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## Personality and the Intention to use Bus Rapid Transit on Pandemic COVID-19: The role of environmental concern as a mediator

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### Cover Page Footnote

I would like to thank the Social and Environmental Behavior Laboratory (SnEBLAB) team, Universitas Lambung Mangkurat, who provided technical assistance in data collection. I appreciate the grant from the LPPM of Universitas Lambung Mangkurat.

# Personality and the Intention to use Bus Rapid Transit on Pandemic COVID-19: The role of environmental concern as a mediator

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## Abstract

The COVID-19 pandemic has had an impact on the behavior of public transport users and raised concerns about the means of transportation. Therefore, this study aims to explain the mediating effect of environmental concern in the relationship between five personality traits on the intention to use Bus Rapid Transit (BRT) during the pandemic. A correlational survey of 425 participants was conducted, and the analysis found that all five personality traits did not directly predict the intention to use BRT. Furthermore, there was a positive mediating effect at the weak level of environmental concern on the relationship between four of the personality traits (agreeableness, conscientiousness, extraversion, and openness to experience) toward the intention to use BRT. The results showed that the mediating effect of environmental concern was not significant for the relationship between neuroticism and BRT usage intentions. It was reported that one of the reasons people use public transportation is due to environmental concerns during a pandemic.

## Keywords

Big Five Personality Traits, Environmental Concern, Public Transportation Use, Bus Rapid Transit, Pandemic

The COVID-19 pandemic has reduced the usage frequency of all transportation modes ten countries on six continents (Barbieri et al., 2021), by up to 90% (Przybylowski et al., 2021; Sahraei et al., 2021; Tirachini & Cats, 2020). Based on this condition, it is important to understand the behavior to use public transportation during the pandemic. Several studies explain the desire to pay (Awad-Núñez et al., 2021), safety, and comfort (Przybylowski et al., 2021), as well as behavior looking to maintain health protocols (Dzisi & Dei, 2020; Guellich et al., 2021). Currently, there

is a need to explain the practice of using public transportation during the COVID-19 pandemic (see Irawan et al., 2020), especially in terms of personal factors such as personality. The meta-analysis study of Zettler et al. (2022) found that differences in personality traits have varying effects on personal perception, behavioral adjustment, and societal evaluation.

There are still limited studies on travel behavior using public transportation during the COVID-19 pandemic in terms of personality factors. The general personality concept studied in the context of behavior using public transportation is the "Big Five Personality Traits" (Costa & McCrae, 2011). Furthermore, Asselmann et al. (2020) found a significant positive relationship between agreeableness and the reduction in the use of public transportation during the first week of the pandemic in Germany, while other traits were not significantly correlated. Another study conducted by Krupic et al. (2010) demon-

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strated positive and negative relationships between agreeableness and extraversion, respectively, and restrictions on the use of public transportation in Croatia, while other traits were not significantly correlated. In contrast to Asselmann et al. (2020) and Krupic et al. (2010) which examined the relationship between personality traits and restrictions on the use of public transportation in the pandemic era, I investigate the factors that might mediate the relationship between a given personality trait and the use of public transport in a pandemic.

Under nonpandemic conditions, many studies explain the role of personality factors in public transportation behavior (Abraham & Wirayudha, 2015; Anagnostopoulou et al., 2020; Gao et al., 2017; Roos et al., 2020; Yazdanpanah & Hosseinlou, 2017). Some previous findings have produced contradictory results on the relationship between personality traits and intention to use public transportation. For example, extraversion had a negative relationship (Roos et al., 2020), but, in contrast, Yazdanpanah and Hosseinlou (2017) found a positive relationship between extraversion and the intention to use public transportation. Contradictory results are also found on the conscientious trait; Abraham and Wirayudha (2015) and Roos et al. (2020) revealed a negative association between conscientiousness and the intention to use public transportation. Conversely, conscientious individuals more often use public transportation based on the cost of transportation expenses (Yazdanpanah & Hosseinlou, 2016). From the literature review, I also note inconsistent findings in the relationship between personality traits and the intention to use public transportation. Openness to experience (Roos et al., 2020), agreeableness (Roos et al., 2020; Stachl et al., 2017), and neuroticism (Yazdanpanah & Hosseinlou, 2017) had a significant correlation with the intention to use public transportation. Conversely, research in Indonesia found that these three traits did not predict the intention to use public transportation significantly (Abraham & Wirayudha, 2015).

Several inconsistent findings of the relationship between personality traits and the intention to use public transportation have the potential to need new explanations. Shadiqi et al. (2023) found that besides the comfort and accessibility

of public transportation, environmental concern predicted the use of public transportation. It is difficult to find previous findings that test the mediating effect of environmental concerns on the relationship between personality and public transportation use during a pandemic. Environmental concern was strongly related to attitudes toward the environment (Ibrahim et al., 2021). Attitudes toward the environment mediated the relationship between personality characteristics and responsible environmental behavior-related waste (Ojedokun, 2011). A study by Basic-Sontic et al. (2017) examined the mediating effect of environmental concern on the relationship between the Big Five Personality Traits and pro-environmental behavior during a non-pandemic period. I believe that the relationship patterns, as identified by Basic-Sontic et al. (2017), can apply to the use of public transportation. This is likely because, first, one form of pro-environmental behavior is the use of public transportation (Chan et al., 2023); and second, pandemic conditions can increase environmental concerns (Severo et al., 2021). I argue that environmental concern plays an important role in the relationship between personality traits and the intention to use public transportation. This study aims to provide answers regarding the mediation effect of environmental concerns on the relationship between personality factors and the intention to use public transportation during the COVID-19 pandemic. In this research, I employed Bus Rapid Transit (BRT) as a form of public transportation. BRT is an integrated bus transportation system that offers speed, comfort, and cost-effective in urban area (Wright, 2003).

### ***Personality Traits and Public Transportation Use***

In this study, I focus on explaining the use of public transportation. The availability of public transportation is one characteristic of sustainable urbanization (Zhang, 2016). Urban communities use public transportation for their daily mobility. The use public transportation behavior is kind of proenvironmental behavior (Ertz et al., 2016). Public transportation, as a sustainable mode of transportation, becomes a way to reduce energy consumption and environmental pollution (Lejda et al., 2017). In addition to its environmental benefits, public transportation is also a way to reduce the use of private transpor-

tation, which is prone to traffic accidents, such as the motorbike mode in Indonesia (Soehodho, 2017). In this study, I examine the determinant factors that make someone use public transportation, specifically BRT, and one of the factors is personality.

I chose the Big Five Personality Traits as the main predictor in this study. The factor theory of the Big Five Personality Traits is a structure of differences designed to explain individual development and functioning (McCrae, 2010). The five personality domains are called personality traits, namely (Costa & McCrae, 2011): (1) Extraversion: characterized by openness, easy closeness with others, being active, happiness to socialize, being optimistic, fun, affectionate, and friendly; (2) Agreeableness: characterized by being gentle, kind, helpful, always open and loving to others, very trustworthy, and easily deceived; (3) Conscientiousness: has a strong stance, well-organized ability, is orderly, credible and diligent; (4) Neuroticism: characterized by uncontrolled anxiety, increased anger levels, feelings of unease, often sad and not easy to get along with; (5) Openness to experiences: characterized by high curiosity, creativity, confidence, being imaginative, and always looking for novelty.

No research has been conducted to examine how personality traits relate to the use of public transportation during the COVID-19 pandemic, but this section does provide a review of studies that were carried out before the pandemic. Roos et al. (2020) conducted a study in 2017 and found that the personality trait dimensions of openness to experience and agreeableness had a positive relationship with the use of public transportation. Furthermore, conscientiousness and extraversion had a negative relationship with the use of public transportation in Sweden, while neuroticism had no significant relationship (Roos et al., 2020). Stachl et al. (2017) found that agreeable people used public transportation applications more often in smartphones in Munich. Before the COVID-19 pandemic, for users of public transportation in Jakarta, conscientiousness is the only personality dimension negatively significantly associated with the intention of using public transportation, and the other four traits are not significant (Abraham & Wirayudha, 2015). Another study in Iran before

the pandemic found a significant negative relationship between neuroticism and the intention to use public transportation, while extraversion was positively related to the intention (Yazdanpanah & Hosseinlou, 2017).

Based on the study of the Big Five Personality Traits theory and related scientific findings, the following hypotheses are proposed: Openness to experience, agreeableness, and extraversion are positively correlated with the intention to use BRT; neuroticism and conscientiousness are negatively correlated with the intention to use BRT in the COVID-19 pandemic.

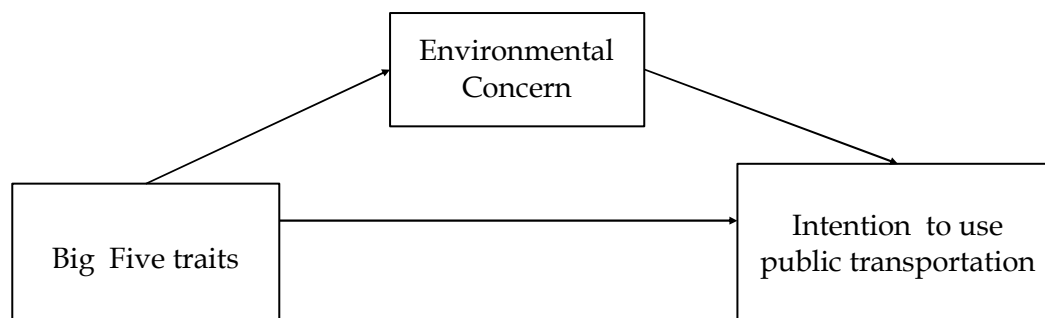
### *Environmental Concern*

Environmental concern is a person's attitude toward specific environment behavior or environmental value orientations (Cruz & Manata, 2020; Fransson & Gärling, 1999). Personality was found to be an important factor in determining environmental concern (Chen et al., 2020). In addition, several studies have found a positive relationship between neuroticism, conscientiousness (Abdollahi et al., 2017; Hirsh, 2010), agreeableness (Hirsh, 2010, 2014), openness to experience (Milfont & Sibley, 2012; Wuertz, 2015), and extraversion (Abdollahi et al., 2017) on environmental concern. Furthermore, it was hypothesized that openness to experience, agreeableness, conscientiousness, neuroticism, and extraversion are positively correlated with environmental concern.

Environmental concern is an antecedent of pro-environmental behavior related to the choice of transportation mode (Bouscasse et al., 2018; Daziano & Bolduc, 2013; Heath & Gifford, 2002; Ng & Phung, 2020), and people with a low level of concerns will tend to choose private transportation modes (Bouscasse et al., 2018). Donald et al. (2014) found that environmental concern was not significantly related to the intention to use private and public transportation. In different types of transportation modes, He et al. (2018) and Shalender and Sharma (2021) found that there is a relationship between environmental concern and the desire to use electric vehicles as a form of sustainable car transportation.

I argue that environmental concern has an effect as a mediator based on research on the relationship between personality traits and pro-

**Figure 1.** The analytical model framework to examine the mediating effect of environmental concern on the relationship between the Big Five Personality Traits and intentions to use the BRT



environmental behavior. Proenvironmental behavior allows people to achieve explicit goals for environmental benefits by doing something (Steg & de Groot, 2019). There is a positive mediating effect of environmental concern on certain personality traits (e.g., openness to experience and agreeableness) on pro-environmental behavior (Busic-Sontic et al., 2017). Environmental concern also negatively mediated extraversion and positively mediated neuroticism associated with green investment behavior (Busic-Sontic & Brick, 2018). Poier (2021) found the mediating effect of environmental concern on the relationship between openness to experience, agreeableness, and neuroticism on the adoption of solar energy in households. Busic-Sontic et al. (2017), Busic-Sontic and Brick (2018), and Poier (2021) have similarities in describing examples of pro-environmental behavior. One example of pro-environmental behavior on the private sphere is the use of public transportation (Ertz et al., 2016). Based on this explanation, it is hypothesized that there is a positive relationship between environmental concern and the intention to use BRT. Furthermore, environmental concern mediates the effects of agreeableness, neuroticism, conscientiousness, openness to experience, and extraversion on the intention to use BRT during the COVID-19 pandemic.

### Current Research

This study was conducted in South Kalimantan, because after relying on conventional urban transportation such as *angkot* or public minivan for a long time, the South Kalimantan government finally developed modern public transportation. Currently, one of the most popular types of modern public transportation in the Province of South Kalimantan is the BRT of "Banjarbakula." The BRT is a pioneer of modern

public transportation with 11 buses and more than 37 bus stops in use since 2019 on the Banjarmasin-Banjarbaru city route (Subayu, 2020). The lack of studies on public transportation behavior during the pandemic makes this important. Several studies of public transportation behavior in Indonesia during the pre-pandemic period explained user dissatisfaction (Joewono et al., 2016), the intention to use public transportation (Abraham & Wirayudha, 2015), the choice of transportation modes (Bastarianto et al., 2019; Van et al., 2014), and the performance of public bus drivers (Suraji et al., 2017). Only Abraham and Wirayudha (2015) explain personal factors in the form of personality traits on the intention to use public transportation in Jakarta as a city with a well-developed public transportation system in Indonesia. Therefore, this current study focuses on the intention to use public transportation during the pandemic, especially in places that are still developing modern transportation modes, such as South Kalimantan. Furthermore, it explains the personality factors mediated by environmental concerns on the intention to use Banjarbakula BRT. It consists of the intention to use public transportation during pandemic; the Big Five traits; and environmental concern as an outcome, predictor, and mediator variable (see Figure 1).

### Methods

#### Participants

An online correlational survey was conducted on 19–26 March 2021, and data were collected using surveymonkey.com from 425 participants (Mean age = 19.770, SD = 1.635, range = 17–31). The majority were women (75.8%), currently attending school/college (90.6%), living in urban areas (81.9%), and never having used the

Banjarbakula BRT before (64.5%). A total of 89.7% live in two cities that are served by the Banjarbakula BRT service line, namely Banjarmasin and Banjarbaru. Meanwhile, 10.4% live in Martapura City closest to BRT services, and these three cities are located in South Kalimantan Province, Indonesia.

## Measures

### Intention to Use BRT

Participants' intention to use the Banjarbakula BRT during a pandemic was measured using two items with a correlation value of  $r = 0.641$ ,  $p < 0.001$  (e.g., 'During the COVID-19 pandemic, I intend to use the Banjarbakula BRT transportation again to go to work or study places/services and shopping centers/recreational places'). The answer choices for this measuring instrument ranged from 1 = Strongly disagree to 4 = Strongly agree.

### Environmental Concern

This study adapted the New Ecological Paradigm scale (NEP-15, Dunlap et al., 2000), and the translation was conducted by adopting the instrument from Beaton et al. (2000) into Indonesian. Furthermore, two items that have correlation values with a low total score were eliminated. This affected the quality of reliability, and in total, there were 13 statement items with good reliability,  $\alpha = 0.742$  (e.g., 'when the things that are happening now continue, a major ecological disaster will be faced'). The responses ranged from 1 = Strongly disagree to 4 = strongly agree.

### The Big Five Personality Traits

**Big Five Personality Traits.** This measuring instrument consists of the personality traits of agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience. The study uses the Indonesian version of the Big Five Inventory (BFI) of 28 items from Ramdhani (2012) adapted from John and Srivastava (1999). Among the five personality traits, a statement item was eliminated because the low quality of corrected item-total correlation in reliability test. Agreeableness consists of six valid items out of a total of seven items with reliability  $\alpha = 0.664$  (e.g., 'I am a forgiving person'). Conscientiousness consists of six items with reliability  $\alpha =$

0.727 (e.g., 'I am a reliable worker'). Extraversion consists of five items with reliability  $\alpha = 0.749$  (e.g., 'I am an enthusiastic person'). Neuroticism consists of four items with reliability  $\alpha = 0.781$  (e.g., 'I am a moody person'). Openness to experience consists of six items with reliability  $\alpha = 0.712$  (e.g., 'I am a person who often has new ideas'). The range reliability value of the five personality traits is from  $\alpha = 0.664$  to 0.781. The BFI uses 1 = Strongly disagree to 4 = strongly agree as the response scale.

### Control Variables

Five control variables were determined including concerns about public transportation, age, gender, place of residence, and ever/never having used BRT before. Before mediation model analysis, the variables that need to be controlled based on the results of the bivariate correlation test should be checked.

### **Concern about using public transportation.**

This study asked a statement item about 'The COVID-19 pandemic makes me anxious to take public transportation.' Responses 1 = strongly disagree to 4 = strongly agree.

**Demographic factors.** This study asked for several demographic factors, namely, age, gender (1 = male, 2 = female), place of residence (1 = Urban, 0 = Rural), whether they had taken BRT before (Public transportation (PT) user: 1 = user, 0 = not users).

### Statistical Analysis

Before conducting statistical analysis, it is necessary to check the quality of the data first. There is a missing value  $< 1\%$  of all items in all measuring instruments, and intervention was rendered using expectation maximization. Furthermore, data analysis started with the bivariate correlation of all variables. To address the hypotheses, the mediation regression model was performed using PROCESS macro in SPSS with 1,000 bootstrapping (Model 4, Hayes, 2018). We analyzed the five mediation regression models according to five personality traits. It also controls the covariate variables that are shown to affect the regression results. The covariate variables were determined from the results of the significant bivariate correlation test.

**Table 1.** Bivariate correlation variables

| Variables                            | Mean  | SD    | 1 | 2        | 3     | 4       | 5       | 6       | 7       | 8       | 9       | 10       | 11      | 12       |
|--------------------------------------|-------|-------|---|----------|-------|---------|---------|---------|---------|---------|---------|----------|---------|----------|
| 1. Age                               | 19.77 | 1.635 | - | -0.150** | 0.091 | 0.366** | -0.064  | 0.072   | -0.021  | 0.093   | 0.044   | -0.229** | 0.053   | 0.080    |
| 2. Gender                            | -     | -     | - | -        | 0.048 | 0.053   | 0.129** | -0.030  | 0.036   | -0.011  | 0.005   | 0.109*   | 0.016   | -0.012   |
| 3. Residence                         | 0.819 | 0.386 | - | -        | -     | 0.145** | 0.021   | 0.021   | 0.047   | 0.135** | 0.106*  | -0.086   | 0.074   | -0.032   |
| 4. BRT User                          | -     | -     | - | -        | -     | -       | -0.078  | 0.050   | -0.035  | 0.076   | 0.029   | -0.079   | 0.057   | 0.095    |
| 5. Concern to use PT in Pandemic     | 3.379 | 0.641 | - | -        | -     | -       | -       | 0.188** | 0.107*  | 0.108*  | 0.052   | 0.134**  | 0.043   | -0.210** |
| 6. Environmental Concern             | 3.190 | 0.309 | - | -        | -     | -       | -       | -       | 0.303** | 0.256** | 0.207** | 0.043    | 0.262** | 0.140**  |
| 7. Agreeableness                     | 3.160 | 0.381 | - | -        | -     | -       | -       | -       | -       | 0.449** | 0.433** | -0.107*  | 0.335** | 0.002    |
| 8. Conscientiousness                 | 2.910 | 0.405 | - | -        | -     | -       | -       | -       | -       | -       | 0.502** | -0.238** | 0.485** | 0.08     |
| 9. Extraversion                      | 2.850 | 0.503 | - | -        | -     | -       | -       | -       | -       | -       | -       | -0.308** | 0.439** | 0.114*   |
| 10. Neuroticism                      | 2.890 | 0.543 | - | -        | -     | -       | -       | -       | -       | -       | -       | -        | -0.018  | -0.065   |
| 11. Openness to experience           | 2.930 | 0.392 | - | -        | -     | -       | -       | -       | -       | -       | -       | -        | -       | 0.095    |
| 12. Intention to use BRT in pandemic | 2.331 | 0.680 | - | -        | -     | -       | -       | -       | -       | -       | -       | -        | -       | -        |

Note: Gender: 1 = male, 2 = female; Residence: 1 = Urban, 0 = Rural; PT User: 1 = user, 0 = not user; \*\*  $p < 0.01$ , \*  $p < 0.05$ .



## Results

In the bivariate correlation test, concerns about using PT in the pandemic were negatively correlated to the intention to use BRT ( $r = -0.210$ ,  $p < 0.01$ ). This formed the control for the variable in the regression analysis of the mediation model. I found other control variables such as age, gender, place of residence, and ever/never having used BRT before, are not related to the intention to use BRT. Therefore, these variables are not included in the regression model as covariate variables. Among the independent variables measured (see Table 1), two were weakly correlated to the intention to use BRT in a pandemic, namely, environmental concern ( $r = 0.140$ ,  $p < 0.01$ ) and extraversion ( $r = 0.114$ ,  $p < 0.05$ ).

In the regression analysis of the mediation model, five models were tested according to the number of independent variables of the five personality traits. The mediator variable in this analysis is an environmental concern. Meanwhile, the dependent variable is the intention to use PT in a pandemic. I set the score of concern about using PT in the pandemic as a covariate variable in the regression model. The results of the complete analysis can be seen in Table 2.

The five models showed that agreeableness ( $\beta = 0.286$ ,  $SE = .037$ ,  $t(424) = 6.212$ ,  $p < 0.001$ ), conscientiousness ( $\beta = 0.239$ ,  $SE = 0.036$ ,  $t(424) = 5.119$ ,  $p < 0.001$ ), extraversion ( $\beta = 0.198$ ,  $SE = 0.029$ ,  $t(424) = 4.226$ ,  $p < .001$ ), and openness to experience ( $\beta = 0.254$ ,  $SE = 0.036$ ,  $t(424) = 5.504$ ,  $p < 0.001$ ) significantly predicted environmental concern but not neuroticism ( $\beta = 0.018$ ,  $SE = .027$ ,  $t(424) = 0.377$ ,  $p = n.s.$ ). The five models also found that environmental concern significantly predicted positive intentions to use BRT (see Table 2 for detailed results).

In the results of the mediation model 1 test, environmental concern significantly mediates the relationship between agreeableness and the intention to use BRT ( $\beta = 0.056$ ,  $p < 0.05$ ,  $BootSE = 0.018$ ,  $BootCI$  95% [0.021, 0.093]). Similarly, model 2 showed that environmental concern significantly mediates the relationship between conscientiousness and the intention to use BRT ( $\beta = 0.041$ ,  $p < 0.05$ ,  $BootSE = 0.016$ ,  $BootCI$  95% [0.012, 0.075]). The previous model also found a

significant mediating effect of environmental concern on the relationship between extraversion and BRT use intentions in Model 3 ( $\beta = 0.033$ ,  $p < 0.05$ ,  $BootSE = 0.014$ ,  $BootCI$  95% [0.010, 0.067]). It mediates the significant relationship between openness to experience and the intention to use BRT in model 5 ( $\beta = 0.043$ ,  $p < 0.05$ ,  $BootSE = 0.017$ ,  $BootCI$  95% [0.012, 0.079]). All the mediation effects in models 1, 2, 3, and 5 are full positive mediation because the results of the analysis showed that the direct effect (coefficient value  $c$ ) from the independent to the dependent variable is not significant (see Table 2). Meanwhile, there is no significant mediating effect of environmental concern on the relationship between neuroticism and the intention to use BRT ( $\beta = 0.033$ ,  $p = n.s.$ ,  $BootSE = 0.010$ ,  $BootCI$  95% [-0.016, 0.024]).

A significant negative effect was also found from the control variable of the concern of using BRT during a pandemic in model 1 ( $\beta = -0.243$ ,  $SE = 0.051$ ,  $t(424) = -5.092$ ,  $p < 0.001$ ), model 2 ( $\beta = -0.248$ ,  $SE = 0.051$ ,  $t(424) = -5.212$ ,  $p < 0.001$ ), model 3 ( $\beta = -0.239$ ,  $SE = 0.036$ ,  $t(424) = 5.119$ ,  $p < 0.001$ ), model 4 ( $\beta = -0.239$ ,  $SE = 0.036$ ,  $t(424) = 5.119$ ,  $p < 0.001$ ), and model 5 ( $\beta = -0.239$ ,  $SE = 0.036$ ,  $t(424) = 5.119$ ,  $p < 0.001$ ). Therefore, the concern effect of using BRT can reduce the intention to use BRT in a pandemic. The right decision was made to control this using a covariate variable in the mediation regression model analysis.

## Discussion

The five personality traits were not significantly related to the intention to use BRT during the pandemic. On the total effect, there was a significant partial relationship of conscientiousness, extraversion, and openness to experience with the intention to use BRT without involving mediator variables in the regression estimation. Agreeableness, conscientiousness, extraversion, and openness to experience are partially related to environmental concerns. However, neuroticism is not significantly related, and across all models, environmental concern was significantly related to the intention to use BRT during the COVID-19 pandemic. An important finding was the proven effect of environmental concern mediation. The main hypothesis, environmental concern significantly mediates the relationship

**Table 2.** Mediation analysis result of intention to use Public Transportation (Y)

|  | Path coefficients ( $\beta$ ) |                 |                        | Indirect effect          |   |
|--|-------------------------------|-----------------|------------------------|--------------------------|---|
|  | Path a<br>(X→M)               | Path b<br>(M→Y) | Path c<br>(Total eff.) | Estimates<br>( $\beta$ ) | Confidence interval 95%<br>of $\beta$ (Bootstrap) |
| Model 1 ( $R^2 = 0.078, F(3, 421) = 11.901, p < 0.001$ ) |                               |                 |                        |                          |   |
| Agreeableness (X)  | 0.286(0.037)***               |                 | 0.025(0.085)           | -0.031(0.088)            |   |
| Environmental concern (M)                                |                               | 0.195(0.011)*** |                        |                          |   |
| A → EC → IUPT  |                               |                 |                        | 0.056(0.018)*            | 0.021, 0.093                                      |
| Model 2 ( $R^2 = 0.081, F(3, 421) = 12.366, p < 0.001$ ) |                               |                 |                        |                          |   |
| Conscientiousness (X)                                    | 0.239(0.036)***               |                 | 0.104(0.080)*          | 0.063(0.081)             |   |
| Environmental concern (M)                                |                               | 0.171(0.108)**  |                        |                          |   |
| C → EC → IUPT  |                               |                 |                        | 0.041(0.016)*            | 0.012, 0.075                                      |
| Model 3 ( $R^2 = 0.085, F(3, 421) = 13.099, p < 0.001$ ) |                               |                 |                        |                          |   |
| Extraversion (X)   | 0.198(0.029)***               |                 | 0.125(0.064)**         | 0.092(0.065)             |   |
| Environmental concern (M)                                |                               | 0.167(0.107)**  |                        |                          |   |
| E → EC → IUPT  |                               |                 |                        | 0.033(0.014)*            | 0.010, 0.067                                      |
| Model 4 ( $R^2 = 0.079, F(3, 421) = 12.039, p < 0.001$ ) |                               |                 |                        |                          |   |
| Neuroticism (X)  | 0.018(0.027)                  |                 | -0.048(0.060)          | -0.041(0.059)            |   |
| Environmental concern (M)                                |                               | 0.187(0.105)*** |                        |                          |   |
| N → EC → IUPT  |                               |                 |                        | 0.003(0.010)             | -0.016, 0.024                                     |
| Model 5 ( $R^2 = 0.081, F(3, 421) = 12.322, p < 0.001$ ) |                               |                 |                        |                          |   |
| Openness to experience (X)                               | 0.254(0.036)***               |                 | 0.104(0.082)*          | 0.060(0.084)             |   |
| Environmental concern (M)                                |                               | 0.170(0.108)**  |                        |                          |   |
| O → EC → IUPT  |                               |                 |                        | 0.043(0.017)*            | 0.012, 0.079                                      |

Notes: A = Agreeableness, C = Conscientiousness, E = Extraversion, N = Neuroticism, O = Openness to experience, EC = Environmental Concern, IUPT = Intention to Use Public Transportation, coefficients regression = standardized coefficient, \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < .001$ .

between personality traits of openness to experience, agreeableness, conscientiousness, and extraversion (except neuroticism) with intention to use BRT, and the four indirect effects are found to be at a weak regression coefficient level. This result is supported by the average score of the BRT use intention variable which is at a low level (mean score = 2.331 on a scale of 1–4) (see Table 1).

The results of this study found that all direct effects of the five personality traits were not significantly related to the intention to use BRT. However, some total effects of personality traits were found to be significant in relation to the intention to use BRT. During the pandemic, agreeableness was not significantly related to the intention to use BRT (indirect and total effect) which is in line with the study conducted by Abraham and Wirayudha (2015). Conscientiousness did not affect the intention to use BRT directly, but the coefficient of total effect (without involving the mediator variable) was significant. Previous studies found a negative relationship between conscientiousness and the intention to use public transportation (Abraham & Wirayudha, 2015; Roos et al., 2020). Openness to experience does not have a direct relationship with the intention to use BRT. However, there is a significant total effect between this trait and intention when it does not involve the mediator variable. My study did not obtain a direct effect of extraversion on the intention to use BRT, but the coefficient of total effect (without involving a mediator) found a significant relationship. There was an insignificant relationship between neuroticism and the intention to use BRT during the pandemic (indirect effect and total effect) in line with the findings of Roos et al. (2020). However, this contrasts with the Matz and Harari (2010) study, where a positive relationship with the desire to spend time in transit was obtained (vehicle). During the pandemic, people restricted their movements and practiced social distancing, such as by avoiding PT, due to the potential for social interactions that could lead to the transmission of COVID-19. This means that there is another explanation that can account for why people with certain personality types are willing to use PT, and I believe environmental concern is the key variable.

The pandemic has both positive and nega-

tive impacts on the environment. One of the positive impacts is the restriction of transportation activities to reduce noise and air pollution (Rume & Islam, 2020). The pandemic affects the environment (Zambrano-Monserrate et al., 2020), and the lockdown that reduced mobility increased air quality rates in several countries (Muhammad et al., 2020; Sahraei et al., 2021). Furthermore, the pandemic increased environmental awareness (Ali et al., 2021; Severo et al., 2021). The survey results of Kachaner et al. (2020) of 3,000 people from several countries found that 70% of participants became more concerned with the environment than before the pandemic. The pandemic condition shows the effect of environmental concern to be significant on the intention to use PT. In addition, 76% of participants thought that environmental issues were as worrying as (or more worrying than) health problems during the COVID-19 pandemic (Kachaner et al., 2020). The findings explain that anxiety has a strong effect on reducing the intention to use BRT during a pandemic (a significant effect from the control variable). The state of anxiety during the pandemic reduced the sense of security in PT (Dong et al., 2021), and there was a tendency for PT users to develop a generalized anxiety disorder as a response to the pandemic (Kassaw & Pandey, 2022).

The analysis results prove that the mediating effect of environmental concern is not only evident in the relationship between neuroticism and the intention to use BRT, but other personality traits have a significant mediating effect. This study reported that people with high scores on agreeableness choose to use BRT when there is an environmental concern effect as a mediator. The use of PT can be classified as pro-environmental behavior. The findings of the mediating effect are in line with the studies of Basic-Sontic et al. (2017) and Poier (2021). One of the characteristics of agreeableness was an altruistic and warm or empathetic concern (Hirsh, 2010; Swami et al., 2010). Furthermore, altruism seems to be directed at others (Graziano & Habashi, 2010; Oda et al., 2014) and the environment (Schultz, 2001). It is believed that when a pandemic occurs, agreeable people need concern and altruism on environmental issues to decide on the use of PT. This is because one of the goals of using PT is to reduce the impact of air pollu-

tion or maintain environmental quality.

Furthermore, the results showed that environmental concern positively mediated the relationship between conscientiousness and intention to use BRT. One of the most common domains was orderliness which includes the tendency of people to emphasize tidiness, cleanliness, and planning (Roberts et al., 2014). Furthermore, conscientious people have a “future time perspective” on planning (Przepiorka et al., 2020) and responsibilities (Roberts et al., 2014). This study assesses the mediating effect of environmental concern because people with high levels of conscientiousness perceive environmental conditions as a realistic plan and they feel the need to be responsible by using PT. Moreover, people feel more concerned about and responsible for environmental sustainability during a pandemic (see Ali et al., 2021; Severo et al., 2021).

The results showed that environmental concern positively mediates the relationship between extraversion and intention, but at a weak effect level, and one of the facets was sociability (John, 2021). People with high extraversion scores tend to rate the impact of air pollution on human health (Hirsh, 2014). It is suspected that environmental concerns arise due to awareness of the negative impacts related to air pollution. Furthermore, it makes people with high levels of extroversion choose to use PT, and this decision will certainly provide social benefits to others' health.

People with the openness to experience personality type want to use BRT in a pandemic when environmental concerns have a significant effect as a mediator. In the context of pro-environmental behavior, the findings of the mediating effect were in line with Busic-Sontic et al. (2017) and Poier (2021). The characteristics of openness to experience were high curiosity (Costa & McCrae, 2011) and aesthetics related to nature (Silvia et al., 2015). These two traits made people with high levels of openness to improve their experience and evaluate their environment. Meanwhile, they become interested in using PT as a form of action to reduce the negative impact on nature after gaining knowledge about environmental conditions.

This personality trait did not significantly

predict intention through the mediating effect of environmental concern. During a pandemic, the need for safety and comfort becomes an important factor that determines the use of PT (Awad-Núñez et al., 2021; Przybyłowski et al., 2021). Furthermore, the COVID-19 pandemic has made people with high neuroticism scores prefer to practice social distancing (Ludeke et al., 2021). However, it is difficult to keep social distance on a public transport vehicle full of passengers. Closer contact increases the risk of exposure to the virus (Yezli & Khan, 2020), and this concern reduces the desire to use PT (Chang et al., 2021). For people with the neuroticism personality type, using PT is a daunting prospect.

The environmental concern factor has a weak effect both as a predictor and a mediator. This study is limited to only explaining environmental concerns and personality traits. This is because other possible factors affected the desire to use PT during the COVID-19 pandemic. Furthermore, it was limited to only a relatively new location using modern PT, the BRT Banjarkakula as my context study which started operating in 2019. Locations with an established and well-developed example of a PT system should be considered. The future researcher should examine the other PT modes including commuter trains, light rail transit, mass rapid transit, airplanes, and ferries. My research is limited to using a correlational survey approach, so it cannot generate causal explanations and has weaknesses in internal validity without a manipulated variable (Gravetter & Forzano, 2018). Therefore, I suggest that future researchers use experimental methods.

## Conclusion

Personality traits did not predict the intention to use BRT during the COVID-19 pandemic directly. Environmental concern was found to be positively related to intention. There was a full positive mediating effect on the relationship between four personality traits (agreeableness, conscientiousness, extraversion, and openness to experience) on intentions to use BRT. Meanwhile, environmental concern was not found to mediate the effects of neuroticism and the intention to use BRT significantly. During a pandemic, environmental concerns are important, be-

cause the use of PT will have a positive impact on improving the quality of the environment. The findings provide advice on local policies related to PT and this includes promoting the use of PT by observing the information about positive impacts on the environment. In particular, people with neurotic personality traits are more likely to use public transportation if the safety systems is improved.

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**Data Availability Statement.** The dataset analyzed for this study can be found in the Open Science Foundation repository: [https://osf.io/cnq43/?view\\_only=1cc52a4cdba0412e8e1e86fd45f4c120](https://osf.io/cnq43/?view_only=1cc52a4cdba0412e8e1e86fd45f4c120)

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