

MARTA PIĘTA-CHRYSTOFIAK

University of Gdańsk

ORCID – 0000-0001-9019-7473

DAMIAN BROHS

ORCID – 0000-0002-6863-1445

## THE INTERACTION OF INSTRUMENTAL AS WELL AS STIMULUS RISK PROPENSITY AND THE USE OF CATHINONE DERIVATIVES IN EARLY ADULthood. THE MEDIATING ROLE OF MENTAL RESILIENCE\*

**Introduction:** The period of entering adulthood, constituting the transition between adolescence and early adulthood, for many young adults and their families involves a number of developmental tasks and crises that they face. One of the factors that can interfere with this process is the propensity for risk and the associated threat posed by new psychoactive substances. In this context, it seems significant to look for protective factors that weaken the effect of risk factors.

**Research Aim:** The purpose of the study was to identify factors predisposing the use of cathinone derivatives during early adulthood. The study focused on the interaction between stimulus and instrumental risk propensity as well as their direct impact on the use of new psychoactive substances (NPS). It was also examined whether mental resilience is a mediator of this relationship.

**Method:** The study was carried out by means of a diagnostic survey using the CAWI technique. 531 people aged 18–30 were surveyed. The Stimulus and Instrumental Risk Questionnaire (KRSiRI) as well as the Resilience Assessment Questionnaire (KOP-26) were used for the measurement. A generic SEM model was created to verify the hypotheses.

**Results:** Using cathinone derivatives during the period of entering adulthood is influenced by a high propensity for stimulus risk and a low propensity for instrumental risk. These traits interact – their higher combined level predicts using NPS. The relationship between stimulus risk and using cathinone derivatives is mediated by high social competences. While high personal competences constitute a protective factor, no such relationship was observed for family competences, which is predicted by a low propensity for stimulus risk.

\* Suggested citation: Pięta-Chrystofiak, M., Brohs, D. (2024). The Interaction of Instrumental as Well as Stimulus Risk Propensity and the Use of Cathinone Derivatives in Early Adulthood. The Mediating Role of Mental Resilience. *Lubelski Rocznik Pedagogiczny*, 43(4), 209–227. <http://dx.doi.org/10.17951/lrp.2024.43.4.209-227>



**Conclusions:** Protective factors against using cathinone derivatives are instrumental risk propensity and personal competence. Whereas, a risk consists in the propensity for stimulus risk, which is mediated in part by high social competences. Individuals who exhibit a high propensity for both types of risk are particularly susceptible to using NPS.

**Keywords:** mental resilience, risk propensity, young adults, cathinone derivatives, psychoactive substances, NPS

## INTRODUCTION

Everyone's life involves going through different stages, which are associated with specific developmental tasks and the occurrence of various breakthroughs. During the emerging adulthood, which falls between adolescence and early adulthood, these include moving away from family, starting university, working, and building a romantic relationship (Arnett, 2000). For some young adults, coping with these tasks constitutes a major challenge and is combined with many difficulties. Family members may also experience problems as a result of the disruption of family homeostasis. These changes can lead to crises.

According to the social field theory (see Kellam et al., 1975), an individual at each stage of development finds himself or herself in a distinctive social field, which may include the family. The impact of social fields has an effect on an individual's wellbeing. In these fields, there are others besides the individual, among whom may be so-called *natural assessors*. They condition the individual's process of social adaptation by setting social responsibilities and assessing the adequacy of the individual's performance in this regard (Gaś, 1994). Their functions, depending on the developmental stage of the individual, can be performed by parents, for example. In a crisis situation, when the operation of the social field is incorrect, it can disrupt the individual's psychological functioning and foster risky behaviour and, in the long term, the development of social maladjustment (Cicchetti and Schneider-Rosen, 1984). Therefore, the question must be asked: what makes some individuals or families more vulnerable to crisis than others?

One factor that can make it easier or harder to get through a crisis is the propensity to take risks. This is because it is driven by various motives. It takes into consideration the two-process model of thinking that underpins Zaleskiewicz's (2008) concept of two types of risk. Instrumental risk is characterised by a high level of self-regulation and is underpinned by a motive to achieve an important objective. Whereas, stimulus risk-taking is motivated by the sensation of pleasurable arousal and occurs at a low level of self-regulation. In the former case, thinking is rational and slower, while in the latter it is automatic, impulsive, and driven by negative or positive affect.

For people who pursue stimuli, new psychoactive substances (NPS) pose a particular threat. The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA, 2023) was monitoring approx. 930 NPS at the end of 2022, 41 of which were recorded in Europe for the first time. A significant threat in this context consists in the ever-increasing availability of substances and the lack of awareness of their users concerning what they are taking (Peacock et al., 2019). It is only by determining the chemical structure that it is possible to classify a substance into a group of compounds and determine the consequences of application (Burda, 2016). NPS include cathinone derivatives such as mephedrone, MDVP, and methylone (Karch, 2015). Their effects are similar to typical stimulants such as amphetamines. Symptoms of poisoning vary depending on the substances, their combination, the dose and manner of administration, the frequency, and circumstances of intake, as well as individual circumstances. These symptoms can come from systems such as the nervous with the mental sphere, cardiovascular, digestive, respiratory, muscular, or urinary. The addictive potential is significant and regular use is associated with increased risk (Karch, 2015).

In the context of coping with crises, a key role is played by protective factors, i.e. characteristics and conditions that increase an individual's resilience to risk factors and thus indirectly reduce the likelihood of using NPS (Szymańska, 2012). A concept that reflects the ability to cope with the adversity encountered is *mental resilience*. Its high intensity is associated with well-being, including experiencing positive affect and life satisfaction, while low intensity is associated with negative emotions (Hu et al., 2015). It allows the effects of a crisis, which may be due to the developmental period or environmental factors, to be reduced or mitigated (Haase, 2004). The concept of mental resilience is widely used in health psychology, especially in the context of salutogenesis.

The Haase (2004) adolescent mental resilience model adopted in this study assumes the existence of three groups of factors that make up the construct in question:

- personal competences: hope, positive self-image, courage, ability to cope with stress, faith, openness to people;
- family competences: socio-economic variables, adaptability and sense of cohesion, perceived social support from the family, communication between parents and adolescents, family network;
- social competences: impact of others experiencing similar problems, perceived social support from friends, participation in youth support programmes and satisfaction, perceived support from a carer.

These manifest themselves in confidence, self-control, self-transcendence, and self-esteem. Mental resilience, understood in this way, constitutes a predictor of quality of life. A model assuming these components allows it to be applied among marginalised populations (Rudziński et al., 2017). However, the

consideration of factors protecting families from using NPS by family members is worth extending to the concept of family resilience. The McCubins (1988) in their research concerning the phenomenon of family resilience looked for dimensions, characteristics, and traits that help families to remain resilient in the face of change, as well as adaptable in crisis situations. Therefore, resilience can be understood as the positive patterns of behaviour and competence of functioning that individual family members and the family system as a whole display when subjected to stressors. They are intended to condition the family's ability to function properly by maintaining or restoring cohesion and sustainability, taking into account the well-being of each family member and the system as a whole (Lachowska, 2013). Therefore, family resilience refers to the family's resilience to problems and ability to overcome the negative effects of events (Sznajder and Pietryga-Szkarłat, 2018).

The most important family protective factors in this respect include positive attitudes, spirituality, agreement among family members, flexibility, family communication, financial management, family time spent together, shared entertainment, family routines and rituals, and support networks (Black and Lobo, 2007). In preventing a crisis concerning substance abuse, maintaining proper family relationships is particularly important. A child expects love, acceptance, trust, emotional support, a sense of security, interest, or spending time together from the parent (Adamczyk, 2017). Responsiveness to the child's needs can strengthen both individual and family resilience. Pisarska and Ostaszewski (2012) point out that good contact between parents and their adolescent children as well as an understanding of their children's relevant issues and difficulties are particularly important for family resilience processes. In doing so, the researchers also emphasise the importance of supporting families to make the most of the associated potential.

## RESEARCH AIM AND QUESTIONS

Early adulthood is a time of challenges and changes. It is also a period when young people are at particular risk of becoming addicted to psychoactive substances. Young adults are the age group most likely to use illegal psychoactive substances. One in ten of them has used drugs in the past year, and the prevalence of drug use in this group is almost double that of the general population (KCPU, 2023). The scale and scope of using psychoactive substances, including NPS, indicate that it remains a worrying social phenomenon and that the interventions undertaken to date are not effective enough. Therefore, research has been undertaken that will enable the current state of knowledge regarding taking NPS in early adulthood to be expanded to include protective and risk factors and, in the longer term, help to design effective preventive interventions.



The purpose of this study is to identify factors that predispose to using these substances in early adulthood. The study focuses on the interaction between stimulus and instrumental risk propensity and their direct impact on using NPS. It was also assumed that psychological resilience constitutes a mediator of this relationship. The research questions and hypotheses are included in Table 1.

Table 1.  
*Research questions and hypotheses*

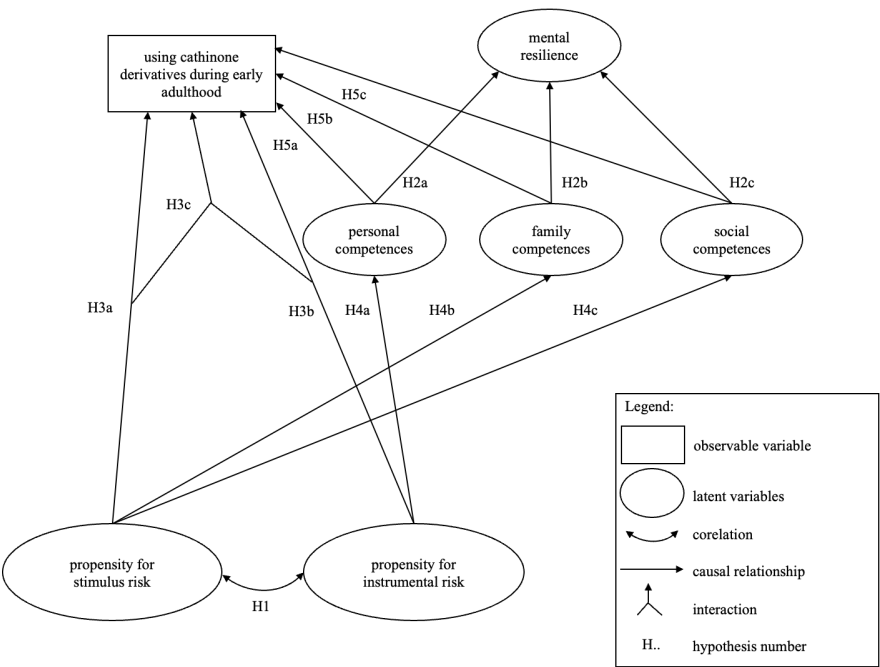
No.	Question	Hypothesis
1	How is the propensity for stimulus and instrumental risk linked?	There is a low negative correlation between stimulus and instrumental risk
2	What is the structure of mental resilience?	Mental resilience is a higher order factor consisting of: <ul style="list-style-type: none"><li>- personal competences</li><li>- family competences</li><li>- social competences</li></ul>
3	How does risk propensity predispose to using cathinone derivatives?	Factors predisposing for the use of cathinone derivatives are: <ul style="list-style-type: none"><li>- high propensity for stimulus risk</li><li>- low propensity for instrumental risk</li><li>- the interaction between the two risks</li></ul>
4	How does risk propensity predict mental resilience?	The type of risk propensity determines the formation of the individual components of mental resilience: <ul style="list-style-type: none"><li>- instrumental risk is a positive predictor of personal competences</li><li>- stimulus risk is a negative predictor of family competences</li><li>- stimulus risk is a negative predictor of social competences</li></ul>
5	How does mental resilience mediate risk propensity and using cathinone derivatives?	The components of mental resilience that act as a mediator are: <ul style="list-style-type: none"><li>- personal competences</li><li>- family competences</li><li>- social competences</li></ul>

Source: Authors' own study.

The concept of risk propensity is based on numerous theories of optimal stimulation, including regulatory temperament theory (Strelau, 2006) and sensation seeking theory (Zuckerman, 1987). These characteristics, grounded in the biological underpinnings of the nervous system, are relatively constant and can influence an individual's behaviour in the context of engaging in risky behaviour. The use of NPS can serve to regulate stimulation and, in the face of crisis, also as an escape from negative emotions. The sole entering into adulthood constitutes a challenging period, which includes a developmental crisis. Hence, an important role is

discovered by the competence of stimulation demand management, which makes individuals resilient. A well-established theory of the phenomenon has allowed creating a model assuming cause-and-effect relationships, interactions, as well as direct and indirect effects, which is shown in Figure 1.

Figure 1.  
*Hypothetical effects of risk propensity and psychological resilience on using cathinone derivatives during early adulthood*

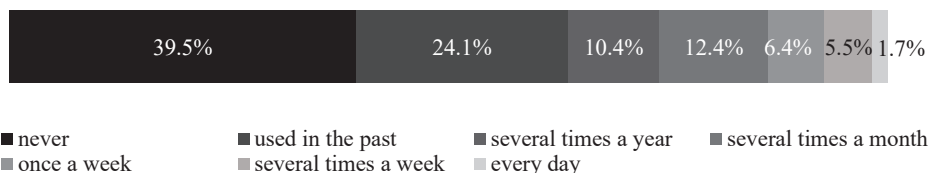


Note. The hypotheses indicated in the diagram refer to those presented in Table 1.

Source: Authors' own study.

The research was carried out on a group of people entering adulthood – Internet users participating in online forums and newsgroups. A total of 606 people took part in the survey. Of the questionnaires collected, a total of 76 (12.5%) were rejected due to failure to meet the formal condition of being of full age. In the end, 531 people were qualified for the research sample, including 290 women (54.6%) and 241 men (45.4%). It was possible to divide the respondents into 3 groups based on the frequency of using cathinone derivatives (Figure 2). These include former ( $n = 127$ ) and current users of this group of substances ( $n = 193$ ) and those declaring non-use ( $n = 210$ ). The selection criterion was the declaration of using cathinone derivatives, as it was controlled to include these three groups in the sample. The mean age of the subjects was 22 years ( $SD = 0.2$ ) and ranged from 18 to 30 years.

Figure 2.  
*Frequency of using cathinone derivatives*



Source: Authors' own study ( $n = 531$ ).

The conducted survey was quantitative and participation was voluntary and anonymous. The sampling should be described as intentional. The survey was carried out by means of a diagnostic survey using the CAWI technique (computer-assisted web interview). Recruitment took place in online forums concerning the issue of substance use and groups for young people, including students. Before completing the questionnaires, respondents became familiar with the instruction concerning the objectives of the survey and the rules for conducting it. After giving informed consent to participate, it was possible to proceed to the actual survey.

## RESEARCH METHOD AND SAMPLE CHARACTERISTICS

The study was carried out using a diagnostic survey method with questionnaires provided through the MS Forms application: the Stimulus and Instrumental Risk Questionnaire (KRSiRI) and the Resilience Assessment Questionnaire (KOP-26). Before completing the questionnaires, respondents became familiar with the instruction concerning the objectives of the survey and the rules for conducting it. After giving informed consent to participate, it was possible to proceed to the actual survey. Using an electronic form allowed only complete forms to be submitted.

The first questionnaire, the Stimulus and Instrumental Risk Questionnaire (KRSiRI), is a Polish tool by Makarowski (2012) based on Zaleśkiewicz's (2008) concept of two types of risk. It consists of 7 statements, forming two scales: stimulus risk – S (4 items, e.g. *Sometimes I tempt fate unnecessarily*) and instrumental risk – I (3 items, e.g. *When I have to take a risk, I carefully consider the possibility of failure*). Respondents respond to each on a 5-point scale (1 – *true*, 5 – *false*). In the validation study, the reliability as determined by Cronbach's  $\alpha$  was 0.78 for stimulus risk and 0.76 for instrumental risk.

The KOP-26 Resilience Assessment Questionnaire (KOP-26) is a Polish tool by Gaśior et al. (2016) based on the Haase (2004) model. The tool consists of 26 items



that form 3 subscales: personal competences – KO (9 items, e.g. *I am able to set clear, concrete goals in my life*), family competences – KR (11 items, e.g. *I became sure that my relatives and friends really care about me*) and social competences – KS (6 items, e.g. *I find it easy to ask other people for help*). The sum of the scores of all items forms an overall resilience score – P. Respondents respond to each statement on a 5-point Likert scale (1 – *completely disagree*, 5 – *completely agree*). Reliability as determined by the Cronbach's  $\alpha$  index in the validation study achieved a value of 0.90 for the total score, when it was 0.91 for personal competences, 0.80 for family competences, and 0.91 for social competences. Satisfactory reliability rates allow these tools to be used in the survey.

### STATISTICAL DATA ANALYSIS PROCEDURE

The analyses were carried out in the R Studio software. To verify the hypotheses, a recursive general structural equation model (SEM) was created using the *lavaan* suite. Due to the fact that this type of analysis combines features of confirmatory factor analysis (CFA) with path analysis (PA), two sub-models were distinguished: measurement and structural.

The identification status was assessed on the basis that there should be more observations than parameters, of which there were 120 in total. The model was considered to be correctly identified based on the number of degrees of freedom and Fisher information matrix analysis (the *lavaan* suite performs such analyses automatically). In the case of identifiability problems, modifications to the model were applied to reduce the number of parameters. The algorithm stopped after 66 iterations.

The variances were analysed, the residuals of the model were analysed, and the model parameters were tested with the D test. The collinearity of the latent variables was verified using the variance inflation factor (VIF), which was a maximum of 1.5, indicating no significant colinearity. The box plots showed no unusual observations that were not theoretically unjustified. No lacks in data were identified either. Basing on the scatter plots, a linear relationship was found between the variables. Due to the fact that the observable variables in the model are expressed on an ordinal scale, the diagonally weighted least squares (DWLS) estimator was used during the analyses. It is resistant to breaking assumptions concerning multivariate normal distributions, which, as Konarski (2009, p. 316) points out, are often unrealistic and difficult to achieve. Moreover, its use allows for analysing multiple continuous and discontinuous variables, and relatively large samples do not need to be used for complex models. The study adopted a significance level of  $\alpha = 0.05$ .





RESULTS

The analysis began with calculating the basic descriptive statistics (Table 2). Based on the skewness and kurtosis, the variables were found not to deviate significantly from a normal distribution (their value was less than |1|). The used scales are characterized by satisfactory reliability.

Table 2.  
*Descriptive statistics for risk propensity and mental resilience*

Variable	M	SD	SKE	KUR	Cronbach's $\alpha$
propensity for stimulus risk	13.1	4.3	-0.26	-0.79	0.82
propensity for instrumental risk	10.7	2.9	-0.56	-0.39	0.72
mental resilience	92.2	16.6	-0.41	-0.32	0.90
personal competencies	33.1	7.1	-0.63	0.00	0.85
family competences	40.4	9.3	-0.58	-0.32	0.87
social competences	18.5	5.1	-0.25	-0.60	0.79

Source: Authors' own study ( $n = 531$ ).

A cross-validation method was used to assess the stability and quality of the model (Table 3). The data was randomly split into a training set (70%) and a test set (30%). The models have a moderate fit to the data ( $CFI \approx 0.90$ ,  $TLI \approx 0.90$ ,  $RMSEA < 0.08$  and  $SRMR < 0.08$ ), with slightly better results achieved in the test model. The proper model, including the entire sample, also showed an acceptable fit, although its indicators were slightly lower than for the test model. Only the chi-square statistic was found to be statistically significant, indicating a poor fit of the models. However, with large samples, it is often too sensitive, leading to test significance (Konarski, 2009, p. 334). Based on the statistical power, it can be concluded that the actual effects were captured by the model, indicating a high reliability of the results.

Table 3.  
*Fitting the model*

Model		CFI	TLI	RMSEA	SRMR	power	$n$
Training	1473.45***	0.90	0.89	0.07	0.08	1.00	371
Test	804.92***	0.93	0.93	0.05	0.08	0.99	160
Proper	1957.49***	0.89	0.89	0.07	0.07	1.00	531

\*\*\* $p < 0.001$ .

Source: Authors' own study.

A *two-step approach* was used to test the overall SEM model, which involves in-  
itally verifying the structure of the measurement submodel and then assessing the

full model (Konarski, 2009, p. 402). The models were shown to have a good fit to the data and the tools used had satisfactory content validity (Table 4). Due to the subject matter of the article, we were limited to presenting the measurement structures only in the general SEM model, which also confirmed the content relevance of the tools, as each observable variable significantly loaded its assigned latent variable.

Gąsior et al. (2016) present a way to calculate an overall mental resilience score, but do not demonstrate the existence of a higher-order factor using hierarchical confirmatory analysis (HCA). The source literature suggests that there is a general factor of mental resilience, which led the authors to include HCA in the model. A hierarchical structure of this construct was shown, consisting of personal, family and social competences (Table 4).

Table 4.  
*Factor loadings of the sub-measurement model*

Item	<i>B</i>	$\beta$	<i>SE</i>	item	<i>B</i>	$\beta$	<i>SE</i>
$\lambda_{KO1}$	1.00	0.61		$\lambda_{KS1}$	1.00	0.74	
$\lambda_{KO2}$	0.87***	0.57	0.08	$\lambda_{KS2}$	0.85***	0.59	0.10
$\lambda_{KO3}$	1.07***	0.55	0.12	$\lambda_{KS3}$	0.88***	0.75	0.09
$\lambda_{KO4}$	0.54***	0.37	0.07	$\lambda_{KS4}$	0.91***	0.66	0.11
$\lambda_{KO5}$	1.54***	0.83	0.16	$\lambda_{KS5}$	0.96***	0.70	0.10
$\lambda_{KO6}$	1.52***	0.81	0.16	$\lambda_{KS6}$	0.45***	0.32	0.09
$\lambda_{KO7}$	1.38***	0.74	0.15	$\xi_{KO}$	1.00	0.86	
$\lambda_{KO8}$	1.15***	0.66	0.12	$\xi_{KR}$	0.96***	0.59	0.17
$\lambda_{KO9}$	0.72***	0.40	0.09	$\xi_{KS}$	1.00***	0.63	0.18
$\lambda_{KR1}$	1.00	0.74		$\lambda_{RS1}$	1.00	0.56	
$\lambda_{KR2}$	0.94***	0.68	0.09	$\lambda_{RS2}$	1.30***	0.70	0.14
$\lambda_{KR3}$	0.35***	0.32	0.05	$\lambda_{RS3}$	1.40***	0.67	0.16
$\lambda_{KR4}$	1.01***	0.79	0.09	$\lambda_{RS4}$	1.37***	0.69	0.15
$\lambda_{KR5}$	0.61***	0.57	0.07	$\lambda_{RI1}$	1.00	0.57	
$\lambda_{KR6}$	0.86***	0.62	0.07	$\lambda_{RI2}$	0.94***	0.57	0.12
$\lambda_{KR7}$	0.83***	0.63	0.08	$\lambda_{RI3}$	1.45***	0.75	0.16
$\lambda_{KR8}$	0.69***	0.63	0.07				
$\lambda_{KR9}$	1.02***	0.76	0.09				
$\lambda_{KR10}$	1.03***	0.78	0.09				
$\lambda_{KR11}$	0.91***	0.67	0.10				
$\chi^2_{(489)}=1919.573; p<0.001; CFI=0.92; TLI=0.91; RMSEA=0.07; SRMR=0.08; power=1$							

*Note.* KO – personal competences, KR – family competences, KS – social competences, RS – stimulus risk propensity, RI – instrumental risk propensity,  $\lambda$  – factor loading of the observable variable,  $\xi$  – factor loading of the latent variable on mental resilience (higher order factor).

\*\*\* $p < 0.001$ .

Source: Authors' own study ( $n = 531$ ).

Confirmation of the measurement structure enabled an analysis of the relationship between risk propensity and mental resilience in the context of using cathinone derivatives during early adulthood (Table 5). The results showed a negative correlation between stimulus risk propensity and instrumental risk, indicating that an increase in one variable is associated with a decrease in the other. Direct effects showed that stimulus risk propensity has a positive effect on using cathinone derivatives, while instrumental risk propensity has a negative effect. Moreover, the interaction between the two risk variables appeared to be significant – the co-occurrence of high levels of both significantly increases the likelihood of using cathinone derivatives.

In addition, the analysis showed that mental resilience, composed of personal, family and social competences, plays a significant role in predicting behaviours related to NPS use (Table 5). Stimulus risk propensity negatively affects family competences but positively affects social competences. In the case of the latter, a partial mediation between propensity for stimulus risk and using cathinone derivatives was observed, implying that high social competence may increase the propensity for NPS use. Even though low personal competences increase the likelihood of using cathinone derivatives, it has not been shown to be predicted by instrumental risk propensity. Whereas, family competences, although linked to the propensity for stimulus risk, showed no significant effect on NPS use. The results of the analyses are shown in Figure 3.

Table 5.  
*Dependence between risk propensity, mental resilience, and using cathinone derivatives during early adulthood*

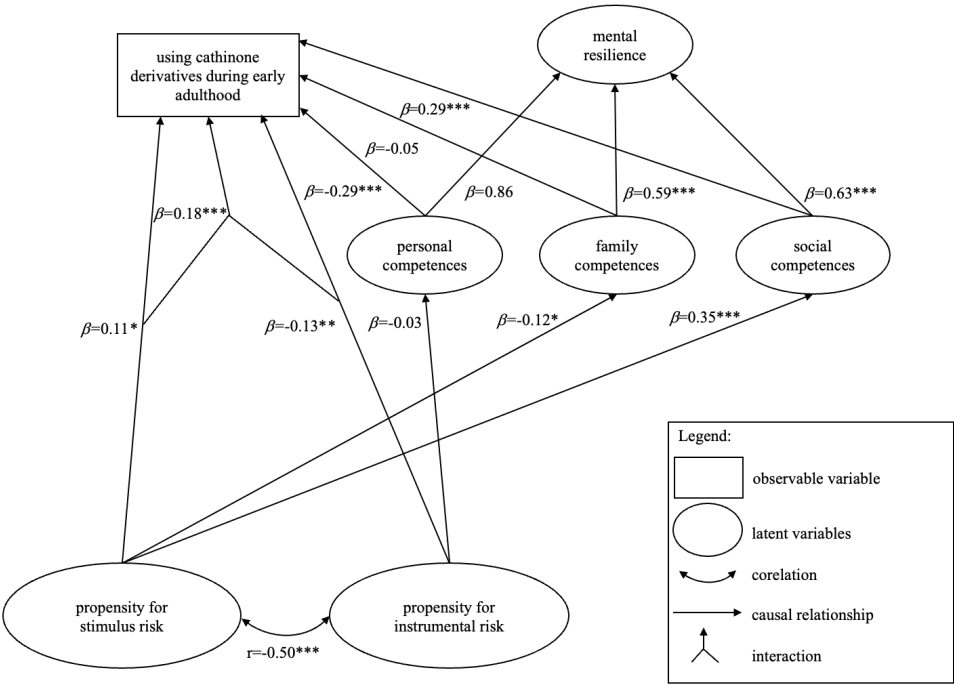
Dependencies	<i>B</i>	$\beta$	<i>SE</i>
propensity for stimulus risk $\leftrightarrow$ instrumental	-0.50***	-1.26	0.07
propensity for stimulus risk $\rightarrow$ using cathinone derivatives	0.18*	0.11	0.09
propensity for instrumental risk $\rightarrow$ using cathinone derivatives	-0.20**	-0.13	0.07
propensity for stimulus risk * instrumental $\rightarrow$ using cathinone derivatives	0.00***	0.18	0.00
propensity for instrumental risk $\rightarrow$ personal competences	-0.03	-0.03	0.04
propensity for stimulus risk $\rightarrow$ family competences	-0.16*	-0.12	0.07
propensity for stimulus risk $\rightarrow$ social competences	0.52***	0.35	0.10
personal competences $\rightarrow$ using cathinone derivatives	-0.44***	-0.29	0.10
family competences $\rightarrow$ using cathinone derivatives	-0.06	-0.05	0.06
social competences $\rightarrow$ using cathinone derivatives	0.33***	0.29	0.07

Note.  $\leftrightarrow$  – correlation,  $\rightarrow$  – causal relationship, \* – interaction.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Source: Authors' own study ( $n = 531$ ).

Figure 3.  
*The interaction of instrumental and stimulus risk propensity and using cathinone derivatives in early adulthood – the role of mental resilience as a mediator*



$\chi^2_{(547)}=1957.49***$ ; CFI=0.89; TLI=0.89; RMSEA=0.07; SRMR=0.07

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Source: Authors' own study ( $n = 531$ ).

DISCUSSION

The study identified both risk and protective factors for using cathinone derivatives during the transition into adulthood. According to Zuckerman's (1987) sensation-seeking theory and Zaleśkiewicz's (2008) research, the propensity for stimulus risk is associated with the search for intense sensations, as well as a reduced capacity for self-regulation. Young adults with high levels of this trait are less likely to take risks to pursue long-term personal goals (hypothesis H1 confirmed), as they tend to seek immediate gratification. According to the confirmed hypotheses (H3a and H3b), stimulus risk increases the likelihood of NPS use, while instrumental risk has a protective function. In the second case, more complex cognitive processes are involved, such as planning and deferring gratification (Carver and

Scheier, 1982; Zaleśkiewicz, 2008). Therefore, people who regulate their need for stimulation in a more structured and goal-oriented way are less likely to use cathinone derivatives.

The study showed that the interaction of stimulus and instrumental risk significantly predisposes to using cathinone derivatives, supporting hypothesis H3c. When both inclinations are high in an individual, the risk of using NPS increases, even though instrumental risk usually has a protective function. The combined impact of the two forms of risk turns out to be greater than their individual effects would suggest, which can be explained by the synergistic effect of the two risks. According to risk behaviour theory (Jessor, 1991), different types of risk can overlap and reinforce impulsive decisions. The propensity for stimulus risk drives individuals to seek intense sensations (Zuckerman, 1987). At the same time, the propensity for instrumental risk may cause individuals to perceive cathinone derivatives as a tool in favour of performance, for example in professional or educational areas, reminiscent of mechanisms reported in the literature concerning the use of cognitive enhancing substances such as amphetamine among students (Smith and Farah, 2011).

In the face of difficulties faced by an individual – both those arising from developmental tasks and the environment – contact with this group of substances can, according to Khantzian (2013), be a form of self-medication. Using NPS provides a temporary reprieve and its consequences should be perceived as the opposite of resilience (Rudzinski et al., 2017). The study allowed to confirm that mental resilience consists of personal, family and social competences (hypotheses H2a, H2b and H2c were confirmed). The literature emphasises that these competences are crucial for mental balance and the ability to cope with crises (Masten, 2001).

The need for stimulation is a constitutive trait considered within temperament theory, which refers to traits that are relatively constant with a biological basis (Strelau, 2006). Therefore, it was assumed that risk propensity could determine competence development. The study found that persons with a higher predisposition to take stimulus risks had lower family competences (hypothesis H4b was confirmed). Similar findings in a sample of socially maladjusted young people were confirmed by Konaszewski and Kwadrans (2017). The need for instant gratification and intense experiences in the context of family life can lead to neglecting responsibilities and interfere with building stable relationships that require emotional commitment and time (Holt-Lunstad et al., 2010). However, family competences do not show a significant effect on using cathinone derivatives (hypothesis H5b was not confirmed). This points to the need to examine the individual's wider environmental context, including factors such as parenting style.

The study did not confirm the hypothesis that personal competence develops as a result of instrumental risk propensity (hypothesis H4a was not confirmed). In theory, one would expect this type of risk to foster the development of person-

al skills, as it involves purposeful action. However, in practice the propensity for instrumental risk can be too focused on instant rewards, such as material gains or professional achievements, which is not conducive to the long-term development of personal competences such as self-reflection, adaptability, or emotional development. Due to this, Zaleśkiewicz's (2008) concept of high self-regulation in the face of such risks may need to be revised. However, the study confirmed that personal competences constitute a protective factor against using cathinone derivatives (hypothesis H5a was confirmed). Many studies point to their protective role in the context of substance use among adolescents (Botvin and Griffin, 2015).

The propensity for stimulus risk may lead to developing social competences, but the results of the study indicate a contradiction with the hypothesis (H4c) and with the existing state of knowledge (Konaszewski and Kwadrans, 2017). These differences may result from the various ways in which social support is measured. While previous studies have focused on the school environment, the study presented here took more account of support from friends and people facing similar problems. In addition, the results of the study indicate that the propensity for stimulus risk predicts using cathinone derivatives, which is also the inverse of the hypothesis (H5c) and suggests that these substances may be a risk factor for NPS use. Higher social skills may be the result of impulsive actions, and the study did not take into account factors moderating this relationship, such as upbringing style or the individual's general environment. It is worth noting that the drug environment can provide a sense of support and closeness, which is particularly important when considering that cathinone derivatives exhibit empathogenic effects (Karch, 2015).

## CONCLUSIONS

Research findings point to the special role of mental resilience in coping with crises and difficult situations and in reducing the impact of risk factors, hence the efforts of educators and psychologists should focus on strengthening it. Its development can lead to an improved quality of life (Ogińska-Bulik, 2014), however, research is still needed in this area (Leppin et al., 2014).

It is also important to promote resilience through preventive and therapeutic interventions targeting the entire family system. This is especially true in the area of family upbringing interactions relevant to individual mental resilience, i.e. primarily protective factors, resilience processes, adaptive mechanisms, and value systems as well as resources and potentials (Błasiak and Dybowska, 2021).

In addition, there should be extensive evidence-based prevention practice, e.g. Functional Family Therapy, Life Skills Training, multisystemic therapy (see review by Barczykowska and Dzierżyńska-Breś, 2013). They can be helpful in supporting intrinsic motivation for change, increasing personal competences or strength-

ening and building the personal potentials of young people, but also in creating a network of social support and control within the local environment. However, these interventions should be preceded by a multifaceted diagnosis, including the child's situation, resources, needs and preferences, as well as risk factors. In this context, early recognition of adolescent children's propensity to take stimulus risks also seems important. This makes it possible to learn impulse control and find alternative activities to satisfy the need for stimulation.

## STUDY LIMITATIONS

The analyses presented in this article refer only to respondents from selected online forums and newsgroups. The sampling was non-probabilistic, so that the results should be interpreted with caution. It should be emphasised that the results obtained cannot be extrapolated to the entire population of young adults using cathinone derivatives in Poland. It would be advisable to carry out research on a representative sample, which would make it possible to develop a characterisation of the phenomenon of the use of cathinone derivatives, with an understanding of its causes and circumstances. An obstacle concerning studying the impacts of NPS use is the inability to determine the exact composition of the psychoactive drug and its effects on the body. Hence, the results obtained cannot be generalised with a high degree of certainty, due to the unique effects of each substance.

The future direction of the research should include investigating the effectiveness of the proposed impacts on, among other things, mental resilience, psychological well-being, and psychopathological symptoms. It is worth broadening the range of variables examined to include sets of other risk and protective factors, related, for example, to parental upbringing style, social support, school or work situation, peer group or religious commitment, and spirituality. The study found no significant effect of instrumental risk on personal competence, which may indicate that there are moderators of this relationship. In the case of competences, a positive effect on using cathinone derivatives was observed, and this effect should be deepened in the course of following studies focusing on other characteristics such as the individual's environment. Whereas, in the case of family competences, the lack of influence on using cathinone derivatives may indicate the important role of other risk and protective factors, related, among others, to the parents' parenting style, social support, school or work situation, peer group, or religious commitment and spirituality. In doing so, it is worth examining which factors are mediators and which are moderators in order to clarify the mechanism by which these characteristics interact. Indeed, according to Jessor's interaction model of human functioning, the influence of individual factors is not equally strong in all developmental phases (Szymańska, 2012), which should also be reflected in further research.





## REFERENCES

- Adamczyk, D. (2017). Konieczność profilaktyki w obliczu zagrożenia narkomanią. *Horyzonty Wychowania*, 7(13), 235–251. Retrieved 8, July, 2022 from: <https://horyzontywychowania.ignatianum.edu.pl/HW/article/view/1043>
- Arnett, J.J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469–480. <https://doi.org/10.1037/0003-066X.55.5.469>
- Barczykowska, A., Dzierżyńska-Breś, S. (2013). Profilaktyka oparta na wynikach badań naukowych (evidence-based practice). *Resocjalizacja Polska*, 4, 131–152.
- Black, K., Lobo, M. (2008). A conceptual review of family resilience factors. *Journal of Family Nursing*, 14, 33–55. <https://doi.org/10.1177/1074840707312>
- Błasiak, A., Dybowska, E. (2021). Wzmacnianie rezyliencji w rodzinie – współczesną potrzebą. *Roczniki Pedagogiczne*, 13(49/4), 59–72. <https://doi.org/10.18290/rped21134.6>
- Botvin, G.J., Griffin, K.W. (2015). Life skills training: A competence enhancement approach to tobacco, alcohol, and drug abuse prevention. In L.M. Scheier (Ed.), *Handbook of Adolescent Drug Use Prevention: Research, Intervention Strategies, and Practice* (pp. 177–196). APA. <https://doi.org/10.1037/14550-011>
- Burda P. (2016). Nowe substancje psychoaktywne – toksyczność, zatrucia i skutki zdrowotne ostrych intoksykacji. In E. Waluk (Ed.), *Nowe narkotyki w Polsce. Tendencje, zagrożenia, procedury postępowania. Poradnik dla pracowników Państwowej Inspekcji Sanitarnej* (pp. 37–53). Główny Inspektorat Sanitarny.
- Carver, C.S., Scheier, M.F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin*, 92(1), 111–135. <https://doi.org/10.1037/0033-2909.92.1.111>
- Gąsior, K., Chodkiewicz, J., Cechowski, W. (2016). Kwestionariusz Oceny Prężności (KOP-26): Konstrukcja i właściwości psychometryczne narzędzia. *Polskie Forum Psychologiczne*, 21(1), 76–92. <https://doi.org/10.14656/PFP20160106>
- Cicchetti, D., Schneider-Rosen, K. (1984). Toward a transactional model of childhood depression. *New Directions for Child Development*, 26, 5–27. <https://doi.org/10.1002/cd.23219842604>
- European Monitoring Centre for Drugs and Drug Addiction. (2023). *European Drug Report 2023: Trends and Developments*.
- Gaś, Z.B. (1994). *Rodzina a uzależnienia*. Wyd. UMCS.
- Haase, J.E. (2004). The adolescent resilience model as a guide to interventions. *Journal of Pediatric Oncology Nursing*, 21(5), 289–299. <https://doi.org/10.1177/1043454204267922>
- Holt-Lunstad, J., Smith, T.B., Layton, J.B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine*, 7(7), e1000316. <https://doi.org/10.1371/journal.pmed.1000316>

- Hu, T., Zhang, D., Wang, J. (2015). A meta-analysis of the trait resilience and mental health. *Personality and Individual differences*, 76, 18–27. <https://doi.org/10.1016/j.paid.2014.11.039>
- Jessor, R. (1991). Risk behavior in adolescence: A psychosocial framework for understanding and action. *Journal of Adolescent Health*, 12(8), 597–605. [https://doi.org/10.1016/1054-139x\(91\)90007-k](https://doi.org/10.1016/1054-139x(91)90007-k)
- Karch, S.B. (2015). Cathinone neurotoxicity (“the “3Ms”). *Current Neuropharmacology*, 13(1), 21–25. <https://doi.org/10.2174%2F1570159X13666141210225009>
- Khantzian, E.J. (2013). Addiction as a self-regulation disorder and the role of self-medication. *Addiction*, 108(4), 668–669. <https://doi.org/10.1111/add.12004>
- Kellam, S.G., Branch, J.D., Agrawal, K.C., Ensminger, M.E. (1975). *Mental health and Going to School: The Woodlawn Program of Assessment, Early Intervention, and Evaluation*. University of Chicago Press.
- Konarski, R. (2009). *Modele równań strukturalnych: teoria i praktyka*. PWN.
- Konaszewski, K., Kwadrans, Ł. (2017). Prężność psychiczna a wsparcie społeczne w grupie młodzieży nieprzystosowanej społecznie. Badania pilotażowe. *Resocjalizacja Polska*, 13, 163–173. <https://doi.org/10.22432/pjsr.2017.13.11>
- Krajowe Centrum Przeciwdziałania Uzależnieniom. (2023). *Raport 2023. Uzależnienia w Polsce*.
- Lachowska B. (2013). O znaczeniu modeli teoretycznych w badaniach rodziny. *Family Forum*, 3, 11–24.
- Leppin, A.L., Bora, P.R., Tilburt, J.C., Gionfriddo, M.R., Zeballos-Palacios, C., Dulohery, M.M., Sood, A., Erwin, P.J., Brito, J.P., Boehmer, K.R., Montori, V.M. (2014). The efficacy of resiliency training programs: a systematic review and meta-analysis of randomized trials. *PloS One*, 9(10), e111420. <https://doi.org/10.1371/journal.pone.0111420>
- Makarowski, R. (2012). Kwestionariusz Ryzyka Stymulacyjnego i Ryzyka Instrumentalnego (KRSiRI) – nie tylko dla sportowców. *Psychological Journal*, 18(2), 335–346.
- Masten, A.S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, 56(3), 227–238. <https://doi.org/10.1037/0003-066X.56.3.227>
- McCubbin, H., McCubbin, M. (1988). Typologies of resilient families: Emerging roles of social class and ethnicity. *Family Relations*, 37(3), 247–254. <https://doi.org/10.2307/584557>
- Ogińska-Bulik, N. (2014). Prężność psychiczna a zadowolenie z życia osób uzależnionych od alkoholu. *Alcoholism and Drug Addiction*, 27(4), 319–324. [https://doi.org/10.1016/S0867-4361\(14\)70023-9](https://doi.org/10.1016/S0867-4361(14)70023-9)
- Peacock, A., Bruno, R., Gisev, N., Degenhardt, L., Hall, W., Sedefov, R., White J., Thomas K., Farrell M., Griffiths, P. (2019). New psychoactive substances: Challenges for drug surveillance, control, and public health responses. *The Lancet*, 394(10209), 1668–1684. [https://doi.org/10.1016/S0140-6736\(19\)32231-7](https://doi.org/10.1016/S0140-6736(19)32231-7)



- Pisarska, A., Ostaszewski, K. (2012). Resilience w rodzinie – wyniki badań warszawskich gimnazjalistów. *Dziecko Krzywdzone: teoria, badania, praktyka*, 3(40), 62–83.
- Rudziński, K., McDonough, P., Gartner, R., Strike, C. (2017). Is there room for resilience? A scoping review and critique of substance use literature and its utilization of the concept of resilience. *Substance Abuse Treatment, Prevention, and Policy*, 12(1), 1–35. <https://doi.org/10.1186/s13011-017-0125-2>
- Smith, M.E., Farah, M.J. (2011). Are prescription stimulants “smart pills”? The epidemiology and cognitive neuroscience of prescription stimulant use by normal healthy individuals. *Psychological Bulletin*, 137(5), 717–741. <https://doi.org/10.1037/a0023825>
- Sznajder, D., Pietryga-Szkarłat, B. (2018). Prężność rodziny – nowe wyzwanie dla badań naukowych. *Annales Universitatis Paedagogicae Cracoviensis. Studia Psychologica*, 11, 56–69. <https://doi.org/10.24917/20845596.11.4>
- Strelau, J. (2006). *Temperament jako regulator zachowania. Z perspektywy półwiecza badań*. GWP.
- Szymańska, J. (2012). *Programy profilaktyczne. Podstawy profesjonalnej psychoprofilaktyki*. ORE.
- Zaleśkiewicz, T. (2008). Samoregulacja i podejmowanie ryzyka. Rola procesów automatycznych. *Czasopismo Psychologiczne*, 14(2), 287–296.
- Zuckerman, M. (1987). A critical look at three arousal constructs in personality theories: Optimal levels of arousal, strength of the nervous system, and sensitivities to signals of reward and punishment. In J. Strelau, H.J. Eysenck (Eds.), *Personality Dimensions and Arousal* (pp. 217–231). Plenum Press.

## INTERAKCJA SKŁONNOŚCI DO RYZYKA INSTRUMENTALNEGO I STYMULACYJNEGO A UŻYWANIE POCHODNYCH KATYNONU WE WCZESNEJ DOROSŁOŚCI. MEDIACYJNA ROLA PRĘŻNOŚCI PSYCHICZNEJ

**Wprowadzenie:** Okres wkraczającej dorosłości, będący przełomem między adolescencją a wczesną dorosłością, dla wielu młodych dorosłych i ich rodzin wiąże się z szeregiem zadań rozwojowych i kryzysów, którym muszą sprostać. Jednym z czynników, który może zaburzać ten proces jest skłonność do ryzyka i związane z nim zagrożenie, jakie stanowią nowe substancje psychoaktywne. W tym kontekście istotne wydaje się poszukiwanie czynników chroniących, osłabiających działanie czynników ryzyka.

**Cel badań:** Celem badań było zidentyfikowanie czynników predysponujących do używania pochodnych katynonu w okresie wczesnej dorosłości. Badanie koncentrowało się na interakcji między skłonnością do ryzyka stymulacyjnego i instrumentalnego oraz ich bezpośrednim wpływem na używanie nowych substancji psychoaktywnych (NSP). Sprawdzone również, czy prężność psychiczna jest mediatorem tej relacji.

**Metoda badań:** Badanie przeprowadzono metodą sondażu diagnostycznego techniką CAWI. Przebadano 531 osób w wieku 18–30 lat. Do pomiaru wykorzystano Kwestionariusz Ryzyka



Stymulacyjnego i Ryzyka Instrumentalnego (KRSiRI) oraz Kwestionariusz Oceny Prężności (KOP-26). W celu weryfikacji hipotez stworzono ogólny model SEM.

**Wyniki:** Na używanie pochodnych katynonu w okresie wkraczającej dorosłości wpływa wysoka skłonność do ryzyka stymulacyjnego i niska do ryzyka instrumentalnego. Cechy te wchodziły w interakcję – ich wyższy łączny poziom przewiduje używanie NSP. Związek między ryzykiem stymulacyjnym a używaniem pochodnych katynonu jest zapośredniczony przez wysokie kompetencje społeczne. Podczas gdy wysokie kompetencje osobiste stanowią czynnik ochronny, nie zaobserwowano takiej zależności dla kompetencji rodzinnych, które przewiduje niska skłonność do ryzyka stymulacyjnego.

**Wnioski:** Czynnikiem ochronnym przed używaniem pochodnych katynonu jest skłonność do ryzyka instrumentalnego i kompetencje osobiste. Natomiast zagrożenie stanowi skłonność do ryzyka stymulacyjnego, która jest zapośredniczona częściowo przez wysokie kompetencje społeczne. Jednostki, które przejawiają wysoką skłonność do obu rodzajów ryzyka są w szczególności podatne na używanie NSP.

**Słowa kluczowe:** prężność psychiczna, skłonność do ryzyka, młodzi dorośli, pochodne katynonu, substancje psychoaktywne, NSP



