# Perceived Stress as a Mediator in the Relationship between Time Perspectives and Alcohol Consumption

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ORIGINAL RESEARCH PAPER

# Perceived Stress as a Mediator in the Relationship between Time Perspectives and Alcohol Consumption

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## Abstract

Heavy drinking is injurious to health and may even lead to death. Previous studies showed that Past-Negative, Present-Fatalistic, and Future time perspectives influence alcohol consumption; however, this study presents evidence that contradicts these claims. Lazarus and Folkman's (1984) transactional model of stress and coping explains that cognitive processes, such as perceived stress, are responsible for individual choices of coping strategies or decision to consume alcoholic beverages. Personal factors also influence time perspectives. This study applies the aforementioned model to hypothesize that the relationship between time perspectives and alcohol consumption is mediated by perceived stress. A total of 307 participants aged 18–22 years (late adolescence) who were habitual consumers of alcohol participated in this study. Mediation analysis was employed and it was revealed that perceived stress did not mediate the relationship between Past-Negative and Present-Fatalistic time perspectives and alcohol consumption. However, perceived stress was found to be a mediator in the relationship between Future time perspective and alcohol consumption. To summarize, dominant Past-Negative and Present-Fatalistic time perspectives can cause alcohol consumption in individuals who possess specific characteristics. Conversely, stress can precipitate alcohol consumption for individuals evincing the Future time perspective.

Studies showed that alcohol consumption in Indonesia has increased in almost all provinces from 2007 to 2018 (Badan Penelitian dan Pengembangan Kesehatan, 2019). The sale of alcohol beverages has also penetrated the digital world, making it easier for the producers to sell the beverages to younger generation (Hidayat, 2019). This situation may lead to an incline numbers of alcohol addiction. A pilot survey done by the researcher showed that 65.1% from 82 undergraduate students (aged 19-23) started consumed alcohol before college.

Clinicians and researchers have tried to discover the determinant variable affecting alcohol addiction. A study by Keough, Zimbardo, and Boyd (1999) determined that time perspective is an important individual traits in grasping the dynamics of alcohol consumption. Time perspective is understood as temporal orientation, or the tendency to orient one's life according to past, present, or future orientations. Zimbardo and Boyd (1999) define time perspective as "the often nonconscious process whereby the continual flows of personal and social experiences are assigned to temporal categories, or time frames, that help to give order, coherence, and meaning to those events" (p. 1271). Zimbardo and Boyd (1999) divided time perspectives into five subcategories based on this definition and their re-

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search: Past-Positive, Past-Negative, Present-Hedonistic, Present-Fatalistic, and Future.

Numerous studies have scrutinized the relationship between time perspectives and alcohol consumption (Laghi et al., 2012; McKay et al., 2018; Keough et al., 1999), especially with regard to the Past-Negative, Present-Fatalistic, and Future perspectives. However, inconsistencies exist in the extant studies apropos findings on the associations between these time perspectives and alcohol consumption. For instance, Laghi et al. (2012) found a significant positive correlation between Past-Negative and Present-Fatalistic time perspectives and binge drinking in adolescents. Conversely, McKay et al. (2018) found that Past-Negative and Present-Fatalistic time perspectives were negative predictors of problematic alcohol use.

Studies have shown a significant negative relationship between the Future time perspective and alcohol consumption (Beenstock et al., 2010; Fieulaine & Martinez, 2010; Keough et al., 1999). Keough et al.'s (1999) study also reported discrete results from different groups of participants: for instance, all 11 groups in their study evinced a negative correlation between future orientation and alcohol consumption, but only seven groups exhibited significant negative relationships. Further, McKay et al. (2018) performed hierarchical regression analysis and did not find Future orientation to be a significant predictor of problematic alcohol use.

These inconsistent results suggest the existence of other psychological factors mediating the relationship between time perspectives and alcohol consumption. Perceived stress is one such psychological factor believed to contribute to the consumption of alcohol. Several studies have reported an association between perceived stress and alcohol use (Armeli et al., 2000; Brady & Sonne, 1999; Cooper et al., 1992). The tension reduction theory of drinking and alcoholism asserts that alcohol consumption can reduce tension (Greeley & Oei, 1999) in individuals who experience stress.

Several studies have also established the connection between time perspectives and perceived stress. Papastamatelou et al. (2015) and Huić et al. (2018) found that Past-Negative and Present-Fatalistic time perspectives were positively and significantly related to perceived stress. An experimental investigation conducted by Stolarski et al. (2013) also revealed that Past-Negative and Present-Fatalistic time perspectives functioned to worsen an individual's disposition; in contrast, Past-Positive and Present-Hedonistic time perspectives could enhance mood and render individuals less vulnerable to perceiving events as stressful.

In addition, Sirois (2014) demonstrated that the Future time perspective was negatively related to perceived stress. Similarly, Keough et al. (1999) contended that Future-oriented individuals could contemplate prospective negative consequences; thus, they were able to refrain from engaging in potentially risky activities such as consuming copious amounts of alcohol. However, Zimbardo and Boyd (1999) asserted that individuals exhibiting a high level of Future time perspective are also prone to stress, which can sometimes positively influence their lives (eustress). Hence, stress experienced by Future-oriented people does not elicit risky behavior such as excessive alcohol consumption.

Lazarus and Folkman's (1984) transactional model of stress and coping explains the mediational relation between time perspective, perceived stress, and alcohol consumption. A time perspective can act as an individual factor that can influence the cognitive appraisal process, which helps individuals understand what is happening to them and facilitates the evaluation of resources in selecting coping strategies (Lazarus & Folkman, 1984). Alcohol consumption denotes an emotion-focused coping strategy that can be used to reduce emotional distress. It is one among several adaptive strategies individuals can utilize to cope with stressful situations.

This study aimed to examine the relationship between Past-Negative, Present-Fatalistic, and Future time perspectives and alcohol consumption and explain the association from the standpoint of individuals experiencing stress. Thus, it probed whether perceived stress can mediate between time perspectives and alcohol consumption. The remaining two dimensions of time perspective were not included in this study because previous investigations have demonstrated a consistent association between the Present-Hedonistic time perspective and alcohol consumption (Fieulaine & Martinez, 2010; Loose et al., 2019; McKay et al., 2018). Conversely, previous studies have also

found a significant negative relationship between the Past-Positive time perspective and alcohol misuse (Laghi et al., 2012; McKay et al., 2018).

## Methods

### *Participants*

Participants were recruited online for this study. Data were initially collected on 316 participants; however, only 307 responses could be used as the rest were incomplete. All the participants in this study were aged between 18 and 22 years (late adolescence) and had completed senior high school (SMA) or equivalent education. The mean age of the 307 participants was $M=20.34$ ($SD= 1.28$). The necessary sample size was calculated through *a priori* analysis and a small effect size with $r = 0.18$ and 0.19, with a loss of 95%. The results of a power analysis using G-Power estimated the required number of participants at 291–325 participants, which this study successfully managed. Nonprobability sampling techniques were used in selecting participants because the population size was unknown. More specifically, the study applied the snowball sampling method of recruiting participants through extant networks (Kumar, 2011).

### *Materials/Measures/Apparatus*

**Zimbardo Time Perspective Inventory (ZTPI).** Time perspective was measured in this study through Zimbardo and Boyd's (1999) ZTPI comprising fifty-six items measuring all dimensions of time perspective. This instrument has a respectable track record of reliability and validity. Further, Indirasari et al. (2020) tailored ZTPI to the Indonesian context, making it a perfect fit for this study. The fifty-six items of the ZTPI encompass ten statements to evaluate the Past-Negative time perspective, nine appraising the Past-Positive, 15 items measuring Present-Hedonistic, nine assessing the Present-Fatalistic, and 13 determining the Future. Each item is scored using a 5-point Likert-like scale (1 = very uncharacteristic to 5 = very characteristic). Unfavorable items (9, 24, 25, 41, and 56) are reverse scored.

**Perceived Stress Scale (PSS***).* Cohen, Kamarck,

and Mermelstein's (1994) PSS was deployed in this study to investigate perceived stress. This scale was adapted to the Indonesian context by Paramitha (2012). It is a unidimensional measure comprising ten items. PSS determines the extent to which a situation or condition is perceived as being stressful by an individual. The items are scored using a 5-point Likert-like scale (0 = never to 4 = very often). Unfavorable items (4, 5, 7, and 8) were reverse scored.

**Alcohol Use Disorder Identification Test (AUDIT).** This instrument is used to measure alcohol consumption by participants. AUDIT was developed by Babor et al. (1987) for the World Health Organization (WHO) AMETHYST project. According to Saunders (1993), AUDIT can screen mild to heavy alcohol consumption users. AUDIT measures three factors: alcohol intake (items 1–3), dependence (items 4–6), and adverse consequences (items 7–10). For this study, the measurement of alcohol consumption for the Indonesian sample was modified to ten grams of pure ethanol contained in one glass/small bottle/can of beer (285 ml - 330) ml), one glass of wine/champagne (120 ml), one shot of whiskey/vodka/tequila (30 ml), ½ glass of traditional clear alcoholic drinks (100 ml), one glass of standard cloudy alcoholic beverages (200 ml), and *oplosan* drinks with an alcohol content of 20% or more. These specifications were added to items 2 and 3. Further, for item 2, the researchers categorized the amount of alcohol consumption according to types of drinks since a person can consume two or more types of alcoholic drinks in one sitting. The consumption data thus collected were recorded as the total dose, measured on a 5-point Likert-like scale. Cut-off scores developed by O'Flynn (2011) for alcohol consumption were subsequently used: 0–7 denoted normal drinking, 8–15 evinced hazardous drinking, 16–19 represented harmful drinking, and 20 or more evidenced alcohol dependence.

### *Procedure*

The data for this study were collected between April 8 and April 28, 2020, using online Google forms. The call for participant recruitment was circulated using social media. The digital poster for recruitment contained information about participant characteristics, a link to the online

questionnaire (Google form), and a reward. A lottery was used to select ten participants who would be awarded Rp 20.000 via electronic payment. Provisions for attaining informed consent from participants were included in the form, along with requirements for recording demographic data such as age, gender, city of residence, educational status, educational institution, age of first alcohol consumption, types of drinks frequently consumed, location of procuring alcoholic beverages, and reasons for consuming alcoholic beverages.

### Data Analysis

Data analysis was accomplished via IBM SPSS Statistics version 24 for Windows. Demographic data were descriptively analyzed. Pearson's correlation coefficient was used to determine the significance value of the relationship between time perspectives, perceived stress, and alcohol consumption. Regression and mediation analysis were utilized to test this study's central hypothesis. Hayes's (2013) bootstrap confidence interval was employed to show the indirect effects that would yield the best conclusion for mediation analysis. PROCESS version 2.15 for SPSS, developed by Andrew F. Hayes, was used to accomplish the mediation analysis.

### Results

### Demographic Data

As noted above, data were collected from 316 participants, but only 307 participant responses could be used. Data pertaining to nine participants could not be included in this study because their characteristics did not match the selection criteria. The compiled demographic data revealed that 200 participants (65.1%) were male, and 107 participants (34.9%) were female.

Participant ages ranged between 18 and 22 years ($M$ = 20.34, $SD$ = 1.28). Most participants resided in the DKI Jakarta area (53.1%). Interestingly, 89.6% of the participants were college students, while 60.3% (185 participants) began drinking alcoholic beverages before graduating from high school. Thus, presumably, they had easy access to alcoholic drinks even though they were still under the legal drinking age.

The most frequently consumed alcoholic beverages were wine (87%), beer (83%), vodka (62%), and *soju* (52%). Participants reported that they usually bought alcoholic drinks from beverage shops (77%) and bars/clubs (70%). They also reported generally drinking for social purposes (75%) and stress release (64%).

### Research Variables

The average AUDIT score for the research variables was $M$ = 11.18 ($SD$ = 6.0), which is lower than the median. However, the results also revealed that 162 participants ranked in the hazardous drinking category (52.8%). For this classification, the consumption of alcoholic drinks could increase the risk of adverse impact on physical health, mental health, and social life. Table 1 displays the AUDIT results of the variables.

**Table 1.** *Description of Alcohol Consumption Levels of Participants*

| Category | AUDIT Total | $f$ (N=307) | % |
|---|---|---|---|
| Normal | ≤7 | 91 | 29.6 |
| *Hazardous drinker* | 8–15 | 162 | 52.8 |
| *Harmful drinker* | 16–19 | 23 | 7.5 |
| *Dependence drinker* | >20 | 31 | 10.1 |

**Table 2.** *Overview of Alcohol Consumption Patterns Based on Levels of Perceived Stress (PSS)*

| Category | PSS Total Score | Frequency | | | Total percentage (%) |
|---|---|---|---|---|---|
| | | Total | Normal consumption | Hazardous Drinking* | |
| High | 0–14 | 52 | 15 | 37 | 16.9 |
| Medium | 15–27 | 197 | 60 | 137 | 64.2 |
| Low | 28–40 | 58 | 16 | 42 | 18.9 |

The results of the PSS divulged that the average stress level was *M* = 21.24 (*SD* = 6.8), indicating moderate overall stress levels sensed by the participants. A total of 197 participants (64.2%) fell within this category. Cross-tabulation between types of alcohol consumption and perceived stress levels revealed that the average level of perceived stress in participants in the normal alcohol consumption range was 21.11 (*SD* = 6.6); this value was 21.30 (*SD* = 6.8) for participants ranked in the alcohol misuse category (hazardous, harmful, dependence).

Most participants were rated in the moderate category of perceived stress in both classifications of normal alcohol consumption and misuse of alcohol. The results of the one-way analysis of variance (ANOVA) analysis demonstrated no significant difference in the stress levels of participants with normal levels of alcohol consumption and participants with hazardous levels of alcohol consumption: $F (1,2) = 0.048$, $p = 0.83$. This outcome indicates that participant perceptions of stress tended to be the same even though their alcohol consumption patterns differed. The PSS categorization was defined using a linear transformation, dividing the participant scores into three categories: low, medium, and high.

### Correlation of Variables

Pearson's correlation coefficient was used to test the relationship between the three variables. The results (see Table 3) demonstrated significant positive relationships between alcohol consumption and orientations that were Past-Negative (*r* = .23, *p* <.01) and Present-Fatalistic (*r* = .25, *p* <.01). These results indicate that individuals with higher scores on Past-Negative and Present-Fatalistic dimensions are more prone to alcohol consumption. Conversely, findings differed on the relationship between the future time perspective and the AUDIT scores. No significant relationship was found between alcohol consumption and the Future time perspective (*r* = −.01, *p* = .92). These results indicate that individuals with high scores on the Future dimension may not be engaged in alcohol misuse. Table 3 also shows a significant positive relationship (*r* = .11, *p* = .04) between alcohol misuse and perceived stress. These outcomes indicate that a person with higher levels of perceived stress

**Table 3.** *Results of Inter-Variable Correlations*

|                     | 1     | 2      | 3     | 4      | 5     |
|---------------------|-------|--------|-------|--------|-------|
| 1. AUDIT            | (.71) |        |       |        |       |
| 2. PSS              | .11*  | (.81)  |       |        |       |
| 3. Past - negative  | .23** | .56**  | (.81) |        |       |
| 4. Present-fatalistic | .25** | .49** | .56** | (.78)  |       |
| 5. Future           | -.01  | -.24** | -.06  | -.29** | (.67) |

Note. The number inside the brackets shows Cronbach's α coefficient of internal consistency for each subscales.

would evince a higher tendency to misuse alcohol. Table 3 showed that the Past-Negative, Present-Fatalistic, and Future time perspectives are significantly related to perceived stress. Positive and significant relationships were found between perceived stress and the Past-Negative (*r* = .56, *p* <.01) and the Present-Fatalistic (*r* = .49, *p* <.01) time perspectives, indicating that individuals with high scores on the Past-Negative and Present-Fatalistic dimensions are likely to sense higher levels of perceived stress. In contrast, a significant negative relationship was found between perceived stress and the Future time perspective (*r* = −.238, *p* <.01). These results indicate that individuals with higher scores on the Future time perspective dimension are likely to have lower levels of perceived stress.

### Mediation Analysis

#### *Mediation Analysis Between the Past-Negative Perspective and Alcohol Consumption with Perceived Stress as a Mediator*

The results of the mediation analysis mentioned above (Figure 1) illuminate that based on 1000 bootstrap samples, the confidence interval for

**Figure 1.** *Mediation Model on the Relationship between the Past-Negative Time Perspective and Alcohol Consumption with Perceived Stress as Mediator*
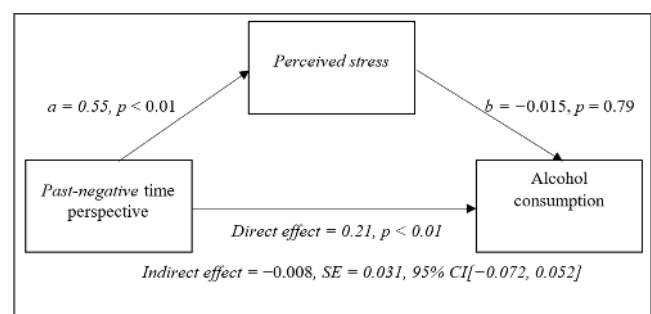
**Table 4.** *Mediation Model on the Relationship between the Past-Negative Time Perspective and Alcohol Consumption Mediated by Perceived Stress*

| | | M (*Perceived Stress*) | | | Y (*Alcohol Misuse*) | | |
|---|---|---|---|---|---|---|---|
| *Antecedent* | | *Coeff* | *SE* | *p* | | *Coeff* | *SE* | *p* |
| X (*Past-negative*) | A | .55 | .04 | .00 | c | .20 | .05 | .00 |
| | | | | | c′ | .21 | .06 | .00 |
| M (*Perceived stress*) | | | | | b | −.01 | .06 | .79 |
| Constant | $i_1$ | .17 | .16 | .31 | $i_2$ | .41 | .18 | .01 |
| | | $R^2 = .31$ | | | | $R^2 = .05$ | | |
| | | $F(1,305) = 138.64, p < .05$ | | | | $F(2,304) = 8.2, p < .05$ | | |

Note. *Indirect effect = −.01, SE = .03, 95% CI[−.07,.05]. c = total effect. c` = direct effect*

the indirect effect (*ab* = −.008) was possible through the value of zero, meaning that it was above and below zero (−.072 to .052). The results of this analysis can be interpreted as evidence that perceived stress does not act as a mediator in the relationship between the Past-Negative time perspective and alcohol consumption. However, the evaluation also revealed proof of the direct effect between the Past-Negative time perspective and alcohol consumption if the presence of perceived stress was controlled (*c'*= .209, *p* <.01). The direct effect coefficient shows that individuals displaying a one-unit difference at the Past-Negative time perspective are estimated to differ by .209 units in their tendency to engage in harmful alcohol consumption even though they sense the same level of perceived stress.

***Mediation Analysis Between the Present-Fatalistic Time Perspective and Alcohol Consumption with Perceived Stress as a Mediator***

The mediation analysis results illustrated in Figure 2 evince that based on 1000 bootstrap samples, the confidence interval for the indirect effect (*ab* = −.003) was possible through the value of zero, meaning that it was above and below zero (−.056 to .042). The outcomes of this examination can be inferred to evidence that perceived stress does not act as a mediator of the relationship between the Present-Fatalistic time perspective and alcohol consumption. However, the analysis also shows a proven direct effect between the Present-Fatalistic time perspective

**Figure 2.** *Mediation Model on the Relationship between the Present-Fatalistic Time Perspective and Alcohol Consumption with Perceived Stress as Mediator*
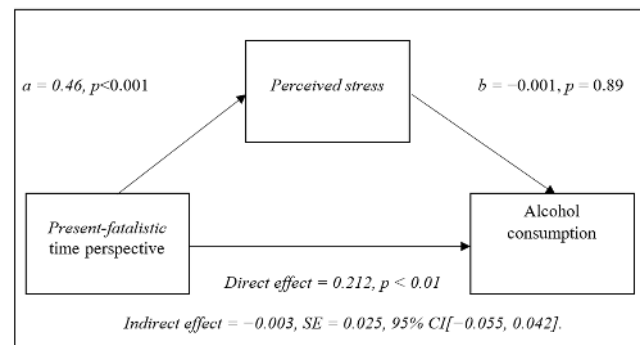


**Table 5.** *Mediation Model on the Relationship between the Present-Fatalistic Time Perspective and Alcohol Consumption Mediated by Perceived Stress*

| | | M (*Perceived Stress*) | | | Y (*Alcohol Misuse*) | | |
|---|---|---|---|---|---|---|---|
| *Antecedent* | | *Coeff* | *SE* | *p* | | *Coeff* | *SE* | *p* |
| X (*Present-fatalistic*) | A | .46 | .05 | .00 | c | .21 | .05 | .00 |
| | | | | | c′ | .21 | .05 | .00 |
| M (*Perceived stress*) | | | | | b | −.001 | .06 | .89 |
| Constant | $i_1$ | .77 | .14 | .00 | $i_2$ | .51 | .15 | .01 |
| | | $R^2 = .23$ | | | | $R^2 = .06$ | | |
| | | $F(1,305) = 94.62, p < .05$ | | | | $F(2,304) = 9.9 \ p < .05$ | | |

Note. *Indirect effect = −.003, SE = .025, 95% CI[−.055, .042]. C = total effect. C` = direct effect*

and alcohol consumption if the presence of perceived stress is controlled ($c'$ = .212, $p$ <.01). The direct effect coefficient shows that individuals who exhibit a one-unit difference at the Present-Fatalistic time perspective are estimated to differ by .209 units in their tendency to engage in harmful alcohol consumption even though they experience the same level of perceived stress.

### Mediation Analysis Between the Future Time Perspective and Alcohol Consumption with Perceived Stress as a Mediator

This mediation analysis (Figure 3) evidenced a significant indirect effect ($ab$ = −.036) because the confidence interval was below zero, meaning that it did not go through zero (−.806 to −.077). The indirect effect coefficient of $ab$ = −.036 indicated that the estimated difference between two individuals who differ by one-unit in the Future time perspective dimension would vary by .036 units lower for engaging in harmful alcohol con-

**Figure 3.** *Mediation Model on the Relationship between the Future Time Perspective and Alcohol Consumption with Perceived Stress as Mediator*
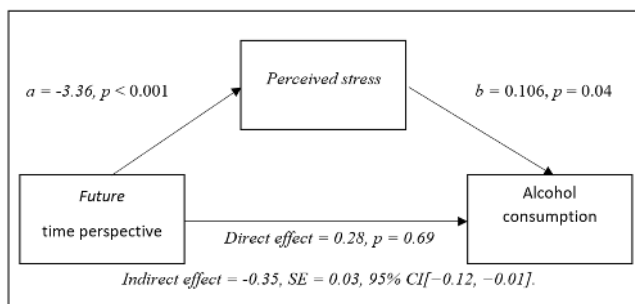


sumption. This outcome can occur because the more dominant an individual's orientation to the Future time perspective, the lower the individual's perceived stress. Thus, such a person would demonstrate a lower tendency to engage in harmful alcohol consumption. The analysis also shows no evidence of a significant direct effect because the confidence interval for the direct effect is above and below zero (−.116 to .173) between the Future time perspective and harmful alcohol consumption if the presence of perceived stress is controlled ($c'$ = −.287, p = .69).

### Discussion

To the best of the researchers' knowledge, this study is the first to examine the role of perceived stress as a mediator between temporal perspectives and alcohol consumption. The findings indicate a direct relationship between alcohol consumption and both past-negative and present-fatalistic time perspectives, wherein perceived stress plays no mediating role. This result supports the findings of the studies conducted by Laghi et al. (2012) and Daugherty and Brase (2010). However, contrary to the conclusions drawn by McKay et al. (2018), this study found that Past-Negative and Present-Fatalistic time perspectives can act as predictors of alcohol consumption.

The relationship between the Past-Negative time perspective and alcohol consumption can be explained by Bolotova and Hachaturova's (2013) investigation, which found that people with Past-Negative time perspectives tend to have experienced unpleasant past occurrences

**Table 6.** *Mediation Model on the Relationship between Future Time Perspective and Alcohol Consumption with Perceived Stress Mediator*

| | | | | *Outcome* | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **M (*Perceived Stress*)** | | | | **Y (*Alcohol Misuse*)** | | |
| **Antecedent** | | *Coeff* | *SE* | *p* | | *Coeff* | *SE* | *p* |
| X (*Future*) | A | −.34 | .08 | .00 | c | −.007 | .07 | .92 |
| | | | | | c′ | .03 | .07 | .69 |
| M (*Perceived stress*) | | | | | b | .11 | .05 | .04 |
| Constant | $i_1$ | 3.30 | .28 | .00 | $i_2$ | .79 | .30 | .01 |
| | | R² = .06 | | | | R² = .01 | | |
| | | F(1,305) = 18.39, $p$ < .05 | | | | F(2,304) = 2.07, $p$ > .05 | | |

Note. *Indirect effect = -.03, SE = .02, 95%CI[−.08, −.01].* c = *total effect.* c` = *direct effect*

that constrained their cognitive analysis process. Individuals with the Past-Negative time perspective also tended to consume alcohol as a coping mechanism to deal with their unpleasant histories and the imprints of the past on their present. At the same time, their limited cognitive abilities affected their decisions to consume alcohol as a coping strategy. Thus, alcohol consumption was not caused by the level of perceived stress for Past-Negative individuals; rather, it was a consequence of their Past-Negative characteristics.

The same can be asserted for Present-Fatalistic individuals. Bolotova and Hachaturova (2013) explained in their study that individuals with a Present-Fatalistic time perspective believe that their life is predetermined; therefore, they do not sense any need to attempt to change their circumstances. Consequently, they do not ponder the long-term negative effects of alcohol consumption and tend to enjoy the present while it lasts. In alignment with their worldview, they tend to see the effects of alcohol consumption as also predetermined. In conclusion, Present-Fatalistic individuals consume alcohol not out of stress but because of their Present-Fatalistic characteristics.

Besides displaying a significant relationship with alcohol consumption, the Past-Negative and Present-Fatalistic time perspectives were also significantly correlated with perceived stress. The results of this study are congruent with the findings of Huić et al. (2018) and Papastamatelou et al. (2015). Individuals with Past-Negative and Present-Fatalistic perspectives are characteristically prone to negative moods (Stolarski et al., 2013), depression, and anxiety (Zimbardo & Boyd, 1999). Persons with the Past-Negative time perspective are also usually unhappy and have lower self-esteem (Zimbardo & Boyd, 1999) because they tend to judge their current state and future prospects based on their negative past experiences. Thus, they tend to view their current circumstances as stressful. Individuals with the Present-Fatalistic time perspective generally exhibit low levels of self-efficacy and perceive their current situation to be unalterable. The accumulated stress can make them more vulnerable to pressure even as they do not endeavor to escape their circumstances.

The study's findings for the Future time perspective were substantially different. Perceived stress was found to act as a mediator in the relationship between the future time perspective and alcohol consumption. No direct relationship was ascertained between the Future time perspective and alcohol consumption. These results endorse the outcomes of research conducted by Zimbardo and Boyd (1999) and McKay et al. (2018), reporting that the Future time perspective is not significantly associated with alcohol consumption. However, the present study's findings contradict studies suggesting that the Future time perspective is related to alcohol consumption (Beenstock et al., 2010; Fieulaine & Martinez, 2010). According to Bolotova and Hachaturova (2013), individuals oriented to the Future time perspective display self-control, tend to select adaptive strategies to resolve conflicts, and are able to cognize ways of resolving problems. They are inclined to seek help from others, are willing to cooperate and work in teams, think optimistically, and believe that they can deal with problems. These characteristics make individuals oriented to the future time perspective capable of using adaptive coping strategies in the face of difficulties; thus, they tend to avoid alcohol consumption as a means of handling problems such as stress.

McKay et al.'s (2018) study demonstrates only the absence of correlation between the Future time perspective and alcohol consumption. However, addictive behavioral patterns may appear when the Future time perspective is combined with perceived stress. Thus, the findings of the mediation analysis on the Future time perspective support Lazarus and Folkman's (1984) transactional model of stress and coping. According to this model, the Future time perspective acts as a factor influencing perceived stress in evaluating situations used to determine coping strategies. Therefore, individuals evincing a low orientation to the Future time perspective tend to perceive higher levels of stress and are more susceptible to harmful alcohol consumption behaviors, and vice versa.

This study also found a significant relationship between perceived stress and alcohol consumption, an outcome that supports Rice and Van Arsdale's (2010) study, which determined that perceived stress can be related to the consumption of alcoholic beverages. The positive correlation between perceived stress and consumption of alcoholic drinks indicates that

higher levels of perceived stress are likely to increase levels of alcohol consumption.

As mentioned earlier, this study is the first to test whether perceive stress can act as a mediating variable between time perspectives and alcohol consumption. The results of this study also portrayed the alcohol consumption among students especially in urban area since most of the respondents live in DKI Jakarta. The fact that most of the students started to drink alcohol before college, future studies could investigate at the cause and effect of alcohol consumption among young generation especially related with their academic performance.

From a practical standpoint, this study offers important implications for clinical practice. Clinicians are advised on the basis of this study's outcomes to consider time perspectives as clinical tools to detect individual vulnerability to addiction. This study can ground the awareness that individuals with certain time perspectives (such as Past-Negative and Present-Fatalistic) are vulnerable to alcohol addiction. In contrast, the degree of stress experienced by Future-oriented individuals can heighten their levels of alcohol consumption. In sum, it is perhaps possible to assert that the dominant time perspectives of individuals may influence vulnerability to addictions.

Finally, several shortcomings of this study must be acknowledged. First, most of the participants were residents of DKI Jakarta, and their ages ranged between 18 and 22 years. Since DKI Jakarta is a metropolitan area, their lifestyles could influence their usual ways of alcohol consumption. Also, different types of stress could be experienced by discrete age ranges. Studies conducted in the future should confirm the findings of the current investigation by examining rural areas and larger age spans. Second, this study did not control the frequency of alcohol consumption and the sources of stress experienced by its participants. Such data may be valuable for the measurement of addiction levels and the identification of sources of stress. Finally, the data were collected during the initial wave of the Covid-19 pandemic and the resultant lockdown period. Those circumstances could also have influenced levels of alcohol consumption and perceived stress that would otherwise differ in more ordinary situations.

## Conclusions

This study was conducted to determine the role of perceived stress as a mediator in the relationship between Past-Negative, Present-Fatalistic, and Future time perspectives and alcohol consumption in Indonesia by regular drinkers of alcoholic beverages aged between 18 and 22 years. The study results evidenced that perceived stress can act as a mediator in the relationship between the future time perspective and alcohol consumption, but not for the Past-Negative and Present-Fatalistic time perspectives. These results indicate that individuals with higher Past-Negative and Present-Fatalistic scores are more vulnerable to alcohol consumption even without any stress perception because of their preconception that their life is more stressful than others. Conversely, Future-oriented individuals who consume alcohol could become alcoholics only if they experience stress.

**Declaration of Conflicting Interest.** There is no conflicting interest in the authorship and/or the publication of the manuscript.

## References

Armeli, S., Carney, M. A., Tennen, H., Affleck, G., & O'Neil, T. P. (2000). Stress and alcohol use: A daily process examination of the Stressor-Vulnerability Model. *Journal of Personality and Social Psychology*, *78*(5), 979–994. https://doi.org/10.1037/0022-3514.78.5.979

Badan Penelitian dan Pengembangan Kesehatan. (2019). Laporan Hasil Riset Kesehatan Dasar (Riskesdas) Indonesia tahun 2018. In *Riset Kesehatan Dasar 2018* (pp. 182–183). https://www.litbang.kemkes.go.id/laporan-riset-kesehatan-dasar-riskesdas/

Beenstock, J., Adams, J., & White, M. (2010). The association between time perspective and alcohol consumption in university students : cross-sectional study. *The European Journal of Public Health*, *21*(4), 438–443. https://doi.org/10.1093/eurpub/ckp225

Bolotova, A. K., & Hachaturova, M. R. (2013).

The role of time perspective in coping behavior. *Psychology in Russia: State of the Art*, 6(3), 120–131. https://doi.org/10.11621/pir.2013.0311

Brady, K. T., & Sonne, S. C. (1999). The role of stress in alcohol use, alcoholism treatment, and relapse. *Alcohol Research and Health, 23* (4), 263–271.

Cohen, S. (1994). *Perceived Stress Scale.* www.mindgarden.com

Cooper, M. L., Russell, M., Skinner, J. B., Frone, M. R., & Mudar, P. (1992). Stress and alcohol use: Moderating effects of gender, coping, and alcohol expectancies. *Journal of Abnormal Psychology, 101*(1), 139–152. https://doi.org/10.1037/0021-843X.101.1.139

Daugherty, J. R., & Brase, G. L. (2010). Taking time to be healthy: Predicting health behaviors with delay discounting and time perspective. *Personality and Individual Differences, 48*(2), 202–207. https://doi.org/10.1016/j.paid.2009.10.007

Fieulaine, N., & Martinez, F. (2010). Time under control: Time perspective and desire for control in substance use. *Addictive Behaviors, 35*(8), 799–802. https://doi.org/10.1016/j.addbeh.2010.03.022

Greeley, J., & Oei, T. (1999). Alcohol and tension reduction. *Psychological Theories of Drinking and Alkoholism, 2*, 14–53.

Hidayat, A. (2019, March 12). *Produsen minuman alkohol merambah penjualan e-commerce.* https://industri.kontan.co.id/news/produsen-minuman-alkohol-merambah-penjualan-e-commerce

Huić, A., Krznarić, T., & Kamenov, Ž. (2018). Time perspective, perceived stress, self-control and relationship satisfaction in heterosexual dating relationships of emerging adults. *Psicologia: Revista da Associacao Portuguesa Psicologia, 32*(1), 63–78. https://doi.org/10.17575/rpsicol.v32i1.1327

Keough, K. A., Zimbardo, P. G., & Boyd, J. N. (1999). Who's smoking, drinking, and using drugs? Time perspective as a predictor of substance use. *Basic and Applied Social Psychology, 21*(2), 149–164. https://doi.org/10.1207/15324839951036498

Kumar, R. (2011). *Research Methodology : A Step by Step Guide for Beginners* (3rd ed.). Sage Publication Inc.

Laghi, F., Liga, F., Baumgartner, E., & Baiocco, R. (2012). Time perspective and psychosocial positive functioning among Italian adolescents who binge eat and drink. *Journal of Adolescence, 35*(5), 1277–1284. https://doi.org/10.1016/j.adolescence.2012.04.014

Lazarus, R. S., PhD, & Folkman, S. (1984). *Stress, Appraisal, and Coping (Google eBook)*. Springer Publishing Company. http://books.google.com/books?id=i-ySQQuUpr8C&pgis=1

Loose, T., Robiou Du Pont, L., Acier, D., & El-Baalbaki, G. (2019). Time perspectives mediate the relationship between personality traits and alcohol consumption. *Time and Society, 28*(3), 1148–1166. https://doi.org/10.1177/0961463X18758515

McKay, M. T., Perry, J. L., Cole, J. C., & Worrell, F. C. (2018). What time is it? Temporal psychology measures relate differently to alcohol-related health outcomes. *Addiction Research and Theory, 26*(1), 20–27. https://doi.org/10.1080/16066359.2017.1309032

O'Flynn, N. (2011). Harmful drinking and alcohol dependence: Advice from recent NICE guidelines. *British Journal of General Practice, 61*(593), 754–756. https://doi.org/10.3399/bjgp11X613287

Papastamatelou, J., , Unger, A., Giotakos, O., & Athanasiadou F. (2015). Is time perspective a predictor of anxiety and perceived stress? Some preliminary results from Greece. *Psychological Studies, 60*(4), 468–477. https://doi.org/10.1007/s12646-015-0342-6

Paramitha, N. M. (2012). Hubungan Stres dan Faktor Lainnya dengan Konsumsi Makanan Mahasiswa Departemen Arsitektur Fakultas Teknik Universitas Indonesia Tahun 2012. In *Skripsi*.

Rice, K. G., & Van Arsdale, A. C. (2010). Perfectionism, perceived stress, drinking to cope, and alcohol-related problems among college students. *Journal of Counseling Psychology, 57*(4), 439–450. https://doi.org/10.1037/a0020221

Sirois, F. M. (2014). Out of sight, out of time? A meta-analytic investigation of procrastination and time perspective. *European Journal of Personality, 28*(5), 511–520. https://doi.org/10.1002/per.1947

Stolarski, M., Matthews, G., & Zimbardo, P. G. (2014). How we feel is a matter of time: Relationships between time perspectives and

mood. *Journal of Happiness Studies, 15*(4), 809-827. https://doi.org/10.1007/s10902-013-9450-y

Zimbardo, P. G., & Boyd, J. N. (1999a). Journal of Personality and Social Psychology 1999 Zimbardo. *Journal of Personality and Social Psychology, 77*(6), 1271–1288.

Zimbardo, P. G., & Boyd, J. N. (1999b). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology, 77*(6), 1271–1288. https://doi.org/10.1037/0022-3514.77.6.1271