

Effect of Personal Belief in a Just World on Drug Use in Adolescence

A Quantitative Study on the Association Between Personal Belief in a Just World and Drug Use mediated by Sense of control, among Dutch Adolescents



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Abstract

This study investigates the association between personal belief in a just world (PBJW), sense of control, and drug use among Dutch adolescents. The study hypothesized that (H1) a stronger PBJW is negatively associated with drug use, (H2) PBJW is positively associated with a sense of control, (H3) sense of control is negatively associated with drug use and (H4) the relation between PBJW and drug use is mediated by a sense of control. Self-report questionnaires were employed to collect data from 515 Dutch adolescents (356 females, 159 males, average age 19.57 years ($SD = 2.36$)). Subsequently, a multiple linear regression and a mediation analysis were conducted to test the hypotheses. The results indicated that PBJW significantly predicted a higher sense of control ($\beta = .95, p < .001$), supporting H2. However, neither the direct effect of PBJW on drug use ($\beta = .02, p = 0.671$) nor the effect of sense of control on drug use ($\beta = -.03, p = 0.524$) were significant. Additionally, the mediation of sense of control ($\beta = .01, p = 0.805$) in the relation between PBJW and drug use was not significant, failing to support H1, H3, and H4. The findings suggest that while PBJW enhances adolescents' sense of control, it doesn't reduce drug use, suggesting other factors are more influential for drug use among adolescents. The study highlights the need for future research to explore additional variables and more complex models to better understand the mechanisms behind adolescent drug use.

Keywords: Personal Belief in a Just World, Sense of Control, drug use, mediation analysis, Dutch adolescents

Introduction

Studies indicate that there is a commonly observed rise in deviant behavior during adolescence, often accompanied by the initiation of substance use during this phase (Veenstra & Laninga-Wijnen, 2022). Recent decades have witnessed a notable rise in the consumption of illicit recreational drugs (Van Den Bos et al., 2022). In 2023, over half of Dutch youth in the Great Nightlife Survey had used MDMA/ecstasy. There are indications of a slight increase in ecstasy use among nightlife attendees since 2020, with nearly 90% using the drug multiple times annually (Trimbos Institute, 2024). Early and later adolescents are particularly susceptible to both initiating and suffering from the adverse effects of substance use compared to older age groups (Arain et al., 2013). Adolescents are the group of people most prone to addiction (Luikinga et al., 2018), most vulnerable for drug use (Degenhardt et al., 2016) and adolescents who abuse drugs are also reported to have higher rates of physical and mental illness and reduced overall health and well-being (Schulte & Hser, 2013). Adolescent substance use is thus a risk behavior that deserves sustained attention (Hoffmann, 2022). Therefore, adolescents are a critical population to study.

Belief in a just world (BJW) is associated with an increased desire to engage in prosocial behavior, and it is also linked with decreased antisocial and deviant behaviors (Bartholomaeus & Strelan, 2019). While studies across German and Indian samples have shown a relation between BJW and some deviant behaviors, such as school cheating, stealing and public destruction of property (Donat et al., 2014), there remains a gap in the literature regarding BJW and illicit drug use specifically (Donat et al., 2014). BJW is generally categorized into two types: personal and general (Dalbert, 1999). In this study, the focus is specifically on personal belief in a just world (PBJW), which pertains to individuals' beliefs about their own personal experiences of justice and fairness.

Building upon the established predictors of adolescent substance use, adolescents' perception of control over their situations is crucial for avoiding substance-related risks and adhering to prosocial behaviors guided by a strong PBJW (Bartholomaeus & Strelan, 2019; Bearinger & Blum, 1997). Investigating sense of control as a mediator could illuminate how PBJW shapes adolescents' behaviors, offering insights into factors that mitigate or exacerbate substance use outcomes.

Moreover, it's vital to explore protective factors for drug use among adolescents, such as PBJW and sense of control (Bartholomaeus & Strelan, 2019). Identifying these factors enables the development of strategies and interventions that strengthen resilience and mitigate the risks associated with substance use, empowering adolescents to make healthier choices (Hofmann et al., 2013).

Exploring the potential link between PBJW, a sense of control, and drug use among adolescents is crucial. While previous studies have shown associations between BJW and various deviant behaviors (Donat et al., 2014), it's unclear if PBJW influences adolescent drug engagement. Additionally, adolescents' sense of control over their situations has been linked to their ability to avoid harmful risks, like substance use (Bearinger & Blum, 1997). Therefore, the research question this study aims to answer is: "To what extent does personal belief in a just world relate to drug use among Dutch adolescents aged 16 and above, and is this relationship explained by their sense of control?"

Literature Review

Personal Just World Belief

People are motivated to believe in a just world (BJW). BJW posits that individuals believe they live in a predictable world where people get what they deserve (Lerner, 1980). The BJW asserts that, quite justly, good things tend to happen to good people and bad things to bad people (Furnham, 2003).

The just world hypothesis proposed by Lerner (1980), states that “People want to and have to believe they live in a just world so that they can go about their daily lives with a sense of trust, hope and confidence in their future”. BJW encourages individuals to pursue long-term goals (Furnham, 2003).

Three intensively investigated adaptive functions in the BJW can be identified (Dalbert, 1999). First, the trust function enables strong just world believers to place more trust in others and in the justice of their fates (Peter et al., 2012). Second, the assimilation function of BJW helps individuals interpret their lives in a meaningful way (Peter et al., 2012). Third, the motive functions compel individuals to behave justly to maintain a just world (Donat et al., 2014). The theory posits that the stronger one's BJW, the more motivated they are to maintain justice through their behavior (Donat et al., 2014).

There is a distinction between a BJW for the self (personal BJW) and a BJW in general (general BJW) (Dalbert, 1999; Lipkusa et al., 1996). Personal BJW (PBJW) refers to the degree to which individuals believe that they themselves get what they deserve, whereas general BJW (GBJW) refers to the degree to which they believe that people in general get what they deserve (Alves & Correia, 2009). PBJW is uniquely associated with mood level, life satisfaction, and self-esteem compared to GBJW, and participants consistently reported stronger PBJW compared to GBJW (Dalbert, 1999).

Adolescents with a strong PBJW are more likely to engage in prosocial behaviors and have higher levels of life satisfaction and self-esteem. PBJW was associated with less rule-breaking behavior (Otto & Dalbert, 2005), and less delinquent intentions (Sutton & Winnard, 2007). Donat et al. (2014) observed that the more students endorsed the PBJW, the less likely they were to self-report cheating and delinquent acts. Thus, focusing on PBJW provides valuable insights into how adolescents' beliefs about justice in their own lives influence their overall development and decision-making processes.

Drug Use

Drug use refers to the consumption of substances that can alter an individual's mental state, physical health, and behavior, often leading to addiction and other adverse effects (Substance use - Health & United States, n.d.) This includes the use of alcohol, tobacco, marijuana, and a variety of illicit drugs (Trucco, 2020).

Drug use is particularly relevant for adolescents, as this developmental stage is marked by experimentation and risk-taking behaviors, which can include the initiation of drug use and the establishment of potentially harmful habits like drug abuse (Veenstra & Laninga-Wijnen, 2022). In addition, adolescent substance use is relatively common (Trucco, 2020).

PBJW and Drug Use

In terms of prevalence, cannabis is the most used drug. However, the use of hard drugs like MDMA (XTC) and cocaine has risen due to their popularity as party drugs (Furlong, 2013). While drug use among young people still triggers moral panic, there is a notable degree of acceptance for soft drugs, particularly cannabis (Furlong, 2013). Evidence suggests that young people clearly distinguish between cannabis and harder drugs like MDMA and cocaine, often perceiving cannabis as less harmful (Steinberg, 2019).

The term deviant behavior comprises many different behaviors violating social or legal norms (Busching & Krahe, 2017). This can easily be transferred to adolescence where several forms of deviant behavior can be found. Drug use can be considered as an unjust, deviant behavior as it can violate social norms and interpersonal rules (Donat et al., 2014).

Individuals with a strong PBJW hold firm to the belief that their actions and choices influence outcomes in their lives, and they strive to maintain fairness and justice in their personal environments (Dalbert, 1999). This belief system can influence their adherence to societal norms and their avoidance of behaviors that are stigmatized and less socially accepted, such as the use of hard drugs like XTC and cocaine.

The motive functions of BJW urge individuals to behave justly to uphold a fair world where people receive what they deserve (Donat et al., 2014). This theory suggests that stronger BJW motivates individuals to maintain justice through their behavior (Donat et al., 2014). This concept is relevant to understanding how PBJW influences behaviors such as drug use, as individuals with high PBJW may be inclined to avoid stigmatized behaviors like substance use to uphold fairness and justice in their personal lives.

Additionally, Gottfredson and Hirschi's (1990) self-control theory posits that low self-control leads to impulsive behavior and seeking immediate gratification, often resulting in deviant behaviors like drug use. Individuals with low self-control are more likely to engage in substance use due to their inability to consider long-term consequences (Gottfredson & Hirschi, 1990). Self-control is the ability to resist certain behaviors, particularly those that offer immediate satisfaction but lead to negative consequences, and instead choose actions that promote positive outcomes in the long run. (Hoffmann, 2022).

Relating this to PBJW, it can be hypothesized that individuals with a stronger PBJW may have higher levels of self-control. They believe that their efforts and actions influence outcomes in their lives, motivating them to regulate their behavior and avoid risky activities such as drug use (Alves & Correia, 2009). High self-control acts as a protective factor against substance use, as individuals with greater self-control are better able to resist immediate gratification in favor of long-term positive outcomes (Hoffmann, 2022).

Adolescents with a strong PBJW and high self-control can more effectively avoid the harmful risks associated with substance use (Bearinger & Blum, 1997). They are more likely to consider the negative consequences of drug use, such as legal issues and health problems, and thus refrain from engaging in such behaviors (Leimberg & Lehmann, 2020; Vito et al., 2019).

Empirical studies support these theoretical frameworks, demonstrating that individuals with a strong belief against substance use and those with a strong desire to maintain their health were more likely to be protected from involvement in drug abuse (Kazdough et al., 2018). This aligns with findings that high believers in a just world also demonstrate a tendency to refrain from unjust behavior and actively seek justice (Correia & Dalbert, 2008), as the PBJW is associated with increased prosocial behavior and decreased antisocial behaviors (Bartholomaeus & Strelan, 2019).

This study aims to explore the potential relationship between PBJW and drug use, particularly focusing on drugs that are less socially accepted, such as XTC and cocaine. Individuals with a strong PBJW may be less inclined to use these hard drugs due to their stigmatization and lower social acceptance.

Sense of Control

Human beings have a strong need to control events in their everyday lives (Skaff et al., 2007). Self-control primarily addresses individuals' ability to manage impulses, resist temptations, and exhibit goal-directed behavior (Baumeister et al., 2018). In contrast, sense of control encompasses broader perceptions regarding individuals' perceived influence over their lives, situations, and outcomes (Skaff et al., 2007). A sense of control means an individual believes his/her behaviors can control objective events, and the individual gradually forms expectations regarding the consistency between personal behaviors and consequences (Mittal & Griskevicius, 2014; Zhu et al., 2020). It encompasses feelings of autonomy, mastery, and predictability, which are crucial for psychological well-being and adaptive functioning (Mirowsky & Ross, 2007). A sense of control is also linked to long-term health and well-being (Lachman & Weaver, 1998).

PBJW and Sense of Control

BJW promotes the development of a sense of control: all people get what they deserve

and believe their own behaviors can influence event development and consequences (Peng et al., 2019). Testé and Perrin (2013) suggested that higher BJW led to a greater sense of control.

PBJW is grounded in the principle of deserving, as articulated by Lerner (1980) in his concept of 'the personal contract'. According to Lerner (1980), the BJW can be interpreted as indicating a personal contract between an individual and their social world. This principle suggests that individuals learn from childhood to delay immediate gratification to earn greater long-term rewards (Bartholomaeus & Strelan, 2019). The personal contract provides individuals with a sense of control (Lerner, 1980), wherein they believe that their actions and efforts will lead to deserved outcomes in a just world.

Additionally, recent research by Ucar et al. (2019) found that PBJW increased perceived control, which in turn resulted in decreased hopelessness and increased life satisfaction. People who believe in a PBJW expect that they will do better than similar others and are even more optimistically biased when they believe such outcomes are within their control (Strelan & Callisto, 2020).

Sense of Control and Drug Use

According to Skinners' 'a guide to constructs of control', sense of control refers to the subjective perception individuals have regarding their ability to influence events and outcomes in their lives. It encompasses beliefs about personal agency, self-efficacy, and the degree of influence one has over their environment. Research suggests that a sense of control plays a significant role in influencing various behaviors, including substance use (Skinner, 1996).

A sense of control has been linked to adaptive behaviors and coping strategies (Skaff et al., 2007). Individuals with a heightened sense of control are more inclined to engage in

problem-solving behaviors rather than resorting to maladaptive coping mechanisms such as substance use (Mirowsky & Ross, 2007).

Drug use can be viewed as a coping mechanism employed by individuals who perceive a lack of control over their lives or face distressing situations (Wills et al., 1996). Individuals with a reduced sense of control may turn to drugs as a means of escaping or alleviating stressors, leading to increased susceptibility to substance abuse.

Research indicates that individuals with a stronger sense of control tend to exhibit less risk-taking behavior and demonstrate greater ability to delay gratification in uncertain situations (Whitson & Galinsky, 2008). This sense of control is also linked to improved functional health, as those who perceive greater control are more inclined to adopt health-promoting behaviors like regular exercise and healthier dietary choices (Andrew et al., 2008). Therefore, higher levels of sense of control are likely associated with reduced drug use, given their tendency to resist immediate temptations in favor of long-term goals.

The Mediating Role of Sense of Control

Individuals with a strong PBJW are motivated to maintain a just world through their behaviors, including avoiding substances that are stigmatized and socially unacceptable (Bartholomaeus & Strelan, 2019). Their belief that actions lead to deserved outcomes supports a sense of control, guiding them away from risky behaviors like drug use.

A sense of control can also explain peoples' prosocial behavior. People with a strong PBJW are motivated to abide by the laws of justice, possibly because these laws provide the individual with a sense of control. If they were to break the laws, they would be disrupting the very system that facilitates their sense of control (Bartholomaeus & Strelan, 2019). Therefore, PBJW instills a sense of control, which in turn can reduce the likelihood of drug use.

Therefore, understanding the mediating role of sense of control provides insights into how beliefs about justice shape behavior, highlighting potential avenues for interventions aimed at promoting healthier choices and reducing substance use among adolescents.

The Current Study

In summary, individuals with strong PBJW may believe in a world where their actions influence outcomes, contributing to an enhanced sense of control. A heightened sense of control may lead individuals to make more deliberate and responsible decisions, potentially reducing the likelihood of engaging in drug use. PBJW may influence drug engagement by shaping individuals' sense of control, ultimately affecting their behavioral choices.

Therefore, this research aims to answer the following question: "To what extent does personal belief in a just world relate to drug use among Dutch adolescents aged 16 and above, and is this relationship explained by their sense of control?" Based on the above literature, this study tests the following hypotheses:

Hypothesis 1 (H1): A stronger personal belief in a just world is negatively associated with drug use among Dutch adolescents.

Hypothesis 2 (H2): There is a positive association between personal belief in a just world and a sense of control.

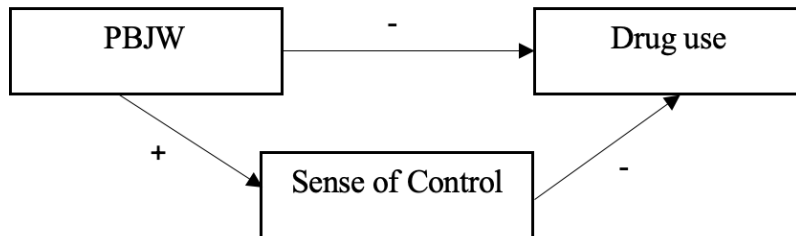
Hypothesis 3 (H3): There is a negative association between sense of control and drug use

Hypothesis 4 (H4): The relation between personal belief in a just world and drug use is mediated by sense of control

A model of these hypotheses is shown in the conceptual model in Figure 1.

Figure 1

Mediating effect of sense of control in the relationship between personal belief in a just world and drug use



Methods

Participants and Design

The study utilized cross-sectional data from the fourth wave of the YOUth Got Talent project (YGT), a longitudinal project focusing on the SES-health gradient among adolescents (16+). The dataset consists of adolescents from MBO schools (vocational education) in the Utrecht region of the Netherlands, with a focus on creative, technical, health education, and business fields. Schools were approached to participate in the study. Grafisch Lyceum Utrecht, Nimeto, and ROC Midden Nederland participated.

Due to the chosen variables, this research focuses on the last wave (wave 4), which was conducted from October 2021 to January 2022, utilizing survey-based methodology. Forty-two classes across GLU (21 classes), Nimeto (11 classes) and ROC MN (10 classes) participated in Wave 4. The adolescent response rate was 76% (75% in GLU, 77% in Nimeto, and 79% in ROC MN). Because information about classes is lacking in wave 4, no data about attrition in wave 4 is available.

Data Inspection

In total, 583 adolescents participated in the fourth wave. Data from the existing dataset was exported to JASP. An initial selection needed to be made from this data. Respondents

with more than 4 missing values on the Personal Belief in a Just World scale and the Sense of Control scale were removed from the dataset, resulting in the exclusion of 53 respondents. Participants who did not answer the drug-related question were also removed, accounting for 5 respondents. Since the analysis focuses on males and females only, respondents who selected the "other" gender option were also excluded, removing an additional 10 respondents. The data from the remaining participants ($n = 515$) were included in the analysis. These participants comprised 356 females and 159 males, with an average age of 19.57 years ($SD = 2.36$).

Procedure

Trained researchers administered a questionnaire covering diverse topics during classroom visits for the fourth wave. The self-report questionnaire took approximately 20-30 minutes, with students in different tracks completing varied sets of questions based on the expected attention levels. Most of the data was collected in the physical classrooms. Data in three classes was collected online. Depending on the available technology within schools, participants filled out the questionnaire on a computer or on paper. All questionnaires utilized in this study were administered in Dutch

Parents of the participants under the age of 18 were informed in advance of the study through consent letters. All participants were informed at school before the study took place about the research being voluntary and that consent could be withdrawn at any time. All participants gave active informed consent by signing a consent form and were informed about the anonymization of their data. No rewards were provided. Ethical approval was granted by the Ethics Assessment Committee of the Faculty of Social Sciences at Utrecht.

Measures

In this study, the variables PBJW, drug use, sense of control, sex, and age were used.

Personal Belief in a Just World

The Personal Belief in a Just World scale (Dalbert, 1999) was employed to assess just world beliefs. This scale comprises 7 items rated on a 7-point Likert scale ranging from 1 (Completely disagree) to 7 (Completely agree). The scale included questions such as “I think I largely deserve what happens to me” and “Usually the events in my life are just.” A Cronbach’s α of 0.88 indicates that this scale was reliable, and Dalbert (1999) established the scale's validity. A mean score of the seven items of the Personal Just World Belief scale was created. Higher scores on this mean variable indicate stronger beliefs in a just world.

Drug Use

Adolescent drug use was measured using one question: "On how many days have you used XTC (ecstasy, MDMA), cocaine (coke or white), crack (base coke), 4-fluoramphetamine (4-FA/4-FMP), mephedrone (3-MMC, 4-MMC/Miaow Meow), amphetamine (uppers, pep, or speed), ketamine, magic mushrooms or truffles, or GHB in your entire life. Response options included never 1 or 2 days, 3-5 days, 6-9 days, 10-19 days, 20-29 days, and 30 days or more. A higher score on this variable indicates more days of drug use.

Sense of Control

To measure sense of control, the Sense of control scale (Lachman & Weaver, 1998) was employed. The scale consists of 11 items on a 5-point Likert scale ranging from 1 (Completely agree) to 5 (Completely disagree). Questions like “I can do little to change the important things in my life” and “About what happens in my life, I often have no control” were asked. Cronbach’s $\alpha = 0.81$, indicates that this scale was reliable. A mean variable was created from the 11 scores of the Sense of Control scale. After recoding some variables, a higher score means a higher sense of control.

Control Variables

Gender and age were included as control variables due to their potential influence on drug use behaviors (Leimberg & Lehmann, 2020; Vito et al., 2019), with males often exhibiting higher rates of substance use compared to females (Johnston et al., 2021). Also, age is a critical factor in adolescence due to developmental changes and varying levels of exposure to risk factors with a distinction between early and late adolescence and their motivations for drug use (Nawi et al., 2021). Furthermore, Liu and Sun (2023) suggest that both gender and age can influence just world beliefs, underscoring the importance of controlling for these variables in the analysis.

Age was assessed via a single-item question prompting participants to provide their birth year and month. Gender was evaluated using a question inquiring, "Are you male or female?", with response options including male (0), female (1), and other.

Data Analysis

For the analyses, JASP version 0.18.3.0 was employed, and necessary variables were created and recoded as needed. Additionally, missing data were addressed by removing them, and mean imputation was applied. Reliability analyses were then conducted to evaluate the Cronbach's alphas (α) of both the PBJW scale and the Sense of Control scale, revealing strong reliability with no items yielding values below 0.70. Consequently, no adjustments were required, affirming the scales' robustness in measuring their respective constructs. Descriptive statistics were subsequently calculated to summarize the key variables of interest, including the mean, standard deviation, and range. Additionally, Pearson correlations were computed to explore the relationships between variables.

Prior to conducting the analysis, several assumptions were assessed using multiple linear regression with PBJW, sense of control, age, and sex as predictors and drug use as the outcome variable. Linearity and homoscedasticity were examined using residual vs. predicted

plots, while the normality of residuals was verified through histograms and Q-Q plots (See Figures 2, 3 and 4 in Appendix B). Outliers and influential cases were identified using standardized residuals and Cook's distance, with a criterion of -3 to 3 for standard residuals and a cutoff of 1 for Cook's distance. Nineteen cases with standardized residuals above 3 were manually reviewed for errors or response inconsistencies, but no patterns of careless responding were observed. Additionally, multicollinearity between the predictors was assessed via VIF values. These ranged from 0.738 to 1.356, well below the critical threshold of 10. All assumptions were met, and no further adjustments or transformations were required before proceeding with the analysis.

Three multiple linear regression analyses were conducted to investigate H1, H2, and H3. Subsequently, a mediation analysis was performed, with drug use as the dependent variable, PBJW as the independent variable, and sense of control as the mediator to test H4.

Results

Descriptive statistics and Correlations

Table 1 presents the descriptive statistics and correlations for the dependent variable (drug use), the independent variable (PBJW) the mediator (sense of control), and the two control variables (age and sex).

In terms of correlations, drug use was found to have a small positive correlation with age, indicating that older adolescents reported slightly higher levels of drug use (Evans, 1996). PBJW had a significant positive correlation with a sense of control, suggesting that a stronger PBJW is associated with a higher sense of control. No other correlations were significant.

Table 1*Descriptive Statics and Pearson Correlations for Study Variables*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Range	1	2	3	4
1. Drug use	515	1.38	1.08	1-7	-			
2. PBJW	515	4.61	1.02	1-5	0.01	-		
3. Sense of Control	515	3.64	0.54	1-7	0.02	0.51**	-	
4. Age	515	19.57	2.36	-	0.12*	-0.05	-0.02	-
5. Sex	515	0.31	0.46	-	-0.04	0.04	-0.05	-0.05

p* < .05 *p* < .001.*Note.* For the variable Sex '0' denotes female respondents and '1' denotes male respondents.**Multiple Linear Regression**

The results revealed a slight increase in drug use with higher PBJW ($\beta = .02$), although this association is not statistically significant ($p = 0.671$). Only 1.3% of the variance in drug use is explained by the model ($R^2 = .01$), suggesting that the predictors (PBJW sex, and age) have very little explanatory power for drug use. Furthermore, the overall model was not statistically significant ($F(3, 511) = 2.255$; $p = .081$), failing to support hypothesis H1, which posited a negative association between PBWJ and drug use.

Based on the results there is a significant positive association between PBJW and a sense of control ($\beta = .95$, $p < .001$). Specifically, for every one-unit increase in PBJW, there is a corresponding increase of 0.95 units in sense of control. This relationship remains statistically significant even after controlling for age and sex. Additionally, the model explains a substantial proportion of the variance in sense of control ($R^2 = 0.26$, $F(3, 511) = 60.57$; $p < .001$). As a result, stronger perceptions of PBJW are linked to higher sense of control. H2 is thus supported by the finding, which suggested a positive association between PBJW and a sense of control.

H3 posited a negative association between a sense of control and drug use. Results showed no significant association between sense of control and drug use ($\beta = .01$, $p = 0.669$).

Additionally, the model exhibited minimal explanatory power ($R^2 = .00$, $F(3, 511) = 0.694$; $p = 0.556$). Therefore, these findings do not support H3.

Mediation Analysis

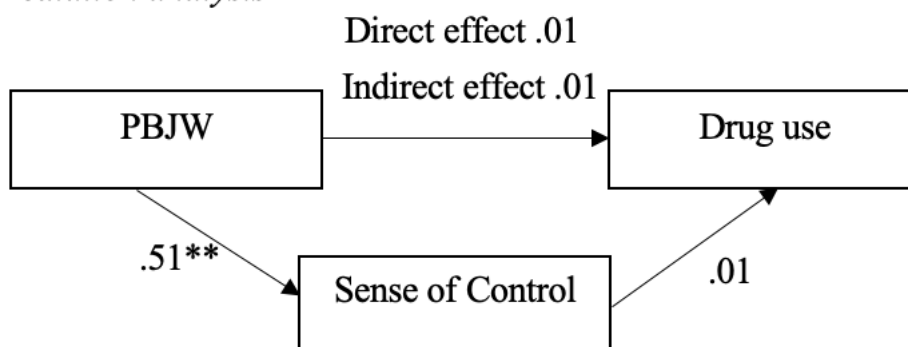
The mediation analysis was carried out to explore the potential mediating role of a sense of control in the relationship between PBJW and drug use. The results are shown in Figure 5.

H4 stated that: the relation between PBJW and drug use is mediated by sense of control. The mediation analysis revealed that the indirect effect of PBJW on drug use through a sense of control was also non-significant ($\beta = .01$, $SE = .03$, $p = 0.805$, 95% CI $[-0.05, 0.06]$). Additionally, the mediation analysis reveals that the model explains a modest amount of variance in a sense of control ($R^2 = .26$), but very little variance in both drug use ($R^2 = .01$) and PBJW ($R^2 = .01$). The results suggest that sense of control does not mediate the relationship between PBJW and drug use, which does not support Hypothesis 4.

Looking at the control variables, age shows a significant relationship with drug use ($\beta = .05$, $p = 0.01$). Table 2 (see Appendix C) presents the rest of the confounder results, which are not significant.

Figure 5

Mediation analysis



** $p < .001$

Discussion

In recent decades, adolescent substance use has risen significantly. Adolescents, highly susceptible to addiction and its adverse effects (Luikinga et al., 2018; Schulte & Hser, 2013), have been extensively studied for predictors of substance use. However, the role of PBJW, associated with prosocial behavior and reduced deviance (Bartholomaeus & Strelan, 2019), remains underexplored in this context. Additionally, a strong sense of control is linked to improved health outcomes and decreased risky behaviors, including substance use. This study aims to investigate the relationship between PBJW and drug use among Dutch adolescents, focusing on whether adolescents' sense of control mediates this association.

The results of this study indicate that there is neither a direct relationship between PBJW and drug use among Dutch adolescents nor an indirect relationship through a sense of control. Although PBJW is associated with a higher sense of control, this increased sense of control does not translate into a reduced likelihood of drug use.

H1 posited that a stronger PBJW would be negatively associated with drug use among Dutch adolescents. The results did not support this hypothesis, as the direct effect of PBJW on drug use was not statistically significant. This finding suggests that believing in a just world, does not directly influence adolescents' decisions to engage in drug use. The result is inconsistent with theoretical expectations that individuals with a stronger PBJW would be more inclined to adhere to societal norms and avoid behaviors like drug use that are perceived as unjust (Alves & Correia, 2009; Dalbert, 1999; Donat et al., 2014). It also contrasts with prior research, suggesting that high believers in a just world also demonstrate a tendency to refrain from unjust behavior and actively seek justice (Correia & Dalbert, 2008), and the association between the PBJW and decreased antisocial behaviors (Bartholomaeus & Strelan, 2019).

One possible explanation for this discrepancy is the unique Dutch context, where drug use, particularly soft drugs, is more socially accepted and less stigmatized compared to other countries. The increasing popularity of party drugs at festivals may have also normalized hard drug use (Hilbink et al., 2024). These cultural differences might reduce the impact of PBJW on drug use behaviors, as societal norms surrounding drug use in the Netherlands differ from contexts where it is more heavily penalized and morally condemned. Consequently, the protective effect of PBJW against drug use may be less pronounced in Dutch adolescents, highlighting the importance of considering cultural and societal factors in psychological research.

H2 proposed a positive association between PBJW and a sense of control. The results provided support for this hypothesis, indicating that adolescents with a stronger belief in a just world reported higher levels of sense of control. The findings align with theories and empirical evidence indicating that PBJW enhances individuals' sense of control (Furnham, 2003; Sutton & Douglas, 2005). PBJW, rooted in the principle of deserving and 'the personal contract' (Lerner, 1980; Bartholomaeus & Strelan, 2019), suggests that individuals who perceive the world as fair and just feel empowered to influence their outcomes. Recent research (Ucar et al., 2019; Strelan & Callisto, 2020) supports that PBJW increases perceived control. This study builds upon current research by examining Dutch adolescents, providing valuable insights into how cultural influences shape these dynamics.

H3 suggested a negative association between a sense of control and drug use. The results did not support this hypothesis, as the effect of a sense of control on drug use was not statistically significant. These results challenge existing findings that suggested a sense of control could contribute to lower risk-taking behavior and a greater ability to resist immediate temptations in favor of long-term goals (Whitson & Galinsky, 2008), and theories suggest that

people with a strong sense of control tend to use problem-solving strategies rather than turning to substance use (Mirowsky & Ross, 2007).

An explanation for this discrepancy could be that while a sense of control is generally considered protective, its influence on drug use behavior may vary depending on contextual factors such as cultural norms, regional differences in drug availability, and methodological variations across studies (Mirowsky & Ross, 2007; Skaff et al., 2007). Research suggests that adolescents with a strong sense of control are more likely to exhibit adaptive behaviors and resist immediate temptations like substance use (Mirowsky & Ross, 2007), yet the extent of this protection may be moderated by societal attitudes towards drug use and local prevalence rates. Methodological differences, including sampling procedures and measurement tools, also contribute to divergent findings in literature, underscoring the need for nuanced exploration of how sense of control interacts with environmental factors to shape drug-related behaviors among adolescents.

H4 posited that a sense of control would mediate the relationship between PBJW and drug use. The results did not support this hypothesis. This finding indicates that while PBJW is positively associated with a sense of control, this sense of control does not translate into lower drug use among adolescents. This contradicts some prior research suggesting that a sense of control could mediate the effects of PBJW on health-related behaviors (Bartholomaeus & Strelan, 2019). One possible explanation is that there is no direct effect between PBJW and drug use and, therefore likely no indirect effect through a sense of control either.

Implications

Based on the study's findings, several implications emerge. First, interventions focused solely on enhancing PBJW may not effectively reduce adolescent drug use (Sanchez et al., 2011), given the lack of a direct association found. Instead, efforts should prioritize

addressing more immediate risk factors such as social pressures and drug availability. Second, while PBJW is associated with sense of control, the absence of a mediating effect of sense of control on drug use suggests that interventions solely targeting sense of control may not lead to reduced substance abuse. Understanding these findings requires consideration of cultural norms surrounding drug use in the Netherlands and methodological differences across studies, emphasizing the need for context-specific approaches in substance abuse prevention among Dutch adolescents.

Limitations, Strengths & Future Research

The current study has several strengths. First, the study employs well-validated scales (e.g., the Personal Belief in a Just World scale and the Sense of Control scale) with high reliability (Cronbach's α), ensuring the measurement tools are robust and the data collected is reliable. Second, the study focuses on adolescents, a critical demographic for understanding substance use and its prevention, given that adolescence is a period marked by high vulnerability to substance abuse (Schulte & Hser, 2013). Third, by exploring the role of PBJW, the research addresses a relatively underexplored area in the context of substance use. And last, including control variables like age and sex helps to isolate the specific effects of PBJW and sense of control on drug use. This methodological approach strengthens the validity of the findings by accounting for potential confounding factors.

Despite the study's strengths, several limitations should be acknowledged. Although a longitudinal dataset was used, the focus on the last wave of data limits the ability to infer causality. Cross-sectional analyses can identify associations but cannot establish temporal relationships or causal links between BJW, sense of control, and drug use. Furthermore, while mediation analysis provides insights into the indirect effects of BJW on drug use through sense of control, it still does not establish a definitive causal pathway due to the cross-sectional nature of the data used in this study (Rohrer et al., 2022) Future research could

benefit from using longitudinal designs that track changes in PBJW, sense of control, and drug use behaviors over time. This approach would allow for the examination of developmental trajectories and the identification of critical periods when interventions may be most effective (Rohrer et al., 2022).

Also, the reliance on self-reported data for drug use and other measures may introduce bias, such as social desirability bias or recall bias. Participants might underreport their drug use (Sloan et al., 2004) or overestimate their sense of control (BRON). Incorporating peer and parental reports could also help to triangulate the data and reduce the reliance on self-reports alone.

Furthermore, the study was conducted in a specific cultural context (Dutch adolescents and MBO students), which may limit the generalizability of the findings. Cross-cultural studies are needed to explore whether the relationships observed in this study hold in different cultural settings.

Another limitation of this study is related to the assumption of normality in the distribution of the dependent variable, drug use. While the residuals were approximately normally distributed, the distribution of the drug use variable itself was not perfect. Specifically, most adolescents reported never using drugs or using them on very few days, resulting in a skewed distribution. This lack of normality could affect the accuracy of the regression and mediation analyses, potentially leading to biased estimates.

Future research could greatly benefit from including a more diverse participant sample, particularly individuals who use drugs more frequently.

Conclusion

In conclusion, this study sheds light on the intricate relationship between PBJW, a sense of control, and drug use among Dutch adolescents. Despite not finding the expected direct or mediated effects, the findings highlight the need for deeper exploration into how

cultural contexts and individual perceptions shape behaviors. Future research should consider longitudinal designs to unravel temporal sequences and causal pathways more robustly. We can develop more targeted interventions that better support adolescents in making informed and healthier choices, ultimately fostering resilience and well-being in diverse societal contexts.

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Appendices

Appendix A: Reflection on interdisciplinarity

Using insights from various scientific subdisciplines significantly enhances our understanding of the problem under investigation. The problem under investigation here is the complex phenomenon of drug use among adolescents. Drug use is influenced by a multitude of factors including individual beliefs, social contexts, and health behaviors. By integrating perspectives from psychology, sociology, and public health, we can better understand the complex interactions between individual beliefs, social contexts, and health behaviors. For instance, combining theories from psychology (like the Belief in a Just World & sense of control) and public health (like patterns of drug use) allows us to grasp how these factors influence each other. This interdisciplinary approach helps identify the underlying mechanisms and broader social factors that contribute to drug use.

The disciplines that are particularly meaningful for the central research questions in this study include:

Psychology provides insights into individual-level processes and cognitive beliefs, such as BJW and sense of control, and their impact on behavior. By examining these psychological constructs, we can understand how personal beliefs shape an individual's actions and decision-making processes, including their engagement in risky behaviors like drug use. In this study, psychological theories and empirical research are utilized to analyze how BJW and sense of control influence adolescents' drug use behaviors. For example, the study draws on Lerner's Just World Theory, which posits that individuals who believe the world is fair are more likely to exhibit prosocial behaviors and adhere to social norms.

Sociology offers an understanding of social structures, social contexts, and the broader societal influences on individual behaviors. This discipline helps explore how social norms shape drug use patterns. By integrating sociological perspectives, the study considers how the

social environment and community-level factors contribute to adolescents' drug use. For instance, the study examines the Dutch context, where drug use, particularly soft drugs, is more socially accepted and less stigmatized. This normalization of drug use in the Netherlands may influence how adolescents perceive and engage in drug use behaviors.

Public Health helps to understand patterns of drug use and develop interventions aimed at reducing substance abuse. This discipline focuses on the prevalence of drug use, risk factors, and the effectiveness of prevention and intervention strategies. The study incorporates public health data and frameworks to identify trends in drug use among adolescents.

Drawing on these disciplines is meaningful because it allows for a comprehensive analysis of drug use behavior by considering both individual psychological factors and broader social influences. This holistic approach is crucial for developing effective prevention and intervention strategies.

Insights and perspectives from stakeholders outside academia, such as healthcare providers, community organizations, and policymakers, are crucial for understanding the practical implications of the research problem. These stakeholders provide real-world perspectives and data that can inform and validate theoretical models. In the context of this study, perspectives from drug rehabilitation counselors, community health workers, and policymakers are particularly important. These stakeholders help bridge the gap between theoretical research and practical application, ensuring that the research findings are relevant and can be effectively translated into practice.

While an interdisciplinary approach is often beneficial, a monodisciplinary approach may be legitimate if the research problem is highly specific and well-defined within a single discipline. For instance, if the primary focus of the study is on the cognitive mechanisms underlying BJW without considering broader social factors, a purely psychological approach

could be sufficient. However, given the multifaceted nature of drug use behavior, an interdisciplinary approach is more appropriate for capturing the complexity of the problem.

Using mixed methods enriches our investigation. Qualitative interviews with Dutch adolescents illuminate their drug use experiences, uncovering cultural norms and social influences. Meanwhile, large-scale surveys quantify drug use across demographics, revealing correlations with age, gender, and socio-economic status. Integrating these methods yields a thorough understanding of drug use dynamics, blending nuanced qualitative insights with quantitative trends. By integrating these approaches, we gain a comprehensive understanding of adolescent drug use in the Netherlands. Qualitative insights provide nuanced explanations for individual behaviors, while quantitative analysis offers broader trends and statistical associations. This combined approach ensures a robust exploration of the complex dynamics influencing drug use behaviors among Dutch adolescents.

Investigating the problem from multiple analytical levels, such as individual, community, and societal perspectives, can lead to a deeper understanding of the research problem. Analyzing individual beliefs and behaviors in the context of broader social and environmental factors allows for a more holistic understanding. For instance, examining how individual BJW interacts with community-level factors (e.g., social support, neighborhood safety) and societal-level factors (e.g., policy, socioeconomic status) can provide insights into the complex dynamics of drug use. The joint analysis of these levels is meaningful as it helps to identify potential intervention points at different levels of influence, thereby informing more effective and comprehensive prevention strategies.

Appendix B: Figures Linearity and Homoscedasticity

Figure 2

Residual vs. Predicted Plots

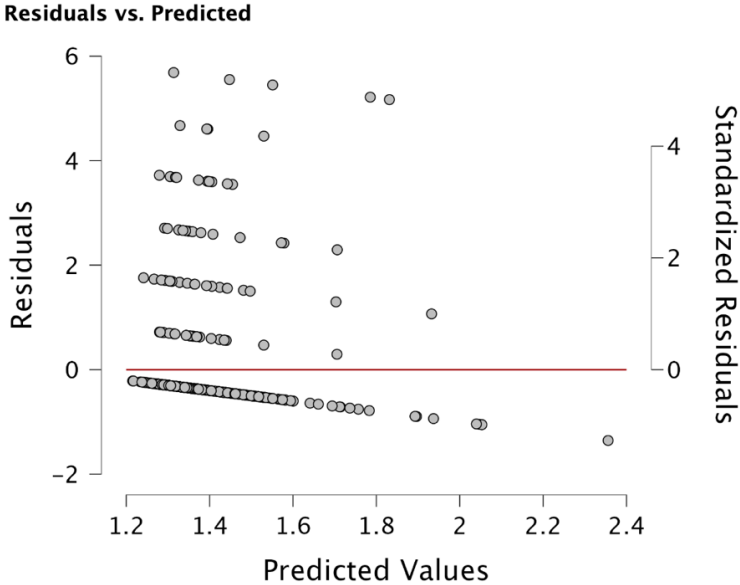


Figure 3

Q-Q plots Normality

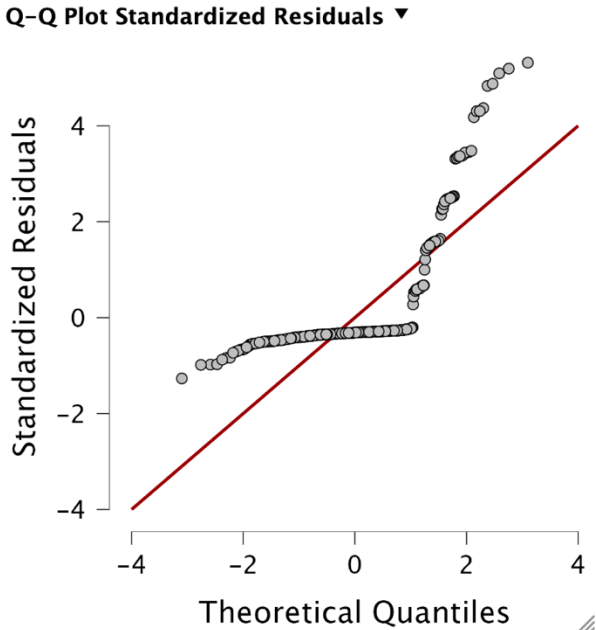
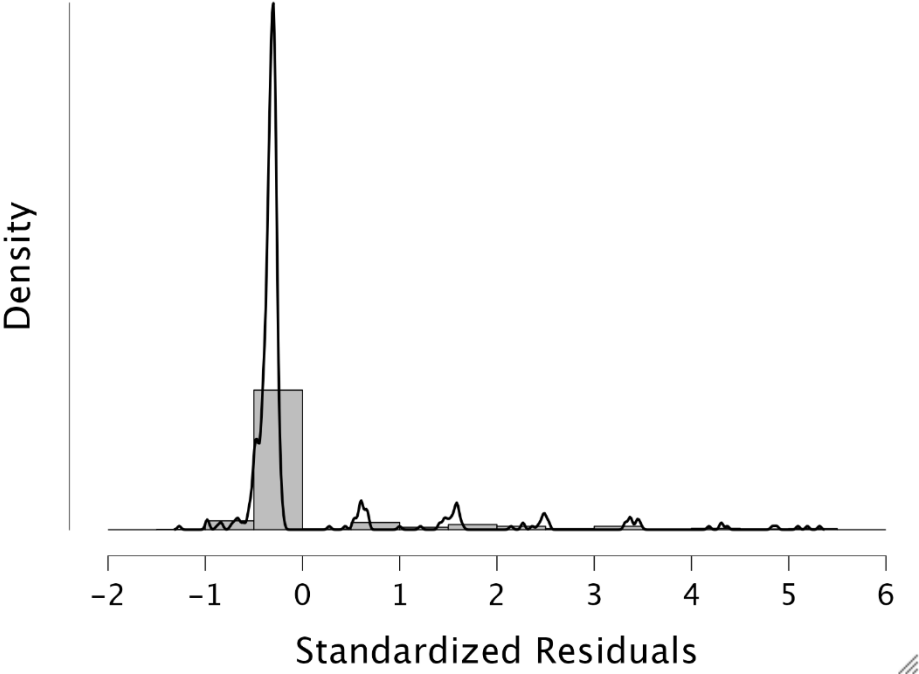


Figure 4

Histogram Normality

Standardized Residuals Histogram ▾



Appendix C: Path Coefficients**Table 2***Mediation Analysis Path Coefficients*

					95% CI	
					Lower	Upper
			β	p		
Age	→	BJW	-.02	0.335	-0.054	0.019
Sex	→	BJW	.18	0.063	-0.010	0.362
Age	→	Sense of Control	-.00	0.900	-0.034	0.030
Sex	→	Sense of Control	.03	0.740	-0.134	0.189
Age	→	Drug use	.05	0.010	0.011	0.084
Sex	→	Drug use	-.03	0.775	-0.213	0.159