body image and low self-esteem (Colder et al., 2001). The pressure imposed by society beauty standards plays a role in lowering ones self-esteem which can lead to substance abuse as a means of fitting in or dealing with expectations (Aparicio-Martinez et al., 2019). Those who have low self-esteem are easily influenced by their peers, which can result in substance abuse as a means of seeking acceptance or avoiding social rejection (Marschall et al., 2014). Substance abuse may be seen as a form of self-harm or as a way to numb pain associated with feelings of low self-worth (Ertl et al., 2022). Furthermore, this creates a cycle where substance abuse reinforces consequences and perpetuates feelings of low self-esteem thereby contributing to continued substance use (Khantzian, 1997). In essence these factors collectively highlight the relationship between self-esteem, dissatisfaction with ones body image and susceptibility to substance abuse.

The fourth hypothesis delved into exploring the moderation effects with respect to gender disparities. The analysis revealed distinctive patterns for females and males, particularly in relation to the interaction effect of body image satisfaction and self-esteem on substance abuse. Contrary to expectations, gender did not significantly moderate the relationship between body image satisfaction and substance abuse. However, a notable trend emerged, indicating that females exhibited a slightly higher susceptibility to substance abuse when influenced by negative body image and low self-esteem compared to males. Additionally,

although, the relationship between self-esteem and substance abuse does not significantly vary between genders in this sample, an interesting pattern emerged. It is indicative of slightly higher vulnerability of females to substance abuse under influence of negative body image and low self-esteem compared to males. These nuanced findings highlight the vital necessity to consider gender-specific nuances in addressing the problem of substance abuse. Specifically, even though gender did not significantly moderate the relationship between body image satisfaction and substance abuse; contemporary evidence suggests that females are more susceptible to substance abuse compared with males due to factors such as negative body image and diminished self-esteem. This finding supports existing literature which emphasizes on tailored approaches in dealing with substance abuse behaviours. These results further emphasize a compelling association between lower body image satisfaction and elevated substance abuse scores across genders. Regardless of gender, individuals experiencing dissatisfaction with their body image appear to be more susceptible to engaging in substance abuse. This highlights the relevance of body image perceptions in shaping substance abuse tendencies. These findings add to the growing body of literature emphasizing the necessity for tailored approaches in addressing substance abuse. While the general patterns apply to both men and women this study emphasizes the need to understand these relationships in a gender context. Recognizing gender differences, in body image dynamics, self-esteem and substance abuse highlights the importance of tailored interventions. This aligns with existing literature emphasizing the unique experiences and susceptibilities of females in relation to their gender (Sagrera et al., 2022).

Current findings are consistent with prior research on the negative associations of body image satisfaction and self-esteem with substance abuse. However, this study goes further by demonstrating how these factors interact together emphasizing the significance of addressing the interplay between body image satisfaction, self-esteem and substance abuse in programs

aimed at preventing substance abuse. To effectively intervene in prevention programs, for substance abuse it is essential to adopt an approach that incorporates educational and social components (Das et al., 2016). To design targeted interventions, it is imperative to address negative body image and self-esteem issues. Gender-sensitive approaches should be incorporated, recognizing distinct vulnerabilities in males and females. Psychoeducational programs can deepen individuals' understanding of the intricate relationship between body image, self-esteem, and substance abuse. Providing information on how these factors interact and contribute to substance abuse tendencies is essential (Tiggemann & Slater, 2013).

It takes a combination of elements that prioritize self-acceptance and appreciation to promote healthy body image. Boosting one's self-esteem involves engaging in activities that highlight strengths and achievements. Providing individuals, with the tools to develop resilience and effective coping strategies is crucial, for overcoming obstacles without turning to substance abuse (Mann et al., 2004). Peer support groups are essential for fostering empathy and a sense of community among those going through similar struggles. According to Kumar et al. (2013), peer support can offer a supportive setting where people can exchange experiences and coping mechanisms. It should be possible to access counseling and therapy services that focus on issues related to body image and self-esteem. It is critical to offer a secure environment where people can examine and resolve underlying problems that are causing them to abuse substances (Cash & Pruzinsky, 2002).

Given the digital nature of social media recruitment, utilizing technology platforms for interventions can improve accessibility. Creating online tools or mobile applications guarantees people will always have help and direction (Regis et al., 2020). In order to increase public understanding of the connection between substance misuse and low self-esteem and bad body image, community outreach is essential. Prevention programs are better implemented when they are implemented in partnership with schools, healthcare providers,

and community leaders. Substance abuse prevention programs can effectively address the complex interaction among substance misuse, self-esteem, and body image satisfaction by including these tactics. This customized, all-encompassing strategy helps people on their path to improved mental health and wellbeing.

Strengths and limitations

Strengths and limitations discuss methodological areas that enhanced or undermined the ability of the study to provide accurate findings or apply them to a broader population.

Though this study is insightful, it has some limitations. The first limitation was employment of cross-sectional design that assessed each variable at single time point. In spite of its utility, this design prevents causal associations from being established.

The second one relates to use of self-report questionnaires as data collecting instruments. Although such measurements are helpful, they do not always provide true representation of participant's behaviour because of susceptibility to social desirability bias. Consequently, future research endeavors will improve their generalizations by using objective measures or employing multiple sources of data. Thirdly, there was a slight gender imbalance, with lower number of male participants, compared to females. This gender disproportion might impact the generalizability of the results, particularly if substantial gender-based variations exist in the variables under examination. Moreover, it should be pointed out that the study only included one non-binary participant, which may restrict the extent to which conclusive findings can be made about this population. In order to fully grasp the interrelation between these variables and the non-binary community, it is crucial to have a more diverse and inclusive representation of this group.

This study primarily examines body image satisfaction and self-esteem as potential indicators of substance abuse, neglecting other significant variables such as socioeconomic

status, mental health, and major life events, which could affect the accuracy of findings.

Future research could delve into the dynamic relationship between these additional factors for a more comprehensive understanding. Furthermore, the inclusion of social media platforms in recruitment processes may lead to selection bias, as those who actively participate on these platforms may differ from those who do not. As a result, this could potentially affect the overall applicability of the study.

Lastly, while the findings contribute to comprehension of the relationships between body image satisfaction, self-esteem, and substance abuse within a general adult population, their applicability to clinical populations, like individuals undergoing substance abuse treatment, might necessitate further exploration.

This study boasts several commendable strengths that reinforce the credibility and validity of its findings. Most notably, it leverages a relatively extensive and diverse sample, encompassing 179 participants of both genders. The inclusion of a diverse sample contributes significantly to the study's capacity to generalize its results to wider populations, establishing it as a more representative investigation. This research also focused on four variables – body image satisfaction, self-esteem, gender, and substance abuse – using validated scales to enhance the findings' precision, accuracy, and credibility. Finally, using inferential statistics, multiple regression is a validated method to determine the nature and strength of association between variables, which increases methodological vigor and the quality of findings. Thus, a representative sample, validated research instruments, and data analysis techniques collectively improve the quality, accuracy, and credibility of the findings.

Lastly, this research stands out for its application of sophisticated statistical techniques, including regression analysis and moderation analysis, to explore the intricate web of relationships between variables. This methodological rigor significantly contributes to the robustness of its results, elevating the overall quality of the investigation.

Recommendations for future research

Based on the valuable findings derived from this study, there are numerous exciting possibilities for future research. First of all, the study could broaden its focus beyond the population of adults. Thus, it would be interesting to find out how the constructs of body image satisfaction, self-esteem and their relation to substance abuse are connected in other age groups, for example, in adolescents or in the elderly. In this case, it will be possible to determine whether those causes that were revealed in the youth population are generically substantiated or not. In addition, there is a need for longitudinal studies to understand the nature of the cause-effect relationships more deeply. Also, cross-cultural and gender-specific studies can add their perspective, as cultural norms and gender expectations can influence these relationships. Secondly, it would be reasonable to explore effective prevention programs. It would be appropriate to track how successful they were, and whether their effect is long-term or not. And, undoubtedly, other factors such as mental health, the role of the family, peer influences, and others should be considered. Given the critical role of social media in people's relationship to their bodies and their self-esteem, research into the role of media in the relationship between the mentioned constructs and substance use is necessary. In addition, studies of the construct in question, incorporating elements of qualitative research, such as interviews and focus groups, can supplement quantitative works. Finally, research on interventions focusing on body image satisfaction and self-esteem would not be superfluous, taking into account the impact on the factor under consideration. Such studies will bring benefits to the practical field, as they will be able to show which interventions are effective and which are not. Finally, meta-analyses and systemic reviews, which summarise the findings of multiple studies, can synthesise data and harvest the fruits of field research to

make them more accessible to all users, which can be incredibly useful for practitioners. This would serve as a valuable resource for researchers and practitioners in the field.

Recommendations for practice

The practical implications of this study are significant. The findings suggest that interventions aiming to reduce substance abuse among adults should consider addressing both body image satisfaction and self-esteem. Targeted programs that enhance self-esteem and promote healthy body image may prove effective in preventing or reducing substance abuse.

The findings are consistent with Zaami et al.'s (2022) report that individuals with a distorted image of themselves manifesting through self-perceived or self-imagined ugliness escalate mental distress and are substantially more likely to present an addiction disorder involving drug and alcohol abuse. Mainly, such individuals do not seek medical advice but turn to substance abuse to alleviate the psychological/emotional anguish caused by their body-image dissatisfaction and misperception or as a misguided approach to self-medicate to overcome their emotional distress. Interventions that improve self-perceived satisfaction with one's body can enhance current interventions combating drug abuse among adults.

Conclusion

In conclusion, this study adds to the understanding of the complicated links between body image satisfaction, self-esteem, and substance misuse in adults. The negative relationships between body image satisfaction, self-esteem, and substance abuse were clear, and the interplay of these factors demonstrated their combined influence. By addressing both body image satisfaction and self-esteem, we may be able to build more successful substance abuse prevention and treatment programmes. Furthermore, by taking gender-specific psychological aspects into account, therapies can be more effective in addressing the intricate dynamics that

underpin substance misuse behaviours in adults. However, the limitations of this study demand additional research to corroborate and expand on the findings.

This study adds to previous knowledge by not only broadening the age demographic under consideration, but also by include the factor of gender dynamics. The study also includes moderation, which investigates how certain characteristics may amplify or reduce the association between self-esteem, body image, and substance addiction among adults. By doing so, it hopes to create a more thorough knowledge of these complex relationships, driving the development of interventions specific to adult populations.

References

- American Psychiatric Association. (2014). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.,
- Aparicio-Martinez, P., Perea-Moreno, A. J., Martinez-Jimenez, M. P., Redel-Macías, M. D., Pagliari, C., & Vaquero-Abellan, M. (2019). Social Media, Thin-Ideal, Body Dissatisfaction and Disordered Eating Attitudes: An Exploratory Analysis. *International journal of environmental research and public health*, 16(21), 4177. <https://doi.org/10.3390/ijerph16214177>.,
- Bachman, J. G., Wadsworth, K. N., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2013). *Smoking, drinking, and drug use in young adulthood: The impacts of new freedoms and new responsibilities*. Psychology Press.,
- Boden, J. M., Fergusson, D. M., & Horwood, L. J. (2014). Associations between exposure to stressful life events and alcohol use disorder in a longitudinal birth cohort studied to age 30. *Drug and Alcohol Dependence*, 142, 154–160.,
- Brady, K. T., & Randall, C. L. (1999). Gender Differences in Substance Use Disorders. *Psychiatric Clinics*, 22(2), 241-252.,

- Branden, N. (1995). *The Six Pillars of Self-Esteem*. Bantam.,
- Carraça, E. V., Silva, M. N., Markland, D., Vieira, P. N., Minderico, C. S., Sardinha, L. B., & Teixeira, P. J. (2011). Body image change and improved eating self-regulation in a weight management intervention in women. *International Journal of Behavioral Nutrition and Physical Activity*, 8, 1-11.,
- Cash, T. F., & Pruzinsky, T. (2002). *Body image: A handbook of theory, research, and clinical practice*. Guilford Press.,
- Cash, T. F., Fleming, E. C., Alindogan, J., Steadman, L., & Whitehead, A. (2002). Beyond body image as a trait: The development and validation of the Body Image States Scale. *Eating disorders*, 10(2), 103-113.,
- Chen, J. A., Glass, J. E., Bensley, K. M., Goldberg, S. B., Lehavot, K., & Williams, E. C. (2020). Racial/ethnic and gender differences in receipt of brief intervention among patients with unhealthy alcohol use in the US Veterans Health Administration. *Journal of Substance Abuse Treatment*, 119, 108078.,
- Colder, C. R., Mehta, P., Balanda, K., Campbell, R. T., Mayhew, K., Stanton, W. R., ... & Flay, B. R. (2001). Identifying trajectories of adolescent smoking: an application of latent growth mixture modeling. *Health Psychology*, 20(2), 127.,
- Compton, P., & Chang, Y. P. (2017). Substance Abuse and Addiction. *Clinical journal of oncology nursing*, 21(2).,
- Das, J. K., Salam, R. A., Arshad, A., Finkelstein, Y., & Bhutta, Z. A. (2016). Interventions for Adolescent Substance Abuse: An Overview of Systematic Reviews. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*, 59(4S), S61–S75.,

- Erol, A., & Karpyak, V. M. (2015). Sex and Gender-Related Differences in Alcohol Use and Its Consequences: Contemporary Knowledge and Future Research Considerations. *Drug and Alcohol Dependence*, 156, 1-13.,
- Ertl, M. M., Sawyer, J. S., Martin, J. L., & Brenner, R. E. (2022). The Role of Objectification in College Women's Substance Misuse and Sexual Risk. *Journal of prevention and health promotion*, 3(1), 68-96.,
- Expósito Álvarez, C., Lila Murillo, M. S., Gracia Fuster, E., & Martín Fernández, M. (2021). Risk factors and treatment needs of batterer intervention program participants with substance abuse problems. *The European Journal of Psychology Applied to Legal Context*, 2021, vol. 13, num. 2, p. 87-97.,
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117–140.,
- Flora K. (2022). A Review of the Prevention of Drug Addiction: Specific Interventions, Effectiveness, and Important Topics. *Addiction & health*, 14(4), 288–295.,
- Fredrickson, B. L., & Roberts, T. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, 21(2), 173–206.,
- Fulton, H. G., Krank, M. D., & Stewart, S. H. (2012). Outcome expectancy liking: a self-generated, self-coded measure predicts adolescent substance use trajectories. *Psychology of Addictive Behaviors*, 26(4), 870.,
- Ganson, K. T., Nagata, J. M., Rodgers, R. F., Cunningham, M. L., Lavender, J. M., Murray, S. B., & Hammond, D. (2022). Weight gain attempts and substance use behaviours among adults across five countries. *Body Image*, 41, 375-383.,

- Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin*, 134(3), 460–476.,
- Greaves, L. (2020). Missing in action: sex and gender in substance use research. *International Journal of Environmental Research and Public Health*, 17(7), 2352. <https://doi.org/10.3390/ijerph17072352>.,
- Greenfield, S. F., Back, S. E., Lawson, K., & Brady, K. T. (2010). Substance abuse in women. *Psychiatric Clinics*, 33(2), 339-355.,
- Hatzenbuehler, M. L., Phelan, J. C., & Link, B. G. (2013). Stigma as a fundamental cause of population health inequalities. *American Journal of Public Health*, 103(5), 813-821.,
- Hunt, B., & Guindon, M. H. (2010). Alcohol and other drug use and self-esteem in young adults. In M. H. Guindon (Ed.), *Self-esteem across the lifespan: Issues and interventions* (pp. 219–229). Routledge/Taylor & Francis Group.,
- Karazsia, B. T., Murnen, S. K., & Tylka, T. L. (2017). Is body dissatisfaction changing across time? A cross-temporal meta-analysis. *Psychological Bulletin*, 143(3), 293–320.,
- Khantzian, E. J. (1997). The self-medication hypothesis of substance use disorders: A reconsideration and recent applications. *Harvard Review of Psychiatry*, 4(5), 231–244.,
- Król, H., Zboina, B., & Sentkowska, I. (2013). Styl życia osób uzależnionych od substancji psychoaktywnych. *Acta Scientifica Academiae Ostroviensis. Sectio A, Nauki Humanistyczne, Społeczne i Techniczne*, 1, 241-257.,
- Lander, L., Howsare, J., & Byrne, M. (2013). The impact of substance use disorders on families and children: from theory to practice. *Social work in public health*, 28(3-4), 194–205. <https://doi.org/10.1080/19371918.2013.759005>.,
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.,

- Lee, C. G., Seo, D. C., Torabi, M. R., Lohrmann, D. K., & Song, T. M. (2018). Longitudinal trajectory of the relationship between self-esteem and substance use from adolescence to young adulthood. *Journal of school health, 88*(1), 9-14.,
- Li, W., Guo, Y., Lai, W., Wang, W., Li, X., Zhu, L., Shi, J., Guo, L., & Lu, C. (2023). Reciprocal relationships between self-esteem, coping styles and anxiety symptoms among adolescents: between-person and within-person effects. *Child and adolescent psychiatry and mental health, 17*(1), 21. <https://doi.org/10.1186/s13034-023-00564-4>,
- Livingston, T. D. (2023). Examining Factors Among People With Opioid Use Disorder and Comorbid Mental Health Disorders.,
- Majcherczyk, A., & Głowik, T. (2011). Krótkie interwencje wobec skazanych nadużywających substancji psychoaktywnych.,, *Przegląd Więziennictwa Polskiego, 70*, 111-138.,
- Mann, M., Hosman, C. M., Schaalma, H. P., & de Vries, N. K. (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health education research, 19*(4), 357–372. <https://doi.org/10.1093/her/cyg041>.,
- Marschall-Levesque, S., Castellanos-Ryan, N., Vitaro, F., & Séguin, J. R. (2014). Moderators of the association between peer and target adolescent substance use. *Addictive Behaviors, 39*(1), 48–70.,
- Myers, T. A., & Crowther, J. H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *Journal of Abnormal Psychology, 118*(4), 683–698.,
- Nahvizadeh, M. M., Akhavan, S., Arti, S., Qaraat, L., Geramian, N., Farajzadegan, Z., & Heidari, K. (2014). A Review Study of Substance Abuse Status in High School

- Students, Isfahan, Iran. *International journal of preventive medicine*, 5(Suppl 2), S77–S82.,
- Nieri, T., Kulis, S., Keith, V. M., & Hurdle, D. (2005). Body image, acculturation, and substance abuse among boys and girls in the Southwest. *The American journal of drug and alcohol abuse*, 31(4), 617-639.,
- Orth, U., & Robins, R. W. (2014). The development of self-esteem. *Current directions in psychological science*, 23(5), 381-387.,
- Ovalle, A., Goldstein, O., Kachuee, M., Wu, E. S., Hong, C., Holloway, I. W., & Sarrafzadeh, M. (2021). Leveraging social media activity and machine learning for HIV and substance abuse risk assessment: development and validation study. *Journal of Medical Internet Research*, 23(4), e22042.,
- Pająk, A. (2020). Zażywanie środków psychoaktywnych przez nieletnich. *Pedagogika Rodziny*, 10(3), 21-35.,
- Perloff, R. M. (2014). Social media effects on young women's body image concerns: Theoretical perspectives and an agenda for research. *Sex Roles*, 71(11–12), 363–377.,
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.,
- Rowe, C. L., & Liddle, H. A. (2003). Substance abuse. *Journal of Marital and Family Therapy*, 29(1), 97-120.,
- Sagrera, C. E., Magner, J., Temple, J., Lawrence, R., Magner, T. J., Avila-Quintero, V. J., ... & Patterson, J. C. (2022). Social media use and body image issues among adolescents in a vulnerable Louisiana community. *Frontiers in Psychiatry*, 13, 1001336.,
- Shroff, H., & Thompson, J. K. (2006). The tripartite influence model of body image and eating disturbance: A replication with adolescent girls. *Body Image*, 24, 37-44.,
- Skinner, H. A. (1982). The Drug Abuse Screening Test. *Addictive Behaviors*, 7(4), 363-371.,

- Soponaru, C., Bojian, A., Iorga, M. (2016). Gender differences regarding body image, stress and coping strategies in adolescence. *Archives of Medical Science – Civilization Diseases*, 1(1), 36-42. <https://doi.org/10.5114/amscd.2016.59897.>,
- Stevens, S. J., Hasler, J., Murphy, B. S., Taylor, R., Senior, M., Barron, M., & Powis, Z. (2014). La Canada adolescent treatment program: Addressing issues of drug use, gender, and trauma. In *Adolescent substance abuse treatment in the United States* (pp. 183-209). Routledge.,
- Storbjörk, J. (2011). Gender differences in substance use, problems, social situation and treatment experiences among clients entering addiction treatment in Stockholm. *Nordic Studies on Alcohol and Drugs*, 28(3), 185-209.,
- Sugarman, D. E., Meyer, L. E., Reilly, M. E., & Greenfield, S. F. (2020). Feasibility and acceptability of a web-based, gender-specific intervention for women with substance use disorders. *Journal of Women's Health*, 29(5), 636–646. <https://doi.org/10.1089/jwh.2018.7519.>,
- Tam, C. C., Benotsch, E. G., & Li, X. (2020). Self-esteem and non-medical use of prescription drugs among college students: Coping as a mediator. *Substance Use & Misuse*, 55(8), 1309–1319. <https://doi.org/10.1080/10826084.2020.1735441.>,
- Tiggemann, M., & Slater, A. (2013). NetGirls: The Internet, Facebook, and body image concern in adolescent girls. *International Journal of Eating Disorders*, 47(6), 630–643.,
- Trucco, E. M., Hicks, B. M., Villafuerte, S., Nigg, J. T., Burmeister, M., & Zucker, R. A. (2016). Temperament and externalizing behavior as mediators of genetic risk on adolescent substance use. *Journal of Abnormal Psychology*, 125(4), 565–575.,
- Tylka, T. L., & Wood-Barcalow, N. L. (2015). What is and what is not positive body image? Conceptual foundations and construct definition. *Body Image*, 14, 118-129.,

- Wang, G. S., & Hoyte, C. (2018). Common substances of abuse. *Pediatrics in review*, 39(8), 403-414.,
- Who, W.H.O. - (2005) 'Management of substance abuse', pesquisa.bvsalud.org [Preprint].
Available at: <https://pesquisa.bvsalud.org/portal/resource/pt/lis-18605> (Accessed: 25 July 2023).,
- Wilsnack, R. W., Wilsnack, S. C., Kristjanson, A. F., Vogeltanz-Holm, N. D., & Gmel, G. (2009). Gender and alcohol consumption: patterns from the multinational GENACIS project. *Addiction*, 104(9), 1487-1500.,
- Wolfe, W. L., & Maisto, S. A. (2000). The relationship between eating disorders and substance use: moving beyond co-prevalence research. *Clinical Psychology Review*, 20(5), 617-631.,
- Wood, C., Griffin, M., Barton, J., & Sandercock, G. (2021). Modification of the Rosenberg Scale to Assess Self-Esteem in Children. *Frontiers in public health*, 9, 655892.
<https://doi.org/10.3389/fpubh.2021.655892>.,
- World Health Organization. (2014). Global status report on alcohol and health 2014.
Retrieved from
https://www.who.int/substance_abuse/publications/global_alcohol_report/en/
- Wu, C. S., Wong, H. T., Shek, C. H., & Loke, A. Y. (2014). Multi-dimensional self-esteem and substance use among Chinese adolescents. *Substance abuse treatment, prevention, and policy*, 9(1), 1-8.,
- Yan, F., Costello, M., & Allen, J. (2020). Self-Perception and Relative Increases in Substance Use Problems in Early Adulthood. *Journal of drug issues*, 50(4), 538–549.,

Zaami, S., Sirignano, A., García-Algar, Ó., & Marinelli, E. (2022). COVID-19 pandemic, substance use disorders and body image issues, a worrisome correlation. *European Review for Medical and Pharmacological Sciences*, 26(1), 291–297.
https://doi.org/10.26355/eurrev_202201_27780.

Appendices

Appendix A

The Rosenberg Self-Esteem Scale (RSE)

Description of Measure:

A 10-item scale that measures global self-worth by measuring both positive and negative feelings about the self. The scale is believed to be uni-dimensional. All items are answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree.

Scale:

Instructions

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. On the whole, I am satisfied with myself.

Strongly Agree Agree Disagree Strongly Disagree

2. At times I think I am no good at all.

Strongly Agree Agree Disagree Strongly Disagree

3. I feel that I have a number of good qualities.

Strongly Agree Agree Disagree Strongly Disagree

4. I am able to do things as well as most other people.

Strongly Agree Agree Disagree Strongly Disagree

5. I feel I do not have much to be proud of.

Strongly Agree Agree Disagree Strongly Disagree

6. I certainly feel useless at times.

Strongly Agree	Agree	Disagree	Strongly Disagree
7. I feel that I'm a person of worth, at least on an equal plane with others.			
Strongly Agree	Agree	Disagree	Strongly Disagree
8. I wish I could have more respect for myself.			
Strongly Agree	Agree	Disagree	Strongly Disagree
9. All in all, I am inclined to feel that I am a failure.			
Strongly Agree	Agree	Disagree	Strongly Disagree
10. I take a positive attitude toward myself.			
Strongly Agree	Agree	Disagree	Strongly Disagree

Scoring:

Items 2, 5, 6, 8, 9 are reverse scored. Give "Strongly Disagree" 1 point, "Disagree" 2 points, "Agree" 3 points, and "Strongly Agree" 4 points. Sum scores for all ten items. Keep scores on a continuous scale. Higher scores indicate higher self-esteem.

Appendix B

The Body Image States Scale (BISS)

BODY IMAGE STATES SCALE

For each of the items below, check the box beside the one statement that best describes how you feel **RIGHT NOW AT THIS VERY MOMENT**. Read the items carefully to be sure the statement you choose accurately and honestly describes how you feel right now.

- Right now I feel . . .
 - Extremely dissatisfied*** with my physical appearance
 - Mostly dissatisfied*** with my physical appearance
 - Moderately dissatisfied*** with my physical appearance
 - Slightly dissatisfied*** with my physical appearance
 - Neither dissatisfied nor satisfied*** with my physical appearance
 - Slightly satisfied*** with my physical appearance
 - Moderately satisfied*** with my physical appearance
 - Mostly satisfied*** with my physical appearance
 - Extremely satisfied*** with my physical appearance

2. Right now I feel . . .

- Extremely satisfied*** with my body size and shape
- Mostly satisfied*** with my body size and shape
- Moderately satisfied*** with my body size and shape
- Slightly satisfied*** with my body size and shape
- Neither dissatisfied nor satisfied*** with my body size and shape
- Slightly dissatisfied*** with my body size and shape
- Moderately dissatisfied*** with my body size and shape
- Mostly dissatisfied*** with my body size and shape
- Extremely dissatisfied*** with my body size and shape

3. Right now I feel . . .

- Extremely satisfied*** with my weight
- Mostly dissatisfied*** with my weight
- Moderately dissatisfied*** with my weight
- Slightly dissatisfied*** with my weight
- Neither dissatisfied nor satisfied*** with my weight
- Slightly satisfied*** with my weight
- Moderately satisfied*** with my weight
- Mostly satisfied*** with my weight
- Extremely satisfied*** with my weight

4. Right now I feel . . .
- Extremely** physically *attractive*
 - Very** physically *attractive*
 - Moderately** physically *attractive*
 - Slightly** physically *attractive*
 - Neither attractive nor unattractive**
 - Slightly** physically *unattractive*
 - Moderately** physically *unattractive*
 - Very** physically *unattractive*
 - Extremely** physically *unattractive*
5. Right now I feel . . .
- A great deal worse** about my looks than I usually feel
 - Much worse** about my looks than I usually feel
 - Somewhat worse** about my looks than I usually feel
 - Just slightly worse** about my looks than I usually feel
 - About the same** about my looks as usual
 - Just slightly better** about my looks than I usually feel
 - Somewhat better** about my looks than I usually feel
 - Much better** about my looks than I usually feel
 - A great deal better** about my looks than I usually feel
6. Right now I feel that I look . . .
- A great deal better** than the average person looks
 - Much better** than the average person looks
 - Somewhat better** than the average person looks
 - Just slightly better** than the average person looks
 - About the same** as the average person looks
 - Just slightly worse** than the average person looks
 - Somewhat worse** than the average person looks
 - Much worse** than the average person looks
 - A great deal worse** than the average person looks

Appendix C

The Drug Abuse Screening Test (DAST-10)

Interpreting the DAST 10

In these statements, the term "drug abuse" refers to the use of medications at a level that exceeds the instructions, and/or any non-medical use of drugs. Patients receive 1 point for every "yes" answer with the exception of question #3, for which a "no" answer receives 1 point. DAST-10 Score Degree of Problems Related to Drug Abuse Suggested Action.

DAST-10 Score	Degree of Problems Related to Drug Abuse	Suggested Action
0	No problems reported	None at this time
1–2	Low level	Monitor, re-assess at a later date
3–5	Moderate level	Further investigation
6–8	Substantial level	Intensive assessment
9–10	Severe level	Intensive assessment

Skinner, H. A. (1982). The Drug Abuse Screening Test. *Addictive Behavior*, 7(4),363–371.

DAST-10 Questionnaire

I'm going to read you a list of questions concerning information about your potential involvement with drugs, excluding alcohol and tobacco, during the past 12 months.

When the words "drug abuse" are used, they mean the use of prescribed or over-the-counter medications/drugs in excess of the directions and any non-medical use of drugs. The various classes of drugs may include: cannabis (e.g., marijuana, hash), solvents, tranquilizers (e.g., Valium), barbiturates, cocaine, stimulants (e.g., speed), hallucinogens (e.g., LSD) or narcotics (e.g., heroin). Remember that the questions do not include alcohol or tobacco.

If you have difficulty with a statement, then choose the response that is mostly right. You may choose to answer or not answer any of the questions in this section.

These questions refer to the past 12 months.	No	Yes
1. Have you used drugs other than those required for medical reasons?	0	1
2. Do you abuse more than one drug at a time?	0	1
3. Are you always able to stop using drugs when you want to? (If never use drugs, answer "Yes.")	1	0
4. Have you had "blackouts" or "flashbacks" as a result of drug use?	0	1
5. Do you ever feel bad or guilty about your drug use? If never use drugs, choose "No."	0	1
6. Does your spouse (or parents) ever complain about your involvement with drugs?	0	1
7. Have you neglected your family because of your use of drugs?	0	1
8. Have you engaged in illegal activities in order to obtain drugs?	0	1
9. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?	0	1
10. Have you had medical problems as a result of your drug use (e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?	0	1

Appendix D

Consent Form

Consent form

Your data will be stored anonymously. In order that we may retrieve your data should you wish to withdraw; we will provide a unique identifier that will be used to label any and all materials relating to your participation in this study. You will need to provide your identifier should you wish to withdraw from the study, which we would ask that you do within two weeks of taking part. Any requests to withdraw after this time may not be actionable as the data will already be anonymously entered for analysis. Please read the following statements and select those that apply to you:

I have read the information sheet provided, and understand what I am required to do in order to take part in this study.

I have been advised of my rights as a participant, and understand that I can withdraw my data from this research project at any time up to two weeks after my participation.

I have had the opportunity to ask questions before consenting to participate in the study and am satisfied with the information provided either through the information sheet, or from adequately answered questions to the researcher.

I confirm that I am over 18 years old; that I consent to allow the answers I provided to be included in the analysis and reporting of the study, including potential publication; and that there is no reason why I consider myself unable to take part.

By selecting this box, I am confirming my consent to participate in this research.

In order to withdraw your data, please could you generate a unique identifier of the first three letters of your maiden mother's name followed by the first two digits of your date of birth. For example, if my maiden mother's name would be Smith and date of birth 24/05/1999, my unique identifier would be SMI24.

Appendix E**ADVERT**

**UNIVERSITY
OF TWENTE.**

Call for Participants

Volunteers requested

I'm a MSc Health Psychology & Technology student at the University of Twente, and I'm looking for volunteers to participate in my study.

The aim of the research will be to explore factors that influence substance abuse. All data will be confidential and anonymous.

Participation will take approximately 15-20 minutes.

Please carefully consider your participation in this study if you are sensitive to mental health issues.

Participation is voluntary, entails completing anonymous questionnaires, all participants must be aged 18 or over and must have had direct contact with substances like

This study is being conducted online. If you would like to know more, please follow this link (Here I will insert the link to my survey) (link to information sheet OR QR code).

If you have any questions regarding this research, please don't hesitate to contact myself (the researcher) using the contact details provided below.
Alicja Majer: a.majer@student.utwente.nl

This research has been approved by the BMS Ethics Committee.

Appendix F

Ethical issues and how they will be addressed

Informed consent. Participants will be provided with an information sheet detailing the topic area, task, ethical considerations, and points of contact for the study. They

will then be provided with a consent form to sign if they agree that they understand the study and their rights as a participant.

Yes No

Anonymity. The privacy and anonymity of each participant will be protected by using a unique identifier rather than having any personally identifiable information directly linked to their data. This will consist of the first three letters of one of their parents' surnames and the first three numbers of their date of birth. For example, a participant whose mothers' maiden name is Smith and whose date of birth is 17th January 1980 would have the unique identifier of SMI170. For qualitative designs, fully anonymity cannot be guaranteed but a pseudonym will be allocated to each participant, and they will be sent their transcript and will have 2 weeks to remove any data that they do not wish to be analysed.

Yes No

Confidentiality. Confidentiality will be maintained by storing any personally identifiable information in a password-protected file (if digital) or a locked filing cabinet (if paper-based).

Yes No

Data protection. All data from participants will be stored in accordance with Data Protection guidelines and will be destroyed (including any audio or video recordings and full transcripts for qualitative research) after the exam board has met or in line with journal guidelines if it is put forward for publication.

Yes No

Right to withdraw. Participants will be informed that they have the right to withdraw from the study at any stage by either not answering any question that they do not feel comfortable answering or by stopping their participation altogether. They will also be informed that if they wish to withdraw from the study after they have submitted their data that they can do so by emailing their unique identifier to the researcher within two weeks of their participation.

Yes No

Debrief. Participants will be fully debriefed as to the aims of the study once their participation is complete and their ethical rights will be reiterated to them. They will also be provided with points of contact should they feel any distress as a result of their participation. This debrief process will also include contact details of the lead researcher, their supervisor and the ethics lead.

Yes No

The information sheet will fully explain the risks of the research's sensitive topic around mental struggles with substance abuse and any psychological challenges with body image and self-esteem. and the debrief form will provide contact details of support services.

Appendix G

Information sheet

Name of Principal Researcher: Alicja Majer

Title of Research: Substance abuse - influence of body image and self-esteem

Aims of the research

The aim of the current research is to investigate factors that influence substance use.

Description of the Procedure

This research is conducted as part of a postgraduate dissertation towards a Masters degree in Psychology at the University of Twente.

The study should take approximately 15-20 minutes. You will be given a consent form which you must sign to participate in the study. You will be asked questions on your current body satisfaction, self-esteem, and substance use. You will be asked to create unique identifier that will be made of the first three letters of your mother's maiden name and the first two numbers of your date of birth. This will ensure that your data will be stored anonymously.

To participate you must be aged 18 or over.

Description of risks

Research such as this has been conducted worldwide with no known negative effects. However, the topic may be of a sensitive nature (about substance abuse/self-esteem and body image problems) so you may feel some negative feelings as result of your participation. You will be provided with the contact details of support services should you wish to speak to someone about any ill-effects felt as a result of your experience and can stop participating at any time.

Data collection and storage

All data will be kept securely in line with Data Protection legislation (digital information will be stored in a password-protected folder and paper-based

information will be stored in a locked filing cabinet). You will be assigned a unique identifier to prevent personal details from being linked directly with your data. Your anonymised data will be combined with that of all participants in the study and this dataset will be available to the Thesis supervisor and the marking team. All data collected from you will be destroyed after the exam board has met, or in line with journal guidelines if the research is published in an academic journal.

Right to withdraw

Participation in this research is voluntary and you have the right to withdraw at any time during the study. You can also withdraw up to two weeks after your participation by emailing a.majer@student.utwente.nl with your unique identifier.

Contact information

If you have any questions about the research, please contact the researcher, *Alicja Majer*: a.majer@student.utwente.nl

If you have any concerns about the conduct of the research, please contact my research supervisor, *Dr Jorge Piano Simoes*, at: j.pianosimoes@utwente.nl

If you wish to discuss the research with an independent party, please contact the chair of the research ethics panel, Dr. P.W. (Peter) de Vries at: p.w.deviries@utwente.nl

You are advised to keep a copy of this information sheet for your records.

This research project has been approved by the BMS Ethics Committee.

Appendix H

**UNIVERSITY
OF TWENTE.**

PSYCHOLOGY DISSERTATION RISK ASSESSMENT School of Natural and Social Sciences

Setting for data collection: Online survey

Hazard Description	Means to Control Hazard
Participant reactivity	Participants will be provided with the researchers email address should they have any questions at any point during the study and will be informed of their right to withdraw at any point by closing the

	<p>browser window. Contact details of support services will be provided in the information sheet, which they are encouraged to keep a copy of.</p> <p>Participants will be fully debriefed at the end of the study and will be provided with the details of support services if they wish to discuss feelings that have arisen as a result of their participation</p>
Researcher safety	The researcher will adjust their privacy settings appropriately.
Researcher reactivity	<p>A reflective log will be kept monitoring the researcher's reactions.</p> <p>Regular supervisor meetings will be attended and any concerns arising will be discussed.</p> <p>The researcher will contact student counselling services if necessary.</p>
Psychological aspects including mental health, wellbeing	<p>Note that these results are a self-assessment and not a professional diagnosis.</p> <p>If any of the questions makes you uncomfortable you can withdraw from the study anytime you want</p> <p>Anonymity</p> <p>All the data will be deleted after the study is completed</p>
Online survey	<p>Do not share your score online</p> <p>Keep the anonymity</p> <p>Complete the survey yourself without the help/advice of others</p> <p>All data will be kept confidential on a secure password protected laptop</p>
Risk to privacy	<p>Use University contact details</p> <p>Do not meet with participants at own home</p> <p>Do not use names of participants in the research report</p> <p>Do not share information about the participants' scores to anyone</p> <p>Store the data safe</p>

Appendix I

Participant Debrief Form

Participant Debrief

Thank you for your participation.

This research involved measuring substance use and how body image and self-esteem could potentially influence that. Your participation in this study was important to find out how much body image and self-esteem can influence substance abuse. Because persons that abuse different substances often struggle with self-acceptance of their body and they experience feelings of being unworthy/having low self-esteem, it is critical to research how much body image and self-esteem influences their substance use. Research has shown that adolescents with negative body image and low self-esteem often struggle with substance abuse and are more often involved in illegal activities.

The data you have contributed will form part of a larger dataset and will remain anonymous and confidential, therefore your data will not be analysed individually, and findings will not be traceable to you as all data will be assigned to a unique identifier rather than your name or any other personal identifiable information. Data will be held by the research team until the exam board meets and the grade for this dissertation project is confirmed and this dataset will be available to the dissertation supervisor and the marking team. After this time any personally identifiable information will be destroyed in line with Data Protection legislation. The anonymized dataset may be published in an academic journal.

All information will be kept securely and processed in line with the ETHICS COMMITTEE BMS / DOMAIN HUMANITIES & SOCIAL SCIENCES ethical guidelines and personal information processed in compliance with data protection legislation. To read more about the university research ethics policy please follow this link: <https://www.utwente.nl/en/service-portal/services/hr/resources/integrity/en/codes-of-conduct/research-ethics-policy-university-of-twente.pdf>

If you would like to withdraw your results, during the study you can do so by exiting the study. To withdraw after study please email the researcher your unique identifier and ask to withdraw your data. You may withdraw your data up until two weeks after taking part – any requests to withdraw after this time may not be actionable as the data may already be pseudo-anonymously entered for analysis.

You are reminded that all precautions have been taken to protect you, however, if you wish to gain additional help or support after the completion of this study, please contact your GP or de Luisterlijn at 088 0767 000 or ehulp@deluisterlijn.nl. Please also feel free to contact Mind korrelatie at [0900 1450](tel:09001450) or visit their website for support: <https://mindkorrelatie.nl>.

If you have questions about the research, then please contact the researcher, Alicja Majer: a.majer@student.utwente.nl

If you have any concerns about the conduct of the research, please contact my supervisor, *Dr Jorge Piano Simoes*, at: j.pianosimoes@utwente.nl
If you wish to discuss the research with an independent party, please contact the chair of the research ethics panel, Dr. P.W. (Peter) de Vries at:
p.w.deviries@utwente.nl

This research project has been approved by the Ethics Committee BMS.

It is recommended that you keep a copy of this debrief form.