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Mediating role of unfavorable distribution of resources in association between sense of hopelessness and intensity of self-aggression in problematic substance users

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Summary

Aim. To explore the mediating role of negative resources distribution in the relationship between sense of hopelessness and intensity of self-aggression in problematic substance users. Beck's concept was used to define sense of hopelessness, while Gaś's concept of psychological aggression syndrome was used to define self-aggressive behavior. Two dimensions of this syndrome were crucial for our research – self-destructive tendencies and hostility towards oneself. The mediating functions of resource distribution consistent with the desperation principle are described based on Conservation of Resources Theory by Hobfoll.

Material and method. The study encompassed 606 individuals. The mean age was 42.58. The study used the *Beck Hopelessness Scale* (BHS) in the Polish adaptation by Oleś and Juros, the *Psychological Inventory of Aggression Syndrome* (IPSA), and the Polish adaptation of Hobfoll's *Conservation of Resources-Evaluation* (COR-E).

Results. Our research showed a significant positive correlation between sense of hopelessness and intensity of self-destructive behaviors in problematic substance users. Distribution of resources is a mediator of the relationship between feeling of hopelessness and the frequency of self-aggressive behaviors: an increase in the feeling of hopelessness leads to a significant unfavorable distribution of resources, while an unfavorable distribution of resources co-occurs with an increased risk of self-destructive behaviors.

Conclusions. In a group of problematic substance users, intensity of their sense of hopelessness is correlated with a tendency to self-aggressive behaviors. Distribution of resources moderates this correlation.

Key words: hopelessness, self-aggressive behaviors, conservation of resources theory

Introduction

Substance abuse may lead to various negative consequences. One of them might be occurrence of depressive symptoms. Even though association between depression and substance abuse has been a subject of many research studies, the direction of this correlation remains unclear. For example, Brazilian studies suggest that occurrence of depressive symptoms was a risk factor for substance abuse [1]. Results of American research study showed, that 30% of college students with depression tend to abuse alcohol and 38% did drugs. It also have been proved that increased level of depressive symptoms and substance abuse are correlated and increase in level of depressive symptoms is associated with frequency of using psychoactive substances [2]. Studies conducted by a team led by Berger-Greenstein et al. [3] also confirm high levels of depressive symptoms in people with addiction disorder. Similar results were obtained by Pradhan et al. [4]. Data from their studies shows that in 74% of participants depression co-occur with addiction. Analyses by Mohamed et al. [5] showed that 72% of problematic substance users had significant intensity of depressive symptoms, compared to 6% in control group (in people without diagnosed addiction syndrome). Research data from studies conducted in Poland suggest that 60.5% of people with alcohol addiction show symptoms of depression. In a group of people addicted to alcohol and gambling 74% of participants were diagnosed with depression, in a group of gamblers only depression was present in 78% of attendees [6].

The evidence for association between sense of hopelessness (which belongs to depressive symptoms) and substance abuse is also present in literature of the subject. It was indicated that hopelessness is a direct risk factor for alcohol and nicotine addiction [7]. Data from another studies also suggest that people addicted to opioids show cognitive distortions distinctive to hopelessness, mainly disqualifying the positive, negative future telling, mental filtering, catastrophizing, and personalization. These cognitive distortions are significantly more intense in people with addiction when compared to non-addicted control group [8].

While explaining a role of hopelessness it is necessary to highlight its strong correlation with cognitive triad, containing negative thoughts about world, future, and oneself, caused by cognitive distortions – including excessive exaggeration of failures while marginalizing successes and/or positive information [9, 10]. On the other hand, it is crucial to take notice of negative outcomes of feeling hopeless such as lack of motivation and giving up on various activities, self-harm, and even suicide [11].

Research findings support the search for connections between the severity of hopelessness and the preference for self-aggressive behaviors. Among other things, they have shown that an increase in the severity of this factor increases the risk of:

- suicide [12, 13];
- self-aggressive behaviors [14];

- first time and consecutive self-harm [15];
- both self-harm and suicidal attempts [16];
- co-occurrence of other risk factors causing self-aggressive behaviors – such as affective disorders, homelessness, functioning in a role of the victim [8, 14, 17].

For further exploration of a relationship between hopelessness and self-aggression Conservation of Resources Theory (COR) by Hobfoll comes in handy. This theoretical approach is based on 4 core principles [18]:

(1) primacy of loss – loss of resources leads to obnoxious experience of stress;
(2) resource investment – people tend to multiply their resource capital in order to protect themselves from stressful events caused by resource loss and build resilience;
(3) paradox – people rich in resources while experiencing stress, on the one hand, experience resource losses, but on the other hand, they value their capital more in order to launch resource investments to stop loss cycle and/or protect themselves against future capital losses;
(4) desperation – people with low amount of resources, while facing loss, tend to adopt defensive attitude due to stronger stress caused by loss cycles that cannot be stopped by their low psychological resilience.

According to COR theory, the main protective factors against negative outcomes of stress are resources understood as all material goods, states, abilities, and other things perceived as valuable by people [19]. When possessed resource capital is low, such situation is called unfavorable distribution of resources. The risk associated with this state can be found in results from multiple studies focused on hopelessness being an outcome of chronic stress in people with low amount of resources. Increase in intensity of experienced hopelessness is corelated with: (a) low household income [20, 21], (b) decreased salary [22], (c) job loss resulting in loss of income source [22], (d) loss of intimacy – e.g., caused by divorce [23], (e) minor social support [23, 24], (f) lack of education [21]. Study results also show that risk of coexistence between hopelessness and self-aggressive behavior increase during major stressful events – for example, during isolation [25] or life threatening events [26].

In a group of people suffering from substance abuse distribution of resources is often based on desperation principle, mainly due to progressive loss of resources (causing chronic stress) and simultaneous lack of resilience (gained by investing possessed resources). Unfavorable distribution of resources may lead to increased risk of hopelessness as well as preferring defensive coping strategies such as self-aggressive behaviors [27]. Hopelessness is also associated with certain cognitive biases that may inhibit the perception of resource gain. Such circumstances may cause further resource loss.

The aim of the presented study is to better understand and learn about the impact of unfavorable distribution of resources on the relationship between experiencing a sense of hopelessness and the tendency to self-aggressive behavior.

On the ground of present data from various research studies we can put forward two hypotheses:

H1: In problematic substance users valid and positive correlation occurs between hopelessness and frequency self-aggressive behaviors

H2: Unfavorable distribution of resources mediates a relationship between hopelessness and frequency of self-aggressive behaviors in problematic substance users.

Study procedure

Characteristics of the study group

The study was conducted according to the guidelines of the Declaration of Helsinki, and written-approved by the Ethics Committee of the Institute of Sociological Sciences of the John Paul II Catholic University of Lublin (No. KEB-IS-2020 and 18/DKE/NS/2022).

The study included 606 individuals. The average age was 42.58 ± 13.40 years old (ranging from 19 to 71 years). The characteristics of the participants are included in Table 1.

Table 1. **Characteristics of the study group**

Characteristics		***N/M***	***%/SD***
Age		42.58	13.40
Sex	Female	417	68.8
	Male	189	31.2
Marital status	Single	143	23.6
	Married	335	55.3
	In a state of separation	10	1.7
	Cohabitation	50	8.3
	Divorced	42	6.9
	Widowed	26	4.3
Level of education	Vocational	30	5.0
	Secondary	175	28.9
	Higher	401	66.2

table continued on the next page

Place of Residence	Village	157	25.9
	Town with less than 5,000 residents	9	1.5
	Town with 6,000–20,000 residents	51	8.4
	Town with 21,000–50,000 residents	93	15.3
	City with 51,000–100,000 residents	85	14.0
	City with more than 100000 residents	210	34.7

Main criteria for participants to be qualified to a research group was abusing substances. The group was formed with people reporting excessive frequency of using psychoactive substances. In order to measure this phenomenon we used the MAP (*Maudsley Addiction Profile*) questionnaire, which is a structured interview used for estimating several variables associated with chemical addictions. The method contains 4 parts: I – substance use – frequency of using various substances, doses and age of initiation; II – health risk behaviors – drug injections and risky sexual behaviors; III – physical and psychological difficulties associated with substance use; IV – difficulties in social functioning associated with substance use. In our study only first part was used. Due to the type of statistical analysis used in the study, first part had to be modified – participants were asked to choose a number which describe their frequency of using each from 10 types of substances as accurate as possible (alcohol, heroin, methadone, cocaine, amphetamine, ecstasy, cannabis, sedatives, psychedelics, other drugs): 1 – "never", 2 – "hardly ever", 3 – "sometimes", 4 – "often", 5 – "really often". All frequencies summed up form severity index. Value of the index can range from 10 to 50 points. Only people who scored at least 40 points were included in the research group.

Psychometric value of the Polish adaptation of a questionnaire: test-retest reliability of the MAP measured with 14 day interval varied between 0.68 up to 0.98 for particular parts of the test. Cronbach's alpha measured on a group of 109 patients with substance addiction was: 0.86 – for physical health scale and 0.89 – for psychological health scale. The research has been conducted from 2020 to 2022.

Variables

Global resourcefulness

Global resourcefulness include various resources that contribute to the growth of adaptive capabilities, including subjective managing resources, social status resources, resilience resources, family resources, material status resources, growth resources, and community resources. The distribution of resources was measured with the COR-E questionnaire. The questionnaire contains a list of 74 resources. Our study utilized the

Polish adaptation [28]. The participants responded to individual items by choosing their answers on a 5-point scale (from 1 = "not at all" to 5 = "to a great degree") in two categories: gain and loss. Cronbach's alpha for the reliability of individual dimensions of the COR-E was acceptable for all dimensions and measurements. In the first round of the cross-sectional research, it ranged from $\alpha = 0.69$ to $\alpha = 0.99$. In the second round of the cross-sectional research, it ranged from $\alpha = 0.70$ to $\alpha = 0.98$. In the longitudinal survey, reliability ranged from $\alpha = 0.64$ to $\alpha = 0.99$ for the first measurement and from $\alpha = 0.63$ to $\alpha = 0.98$ for the second measurement. Global resourcefulness is a difference between results from resource gain scale and resource loss scale. Resourcefullnes can take the positive value, can be 0 or can take the negative value. In the presented study, 28.7% of respondents obtained negative results in resourcefulness, 13% obtained 0 in resourcefulness, and 58.3% received positive results in resourcefulness.

The Beck Hopelessness Scale (BHS)

The Beck Hopelessness Scale (BHS) is composed of 20 dichotomous "true/false" items that aimed to assess three major aspects of hopelessness: feelings about the future, loss of motivation, and expectations about the future. Total scores were created by first reverse-coding nine items (items 1, 3, 5, 6, 8, 10, 13, 15, 19) and then summing the item scores. Higher total scores indicate greater hopelessness (range 0–20). The Polish version of the BHS has been translated and validated by Oleś and Juros. The internal reliability coefficient is reasonably high (0.87). In this study, the internal consistency of the BHS was adequate (0.83).

Signs of aggression

Signs of aggression were measured with the *Psychological Inventory of Aggression Syndrome* (IPSA) by Gaś. The method measures the general level of aggression severity and 11 factors of aggression syndrome: (1) propensity for retaliation, (2) propensity for self-destruction, (3) aggression control disorders, (4) displaced aggression, (5) unconscious aggressive tendencies, (6) indirect aggression, (7) instrumental aggression, (8) self-hostility, (9) physical aggression towards the environment, (10) hostility towards the environment, (11) reactive aggression. Scale reliability was verified using the method of estimation of absolute stability. In all cases, the obtained correlation coefficients were statistically significant at the level of 0.001 or higher [29]. In this study three types of aggression symptoms were analyzed: internal aggression, verbal aggression, and physical aggression towards the environment

Statistical analyses

A series of correlation analyses and mediation analyses were performed. First, zero-order correlations among the variables were analyzed. The mediation analysis was performed in accordance with the guidelines provided by Preacher and Hayes, using IBM SPSS Statistics 26 and PROCESS macro for SPSS. The significance of indirect effects was tested using the bootstrapping procedure. Unstandardized indirect effects were computed for each of the 5,000 bootstrapped samples; the 95% confidence interval was also computed. In accordance with the recommendations provided in the literature, mediation effects were considered significant when the values of the mean estimated indirect effect fell within the 95% confidence interval. It is assumed that for a mediation effect to be detected there must be significant relationships between the independent variable and the mediator (path a), and between the mediator and the dependent variable (path b).

Figure 1 depicts a simple mediation model with one mediator. Path c represents the total effect of hopelessness on internal aggression, verbal aggression, and physical aggression (three separate models). Path c represents both the direct effect of hopelessness on internal aggression, verbal aggression, and physical aggression and the indirect effects of hopelessness on internal aggression, verbal aggression, and physical aggression via global resourcefulness as a mediator. The specific indirect effect is the product of paths a and b (path a x path b).

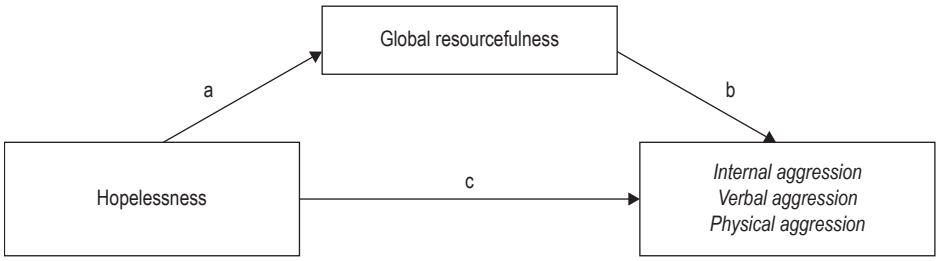


Figure 1. **General mediation model**

Results

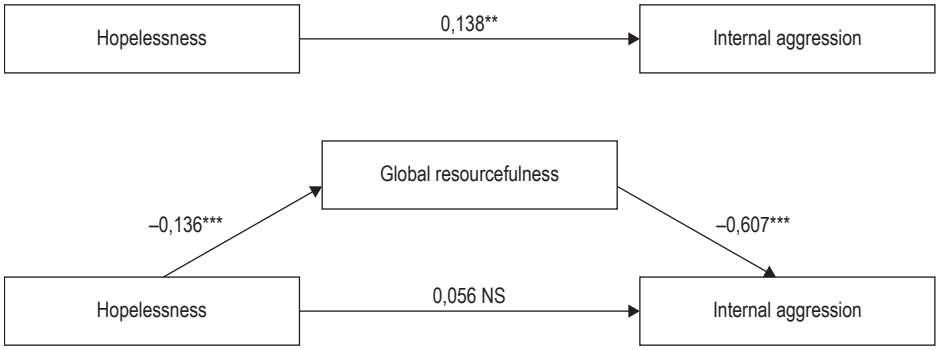
The correlation analysis between analyzed variables showed that sense of hopelessness correlated negatively with global resourcefulness and positively with internal and verbal aggression. Global resourcefulness turned out to be negatively correlated with signs of internal, verbal, and physical aggression. Our research also showed positive correlations between individual forms of aggression. Correlation indicators, means, and standard deviations for analyzed variables are presented in Table 2.

Table 2. **Correlations between analyzed variables**

Characteristic	I	II	III	IV	V
Hopelessness [I]	-				
Resourcefulness [II]	-0.136***	-			
Internal aggression [III]	0.138***	-0.530***	-		
Verbal aggression [IV]	0.102*	-0.476***	0.845***	-	
Physical aggression [V]	-0.074	-0.492***	0.823***	0.900***	-
M	6.36	0.55	7.48	7.97	8.38
SD	4.52	0.97	3.36	3.56	3.71

M – średnia; SD – odchylenie standardowe; *** <0.001;* <0.05

The correlation between hopelessness and internal aggression turned out to be statistically significant. The correlation is positive, higher levels of hopelessness lead to higher risk of self-aggressive behaviors. Correlation is also moderated by resources (loss – gain). Hopelessness is negatively correlated with resources. Higher level of hopelessness is associated with lower resources. On the other hand, global resourcefulness is negatively correlated with internal aggression. Greater resourcefulness is related to lower frequency of self-aggressive behaviors. After taking into account the mediator, correlation between variables become statistically insignificant (full mediation) (Figure 2).

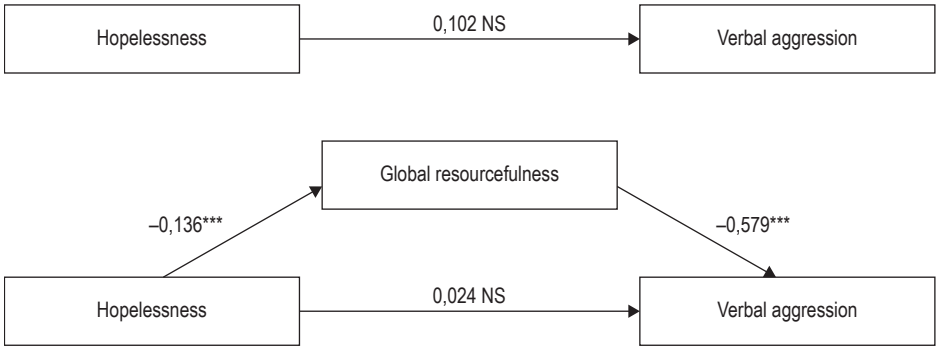


standardized coefficients
*** <0.001;** <0.01

Figure 2. **Correlation between hopelessness, global resourcefulness, and internal aggression**

The correlation between independent variable and dependent variable, i.e., hopelessness and verbal aggression, is statistically significant. The correlation is positive,

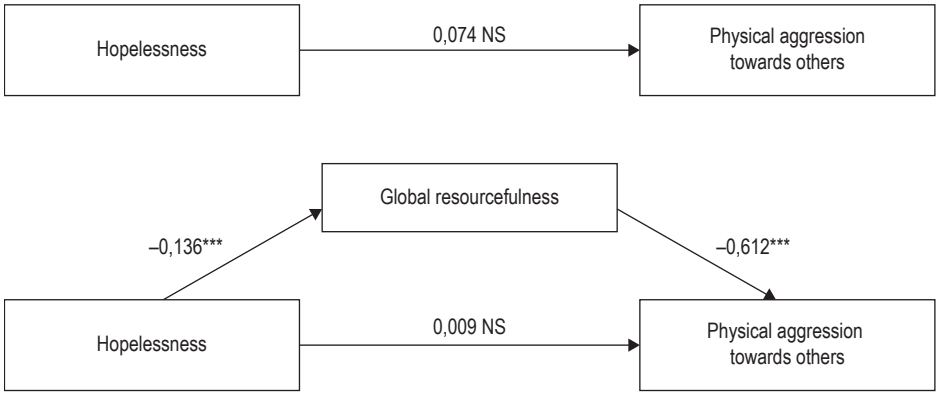
which means that people with substance addiction experiencing higher levels of hopelessness are more likely to use verbal aggression. Global resourcefulness turned out to be negatively correlated with verbal aggression. It means that greater resourcefulness is associated with lower tendency for verbal aggression. After taking into account the mediator, correlation between independent variable and dependent variable becomes statistically insignificant (full mediation) (Figure 3).



standardized coefficients
*** <0.001;* <0.05

Figure 3. **Correlation between hopelessness, global resourcefulness, and verbal aggression**

The correlation between independent variable and dependent variable, i.e., hopelessness and physical aggression, turned out to be statistically insignificant (Figure 4). standardized coefficients



*** <0.001

Figure 4. **Correlation between hopelessness, global resourcefulness, and physical aggression**

Discussion

Findings of the study form the basis for positive validation of both assumptions. First hypothesis suggests that in people with substance abuse there is significant and positive correlation between experiencing hopelessness and frequency of self-aggressive behaviors. Then, it is possible to suggest that increased levels of hopelessness (for example, due to such feelings as: longitudinal lack of hope for the future, pessimism, difficulties in choosing personal goals, aversion towards realization of aspirations, lack of sense in taking actions, sense of helplessness in actual and/or future life activities, considering own life as a failure, expecting misfortune) coexist with higher frequency of self-aggressive behaviors such as: (1) taking actions towards taking own life (suicide attempt/s, strong motivation towards suicidal behaviors, suicidal thoughts), (2) occurrence of self-harm behaviors (inflicting pain and/or self-harm), (3) sings of hostility towards oneself (hatred towards own person and/or perceiving oneself as loveless, loser, evil).

The results of this study are compliant with literature of the subject stating that hopelessness is a significant risk factor for self-aggressive behaviors, including suicidal thoughts and/or behaviors [30, 31, 32, 33, 34].

Conducted statistical analysis also allowed for positive verification of second hypothesis, assuming that unfavorable distribution of resources is a mediator of correlation between experiencing hopelessness and frequency of self-aggressive behaviors in problematic substance users. Statistical analyses indicated the mediating functions of an unfavorable balance between resource gains and losses in assets such as: psychological resources, resilience resources, social status resources, family resources, material resources, growth resources, and community resources [28, 35]. The obtained statistical correlations indicate the occurrence of two unfavorable mediation mechanisms. First one is related to increased levels of hopelessness causing unfavorable distribution of resources which depends on simultaneous decline in resource gains (generating resilience) and escalation of resource losses (causing stress). Such outcome may result from several cognitive biases associated with depressive disorders. In turn, unfavorable distribution of resources leads to increased risk of self-aggressive behaviors (second mediation mechanism).

Regularities resulting from positive validation of second hypothesis can be found in results of many other studies based on COR theory. First of all, unfavorable distribution of resources leads to higher risk of negative consequences of experienced stress, mainly due to lack of mobilization of resilience mechanisms such as investing in resources which can compensate losses in the initial phase of loss [19, 36]. Secondly, character of resource loss is dynamic instead of static. In people with lower amount of resources, loss cycles are much more intensive from the beginning, and further losses lead to quicker and more intense negative consequences. Therefore consecutive loss cycles intensify negative cognitive, emotional, and/or behavioral experiences, which

can be hold back only by further resource investments [18, 19, 37]. Thirdly, defensive behaviors caused by unfavorable distribution of resources may vary – people affected by this phenomenon may display acts of aggression (including self-aggressive actions), helplessness, significant psychological defensive mechanisms, and higher frequency of using substances in order to cope with situation [18, 19, 38]. Therefore it is possible to suggest that results obtained during validation of second hypothesis might be more intense in people with higher frequency of using substances.

Presented mediation mechanisms can be applied in various fields. On their basis we can suggest that intervention/therapeutic actions addressed to problematic substance users should lead to change in distribution of resources – from mechanisms of desperation principle (experiencing simultaneously low resource incomes and high losses causing stress and/or its negative consequences) to mechanisms resulting from paradox principle (under which gain of resources under certain circumstances may reduce stress and/or its negative outcome caused by experienced loss). Interventions and/or therapeutic approaches may take into account capital gains in various dimensions of the functioning of problematic substance users – including psychological resources, resilience resources, social status resources, family resources, material resources, growth resources, and community resources. Greater resourcefulness associated with positive distribution of resources should reduce hopelessness and reduce frequency of self-aggressive behaviors [39, 40, 41].

Conclusions

In a group of problematic substance users, hopelessness is correlated with a tendency to self-aggressive behaviors. Distribution of resources moderates this correlation. Experiencing sense of hopelessness leads to unfavorable distribution of resources, which cause a higher frequency of self-aggression. Positive distribution of resources turned out to be a protective factor in this correlation. Therapy of problematic substance users experiencing hopelessness should be focused on extending possessed resource capital.

Limitations

Two most significant limitations of this study are its quantitative character and a fact that research was conducted on a preclinical group. Further studies on the same field should have clinical character. Firstly, empirical analysis should be conducted on a clinical group, with diagnosis of substance use disorders (including addiction). Secondly, also methods intended to further explore psychophysical conditions (such as hopelessness) and self-aggressive behaviors should be used.

Cross-sectional design of our study is also a significant limitation. In such a situation, a thorough analysis of all revealed dependencies is significantly more difficult.

To fully understand the mediating function of distribution of resources it is necessary to conduct longitudinal studies.

Another important bias might be the use of self-report instruments. Gathering sensitive and personal data is difficult due to desirability and recall biases.

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