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Understanding the influence of personality traits on psychological well-being: A study of caregivers of children with autism spectrum disorder

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Abstract: Caregivers of children with autism spectrum disorder experience psychological pressure, which can affect their psychological well-being. This study aims to identify the personality traits which influence such well-being. A quantitative method was employed, involving 213 Indonesian participants who were caregivers of children with autism attending special schools or enrolled at specialized therapy centers, selected through purposive sampling. The personality traits were measured using the IPIP-BFM-25 scale, while psychological well-being was assessed using the Psychological Well-Being Scale. The data were analyzed using the PLS-SEM method with SMART PLS 3.0 software, employing the disjoint two-stage estimation approach. The results show that the traits of extroversion ($\beta = 0.222$, $t = 2.249$, $p = .021$); conscientiousness ($\beta = 0.258$, $t = 2.782$, $p = .003$); and emotional stability ($\beta = 0.302$, $t = 4.371$, $p = .000$) positively affected the caregivers' psychological well-being. However, those of agreeableness and intellect did not have a significant impact. It is hoped that the study findings will contribute to the efforts to enhance the mental health of caregivers of children with autism.

Keywords: autism spectrum disorder; caregivers; psychological well-being; personality trait

Abstrak: Caregiver anak autism spectrum disorder mengalami tekanan psikologis yang berdampak negatif pada kesejahteraan psikologis. Penelitian ini bertujuan mengidentifikasi *trait* kepribadian yang berpengaruh terhadap kesejahteraan psikologis *caregiver*. Metode kuantitatif digunakan dalam penelitian ini dengan melibatkan 213 partisipan berdomisili di Indonesia. Partisipan adalah *caregiver* yang memiliki anak dengan autisme, menyekolahkan anak mereka di sekolah khusus atau mendaftarkan anak mereka di pusat terapi anak berkebutuhan khusus. Partisipan dipilih melalui teknik *purposive sampling*. Kepribadian diukur menggunakan skala IPIP-BFM-25, sementara kesejahteraan psikologis diukur menggunakan skala *psychological well-being*. Data dianalisis melalui PLS-SEM, dengan estimasi *the disjoint two stage approach*. Hasil penelitian menunjukkan *trait extraversion*, *conscientiousness*, dan *emotional stability* berpengaruh positif terhadap kesejahteraan psikologis *caregiver*, di mana koefisien regresi, t-statistik, dan p-value untuk masing masing *trait* adalah *Conscientiousness* ($\beta = 0,258$, $t = 2,782$, $p = 0,003$), *Emotional Stability* ($\beta = 0,302$, $t = 4,371$, $p = 0,000$), dan *Extraversion* ($\beta = 0,222$, $t = 2,249$, $p = 0,021$). Namun, *trait agreeableness* dan *trait intellect* tidak berpengaruh signifikan. Hasil penelitian ini dapat dijadikan bahan pertimbangan untuk meningkatkan kesehatan mental *caregiver* anak dengan autisme.

Kata Kunci: *autism spectrum disorder*; pengasuh; kesejahteraan psikologis; *personality trait*

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Introduction

It is hard to imagine the responsibilities of those caring for their family members indefinitely. Undoubtedly, the job requires significant physical and psychological energy and relative stability. Physically, caregivers should have good physical health and psychologically have good, relatively stable mental health to provide optimal care to their family members in need. Children diagnosed with autism or autism spectrum disorder (ASD) rely on caregivers for lifelong support and care. These are typically family members, such as parents or close relatives.

According to the American Psychiatric Association's (2013) *Diagnostic and Statistical Manual of Mental Disorders*, ASD is a neurodevelopmental disorder that affects brain function and ultimately results in behavioral disturbances. It has pervasive symptoms, including difficulties in social communication and interaction in various situations, such as the inability to engage in two-way conversations; non-verbal communication challenges; and difficulties with eye contact. Sufferers also exhibit restricted and repetitive behaviors and hyper- or hypo-reactivity to stimuli.

Such behavioral symptoms require intensive care from doctors, psychologists, behavioral therapists, speech therapists and occupational therapists. For this reason, the role of caregivers in nurturing children with autism is crucial. Caregivers with good psychological well-being, which reflects a healthy mental condition, are vital to care for children with ASD. Unfortunately, previous research has found that many caregivers have low psychological well-being (Alsa et al., 2021; Desiningrum et al., 2019; Napitupulu & Kurniawan, 2023; Sonido et al., 2020).

Generally, such low psychological well-being can be attributed to the stress, depression (Disabato et al., 2016; Schotanus-Dijkstra et al.,

2016), and anxiety that caregivers experience. These psychological disturbances arise as consequences of the long-term care for children with ASD. Furthermore, other studies have found that several variables influence caregivers' psychological well-being

For example, online social support (Napitupulu & Kurniawan, 2023); psychological capital including optimism, self-efficacy, hope, and resilience (Sarwar et al., 2022); personality traits; and mindfulness (Green et al., 2021) have all been identified as factors affecting such well-being.

Research on the general population indicates that certain personality traits impact psychological well-being (Damariyanti et al., 2023; de Vos et al., 2022; Laurencelle et al., 2002; McCrae & Costa, 1991; Oravec et al., 2020; Pertiwi & Eva, 2020; Wood et al., 2009). However, in the more specific context of parents or caregivers who have children with autism, related research remains limited. Caring for a child with autism undoubtedly requires many adjustments for parents, including the adaptation of their personality traits. Caregivers are expected to be able to adapt to their child's condition, including changing some of their traits that may not support the child's growth and development.

This study examines the influence of personality traits on caregivers' psychological well-being, since these have implications for psychological well-being (Joshnloo, 2023; Khan, 2020). Personality traits that do not contribute to increased psychological well-being should be minimized, while those that positively affect it should be developed and trained in caregivers. For example, the trait of neuroticism, which damages psychological well-being (Anglim et al., 2020), can be reduced through specific treatments (Sauer-Zavala et al., 2017). Such a reduction is possible because there is elasticity in the neuroticism trait, allowing it to change (Sauer-

Zavala et al., 2017; Thorisdottir et al., 2017). Changing personality traits that negatively impact psychological well-being may be possible through environmental influences (Block, 2002; Dweck, 2008; Li et al., 2021; Little et al., 2017; McAdams et al., 2014; Mehra et al., 2023; Mischel, 2013; Roberts et al., 2005; Stieger et al., 2021; Sutin et al., 2020; Wood et al., 2008, 2009). In this case, a child with autism is an environmental factor contributing to changes in personality traits. The lifelong care of a child with autism affects caregivers' trait adjustments. They are expected to be able to change those traits that do not support optimal childcare, such as being unwilling to seek new information (lack of openness) or being unable to manage stress caused by the child's condition (low emotional stability).

The issue of the psychological well-being of caregivers deserves attention, as it is one of the fundamental human rights in the pursuit mental well-being (Cosgrove & Shaughnessy, 2020). Apart from its significance in the context of caring for children with autism, the mental health of caregivers also provides significant benefits in the performance of various daily activities (American Psychological Association, 2011; Iriarte & Jimenez, 2021).

McCrae and Costa (1987) developed the foundational theory that later became the basis for the Five-Factor Model (FFM) or Big Five personality traits. Five years later, in 1992, assessment tools based on the FFM theory began significantly developing. Many researchers actively contributed to the advancement of the FFM, acknowledging the importance of this theory in measuring human personality across various studies. This theory offers a comprehensive perspective on individual differences in personality through its five primary factors (McCrae & Costa, 1987). Since then, the FFM has garnered widespread recognition and has become a crucial tool in studying human personality).

These five traits are often referred to by the acronyms OCEAN or CANOE (Goldberg, 1990), representing Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism (sometimes called Emotional Stability). Openness reflects the extent to which an individual is open-minded, curious, and receptive to new ideas, experiences, and intellectual pursuits. At the same time, conscientiousness refers to an individual's ability to be organized, responsible, dependable, and self-disciplined. Extroversion represents sociability, assertiveness, and energetic engagement with the external world. Extraverts tend to be friendly, social, and energetic and seek stimulation from social interactions. Agreeableness reflects the tendency to be cooperative, empathetic, and considerate of others. The trait of neuroticism (emotional stability) measures individuals' emotional stability and emotional reactivity. Each trait exists on a continuum, along which individuals can fall at any point, indicating varying degrees of each trait. Psychological well-being encompasses various dimensions that contribute to an individual's satisfaction, enabling them to function optimally in their daily lives. Ryff (1989) proposed six dimensions of psychological well-being.

The first is self-acceptance, a dimension which reflects a positive attitude and acceptance of oneself, including recognizing and appreciating one's strengths and weaknesses. It involves self-confidence, self-esteem, and a realistic understanding of oneself. The second refers to positive relations with others; this dimension emphasizes the quality of an individual's connections and social relationships. It involves the display of empathy and compassion towards others and the maintenance of satisfying interactions with friends, family, and the broader community. The third dimension is autonomy, which relates to an individual's sense of independence and self-determination, and their ability to make choices

that align with their values and preferences. It involves a sense of personal agency and the ability to resist external pressures and influences. The fourth is environmental mastery; this dimension is related to an individual's perceived ability to manage and adapt to the demands of their environment. It involves feeling competent and effective in handling daily tasks, achieving personal goals, and controlling and mastering one's environment. The fifth dimension is one's purpose in life, with purpose reflecting a sense of meaning and direction, and the goals that give individuals significance and direction. It involves a clear understanding of one's values, passions, and beliefs, with one's actions contributing to a greater purpose oneself. The final aspect is personal growth, which is a dimension pertaining to an individual's ongoing personal development, learning and efforts toward self-improvement. It encompasses the pursuit of challenges, exploration of new experiences, and the aspiration to expand one's potential. Collectively, these dimensions contribute to an individual's psychological well-being, promoting a sense of fulfillment, and enabling them to lead a meaningful and satisfying life.

Research on the psychological well-being of caregivers who have children with autism has been extensively conducted, involving variables such as anxiety (Ersoy et al., 2020); coping strategies (Lai et al., 2015); resilience (Kazemi et al., 2019); family functioning (Desiningrum et al., 2019); and technology and digital platforms (Yao et al., 2019). In a general context, studies on the influence of personality traits on psychological well-being have also been extensively conducted. However, to the best of our knowledge, studies on the effects of personality traits on the psychological well-being of caregivers of children with autism remain limited.

Examining the influence of personality traits on caregivers' psychological well-being is an

exciting area of research. In researching the psychological well-being of caregivers of children with autism, the outcomes of studies on this theme are limited. However, understanding which personality traits contribute or do not contribute to caregivers' psychological well-being can provide fresh insights into the development of the psychological well-being of caregivers looking after children with autism. Despite this, little research on this topic has been conducted. This gap indicates the need for further studies into the effects of personality traits on such caregivers.

Several aspects of this study demonstrate its originality. First, the combination of several focused factors. Two critical factors are combined, namely the context of testing the effects of personality traits on the psychological well-being of the caregivers of children with autism. In addition, the originality of the research is evident in the data analysis method employed. The structural equation modelling (SEM) method was employed to estimate the disjoint of the two-stage approach. SEM with two stage approach provides advantages in overcoming bias and estimation errors, yielding more accurate and reliable results.

Moreover, the contribution of the research findings will be beneficial for developing the quality of life of caregivers for children with autism, which is also an essential aspect of the study's originality. Through a deeper understanding of the influence of personality traits on psychological well-being, this research will significantly contribute to the development of more effective interventions and support for caregivers. Therefore, this research holds great promise in enriching our academic understanding and positively impacting the lives of caregivers for children with autism.

The study focuses on examining the influence of personality traits on psychological well-being, as articulated in the following hypotheses:

- (H1) The conscientiousness trait has a positive effect on the psychological well-being of caregivers for children with autism.
- (H2) The agreeableness trait has a positive effect on the psychological well-being of caregivers for children with autism.
- (H3) The emotional stability trait has a positive effect on the psychological well-being of caregivers for children with autism.
- (H4) The intellect trait has a positive effect on the psychological well-being of caregivers for children with autism.
- (H5) The extroversion trait has a positive effect on the psychological well-being of caregivers for children with autism.

Methods

The research instruments used the Psychological Well-being Scale and IPIP-BFM-25. IPIP-BFM-25 is an adapted version of the original IPIP-BFM-50 scale developed by Goldberg. "IPIP" stands for International Personality Item Pool, and "BFM" refers to the Big Five Model of personality traits (Reddy, 2020). In this study, psychological well-being was measured using a scale developed by Ryff (1989), which was translated and adapted into Indonesian by Rachmayani and Ramadhani (2014).

Both the original scale and the Indonesian version measure six dimensions of psychological well-being: self acceptance, environmental mastery, purpose in life, personal growth, positive relations with others, and autonomy. The response options range from "very appropriate" to "very inappropriate," with corresponding scores of 5, 4, 3, 2 and 1. Due to differences in the sample characteristics (the adaptation involved university students), the scale was pilot tested again with 21 caregivers for children with autism. Regarding reliability testing, the reliability of the psychological well-being scale was assessed using Cronbach's alpha, resulting in reliabilities of .787 for autonomy, .872 for environmental mastery,

.867 for purpose in life, .754 for personal growth, .844 for positive relations with others, and .901 for self-acceptance.

As a result of the reliability testing, some items were eliminated, leading to a final set of 45 items consisting of six dimensions. One example of the environmental mastery dimension was "*Saya cukup mahir mengelola beberapa tanggung jawab dalam kehidupan saya sehari-hari,*" with "*Saya merasa senang ketika saya memikirkan apa yang telah saya lakukan di masa lalu dan apa yang saya harap untuk lakukan di masa depan*" being an item of the self-acceptance dimension.

The internal validity of the IPIP-BFM-25, which was translated by Akhtar and Azwar (2019), is relatively good. However, for this research on caregivers, the scale was tested again on 21 caregivers for autistic children. This process resulted in the following Cronbach's alpha reliability coefficients: extraversion with a value of .771, agreeableness with .797, conscientiousness .747, emotional stability .743, and intellect .711. Some items were eliminated or deemed inapplicable. Validity and reliability tests for the measurement tool were conducted again as prerequisites for the regression analysis. The scale consisted of 21 items, with response options ranging from "very unsuitable" to "very suitable," with corresponding scores of 5, 4, 3, 2 and 1. Some items describing the personality trait are "*Berinteraksi dengan banyak orang dalam suatu acara*" describing the extraversion trait, and "*Memiliki suasana hati yang sering cepat berubah*" for the emotional stability trait.

Sampling Technique

The study participants were caregivers who had children with autism. They were identified using the purposive sampling technique, with 213 such caregivers involved. This technique relies on the researcher's judgment in selecting units (individuals, cases/organizations, events, data) to

be studied, and the method is considered appropriate when the researcher wants to focus on specific population characteristics relevant to the research question (Rai & Thapa, 2015). In this case, purposive sampling was used because the sample had specific characteristics: caregivers who care for and nurture children with autism. The number of children with autism reflects the number of caregivers, who are typically their parents. Not all the caregivers were willing to participate in the research due to privacy concerns. The purposive sampling method is deemed more appropriate for obtaining research participants when the exact population size is unclear.

Data Analysis Method

The structural equation modeling (SEM) method was used in the data analysis, employing SMART PLS 3.0 software. There are several reasons why SEM is used, including its ability to handle data with numerous latent variables; its suitability for non-normal data; and its applicability to limited sample sizes.

This research is a quantitative study in which the data processing was performed using Smart-PLS. The data analysis employed a second-order factor model. A second-order factor is a measurement model for multidimensional variables, when several dimensions measure the variables, and a set of measurement items measures these dimensions. The causal relationships between variables and the dimensions that measure them are at the second-order level, while the causal relationships between dimensions and indicators are at the first-order level.

The estimation of the research model adopted the two-stage approach, specifically the disjoint two-stage approach method. This estimation approach was chosen because the research model was of the reflective-reflective measurement type. The method consists of two

stages (Sarstedt et al, 2019): stage one and stage two.

Results

Demographic Data

As many as 98.5% of the caregivers are female, with the highest average age being 37 years (17.37%). A total of 93.3% of caregivers are still married. About 64.2% of caregivers are homemakers. The diagnosis of autism in children is mainly obtained from doctors (77 %). The demographic data of participants is displayed in Table 1.

Stage 1

Stage one involves assessing the construct validity of high-order variables. Stage 1 focuses on variables that fall under the category of high-order variables. In this study, the high-order variable is psychological well-being. Figure 1 illustrates the stage 1 model before construct validity evaluation took place, and figure 2 depicts the model after the assessment of construct validity, wherein several items for each dimension were dropped due to their low loading factor values. These figures show two research variables: personality traits and psychological well-being. Personality traits are measured by items. Meanwhile, psychological well-being is measured by dimensions, and each dimension is measured by items (high-order variables). This stage focuses on psychological well-being to measure construct validity and determine the latent variable scores (LVS). The assessment of the LVS was conducted on items that exhibited good construct validity (Figure 2). LVS scores will be used to represent the dimension of psychological well-being in stage 2.

The measurement of construct validity for psychological well-being is conducted through assessments of discriminant and convergent

validity. Convergent validity was assessed by examining the loading factors (Table 2), Average Variance Extracted (Table 3), and composite reliability (Table 3). The loading factors for the psychological well-being dimensions is available in Table 2, ranging from .608 to .879. A loading factor of $\geq .40$, but $< .70$ for an item, can still be considered for use in the measurement (Hair et al., 2019).

The values of CR and AVE are shown in Table 3. All the dimensions' AVE and CR values meet the minimum threshold criteria of .5. However, Cronbach's alpha values for the autonomy and purpose in life dimensions are below this threshold, at .543 and .510, respectively. Nevertheless, these alpha values can still be accepted with two considerations. First, according to Hinton et al. (2014), Cronbach's alpha values

Table 1
Demographic

| Participant | N | % |
|--|-----|-------|
| Sex | | |
| Female | 210 | 98.5 |
| Male | 3 | 1.41 |
| Age (years old) | | |
| 18 | 1 | |
| 24-30 | 20 | 9.39 |
| 31-35 | 46 | 21.06 |
| 36-40 | 49 | 23 |
| 41-45 | 37 | 17.37 |
| 46-50 | 15 | 7.04 |
| 51-65 | 9 | 4.23 |
| others | 37 | 17.37 |
| Marital status | | |
| Marriage | 200 | 93.9 |
| Divorce | 13 | 6.1 |
| Occupation | | |
| Civil servant | 11 | 4.88 |
| Entrepreneur | 25 | 11.68 |
| Teacher | 9 | 4.14 |
| Others | 38 | 17.83 |
| Housewife | 147 | 64.2 |
| Diagnosis given by | | |
| Doctor | 77 | 36.16 |
| Psychiatrist | 2 | 0.94 |
| Psychologist | 42 | 20 |
| Tocologist | 1 | 0.47 |
| Therapy center for children with special needs | 91 | 42.72 |
| Age of children (years old) | | |
| 1-10 | 204 | 95.33 |
| > 11 | 9 | 4.6 |

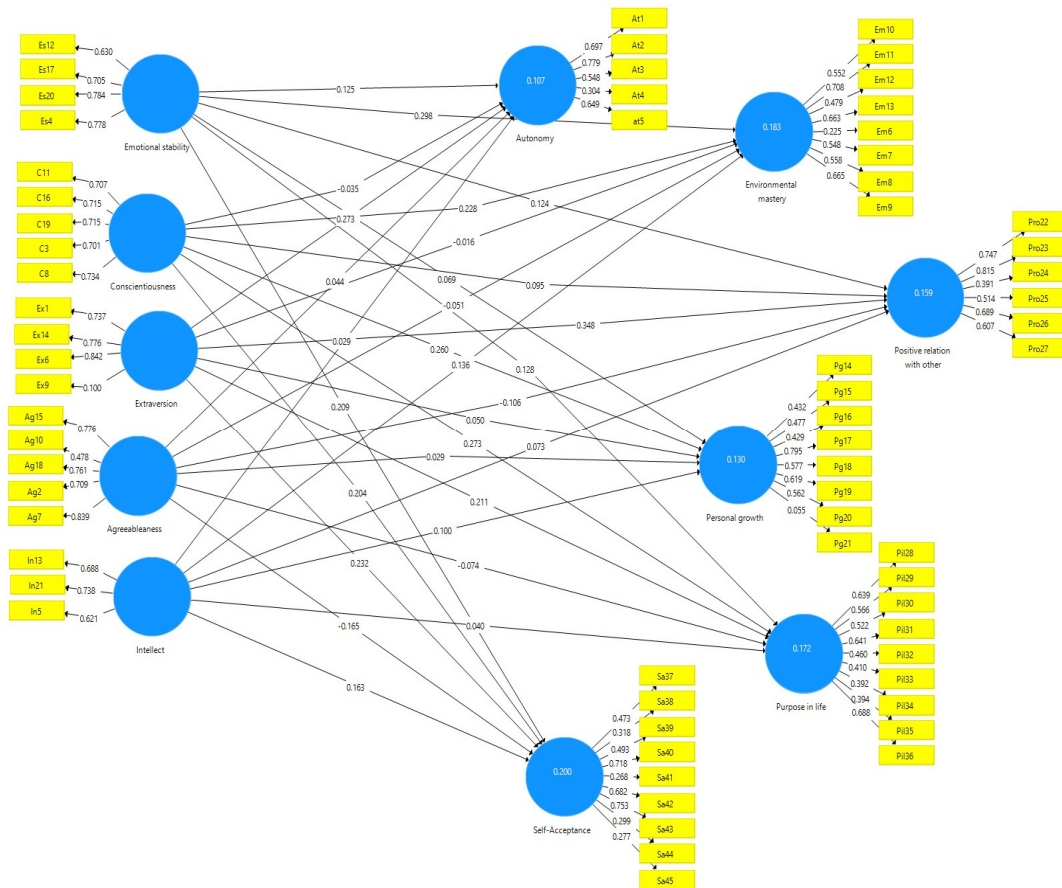
within the range of .5 to .7 indicate moderate reliability. Second, if the composite reliability of a variable exceeds the threshold of .7, then the alpha Cronbach threshold can still be acceptable even if it is below the minimum threshold. In this case, the composite reliability for the autonomy and purpose in life dimensions are .765 and .749, as listed in Table 3, meaning that Cronbach's alpha can be accepted for both the autonomy and purpose in life dimensions.

Discriminant validity in stage one is assessed through fornell-larcker criterion, and Cross

loading. Table 5 provides information of cross-loading which achieved when a measurement item that measures a construct will have a higher correlation with the construct and a low correlation with other constructs.

Another test of discriminant validity is displayed in Table 5 using cross loading, which shows a cross-loading value less than .9. According to Henseler et al. (2015), correlations between constructs that are lower than .9 demonstrate discriminant validity, indicating that the dimensions are distinct from each other.

Figure 1
Stage 1



Tabel 2

Loading Factor (Stage 1)

| Psychological Well-being | Autonomy | Environmental mastery | Personal Growth | Positive relation with others | Purpose in Life | Self acceptance |
|--------------------------|----------|-----------------------|-----------------|-------------------------------|-----------------|-----------------|
| At1 | .699 | | | | | |
| At2 | .791 | | | | | |
| at5 | .672 | | | | | |
| Em11 | | .803 | | | | |
| Em13 | | .755 | | | | |
| Em8 | | .768 | | | | |
| Pg17 | | | .881 | | | |
| Pg19 | | | .895 | | | |
| Pil30 | | | | | .644 | |
| Pil31 | | | | | .608 | |
| Pil36 | | | | | .853 | |
| Pro22 | | | | .829 | | |
| Pro23 | | | | .879 | | |
| Pro26 | | | | 0.73 | | |
| Sa40 | | | | | | .731 |
| Sa42 | | | | | | .774 |
| Sa43 | | | | | | .876 |

Table 3

Average Variance Extracted and Composite Reliability (Stage 1)

| Psychological well-being | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|-------------------------------|------------------|-------|-----------------------|----------------------------------|
| Autonomy | 0.543 | 0.544 | 0.765 | 0.522 |
| Environmental mastery | 0.671 | 0.678 | 0.819 | 0.601 |
| Personal Growth | 0.733 | 0.735 | 0.882 | 0.789 |
| Positive relation with others | 0.749 | 0.778 | 0.855 | 0.664 |
| Purpose in Life | 0.510 | 0.574 | 0.749 | 0.504 |
| Self-acceptance | 0.710 | 0.737 | 0.838 | 0.634 |

Table 4
Fornell-Larcker Criterion (Stage 1)

| Psychological Well-being | Autonomy | Environmental mastery | Personal Growth | Positive relation with others | Purpose in Life | Self-acceptance |
|-------------------------------|----------|-----------------------|-----------------|-------------------------------|-----------------|-----------------|
| Autonomy | | | | | | |
| Environmental mastery | .310 | | | | | |
| Personal Growth | .676 | .267 | | | | |
| Positive relation with others | .441 | .157 | .320 | | | |
| Purpose in Life | .472 | .498 | .463 | .429 | | |
| Self acceptance | .267 | .607 | .276 | .297 | .779 | |

Table 5
Cross Loading (Stage 1)

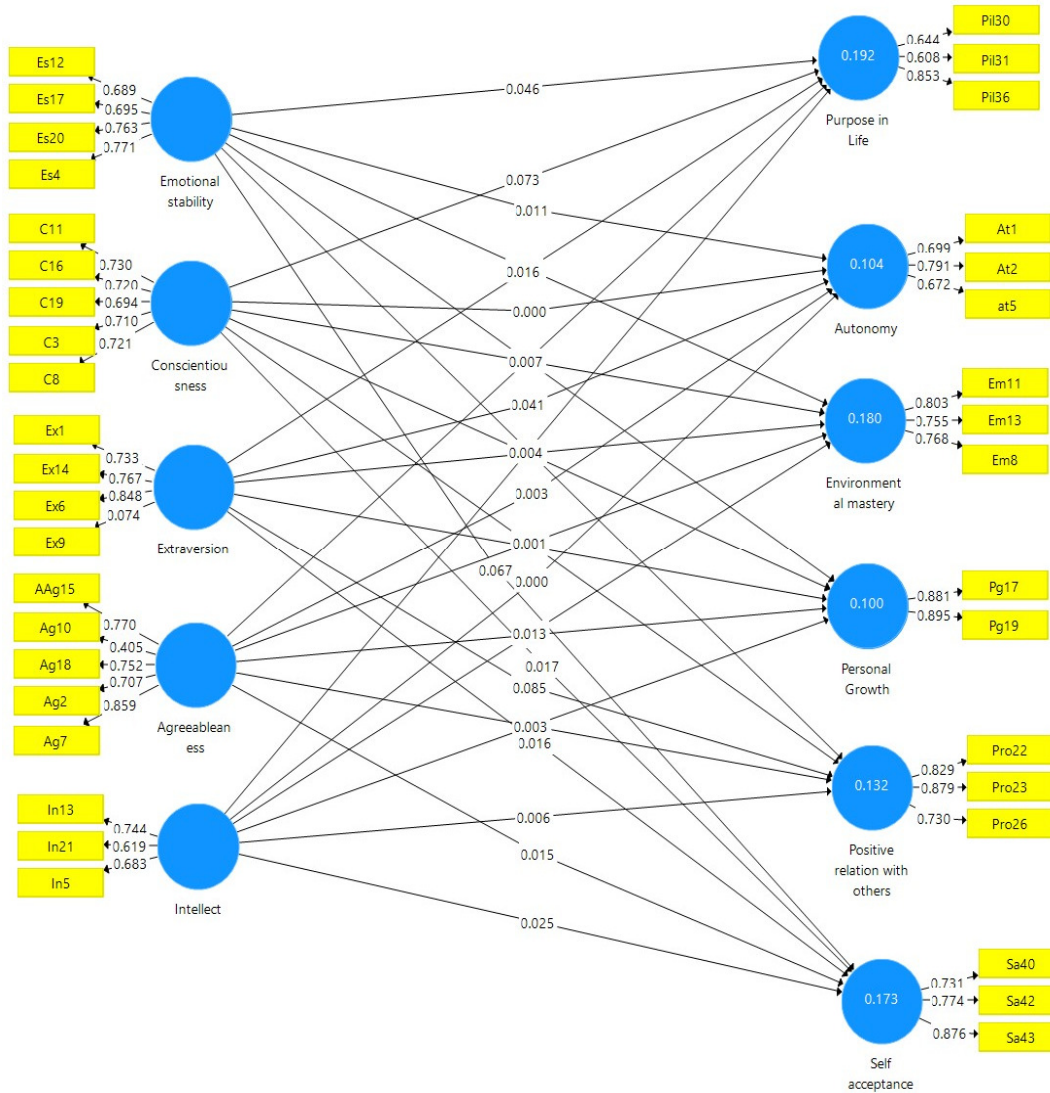
| Psychological well-being | Autonomy | Environmental mastery | Personal Growth | Positive relation with others | Purpose in Life | Self-acceptance |
|-------------------------------|----------|-----------------------|-----------------|-------------------------------|-----------------|-----------------|
| Autonomy | .722 | | | | | |
| Environmental mastery | .161 | .776 | | | | |
| Personal Growth | .425 | .188 | .888 | | | |
| Positive relation with others | .289 | .086 | .250 | .815 | | |
| Purpose in Life | .251 | .310 | .267 | .230 | .710 | |
| Self acceptance | .168 | .422 | .194 | .214 | .479 | .796 |

The results of the discriminant validity test and convergent validity indicate that the psychological well-being construct has discriminant validity and meets the criteria for convergent validity. Five dimensions were each measured by three items, and one, personal growth, was measured by two items. Using two measurement items to assess a dimension is controversial, due to concerns about the validity of the measuring tool. However, some previous studies have employed two measurement items to evaluate a dimension; for example, (MacCallum et al., 1999), Gosling et al. (2003) and Raubenheimer (2004). A variable with one item,

can also be employed as long as the item effectively represents the measured construct (Rossiter, 2002).

The next step was to determine the latent variable scores for the psychological well-being construct for use in stage 2. In this stage, the scores of the first-order indicators (direct indicators of the personality disorder trait) and the latent variable scores of the high-order dimension (psychological well-being) were utilized in the regression analysis to examine the relationships between the high-order latent variables and other variables in the model.

Figure 2
Model of Stage 1 after Evaluation of Construct Validity (Psychological Well-being)



Stage 2

Stage two involves evaluating the structural model through hypothesis testing, which includes latent scores for high-order variables and variables measured by their indicators in the first order. Stage two aimed to determine the influence of the personality and psychological well-being

traits through path analysis. Regression analysis (path analysis) was conducted after assessing the first-order construct validity. This stage also assesses discriminant validity and convergent validity. Discriminant validity is obtained through assessment of cross-loading (Table 7) and Fornell-Larcker (Table 6). Meanwhile, the size of convergent validity is conducted through loading

factor assessment, composite reliability, and average variance extracted (Hair et al., 2017). Loading Factor is in Table 8. Meanwhile composite reliability, and average variance is available in Table 9.

Cross-loadings assess discriminant validity by examining whether the indicators have higher factor loadings on their corresponding constructs than on others. If the correlations between the constructs are higher than those with other constructs, it indicates that discriminant validity is established (Henseler et al., 2015). For example, in table 7, the Agreeableness indicators exhibit more substantial factor loadings on their construct than on others. The same holds for the traits of Conscientiousness, Emotional Stability, Extroversion, and Intellect. The correlation of each trait with itself is higher than the correlation of one trait with another. For instance, the correlation between Agreeableness and itself is .782, higher

than the correlations between Agreeableness and Conscientiousness (.599), Emotional Stability (.054), Extroversion (.584), and Intellect (.377).

The measurement of convergent validity is based on the assessment of loading factors, composite reliability, and AVE. Table 8 shows the factor loadings, while Table 9 shows composite reliability and AVE. Factor loading is a measure used to assess the relationship between latent variables (personality traits) and their indicators (items). It indicates the strength of the relationship between a construct and the indicators used to measure it. Generally, factor loadings of .7 or more are considered sufficiently high. In Table 8, the factor loadings for all the indicators with latent variables are above .7, except for item 13 in the trait intellect 3 (.666). However, a factor loading of .6 is generally accepted as a good measure in PLS analysis (Chin, 1998; Hair et al., 2017).

Table 6

Fornell-Larcker Criterion (Stage 2)

| | Agreeableness | Conscientiousness | Emotional Stability | Extroversion | Intellect |
|---------------------|---------------|-------------------|---------------------|--------------|-----------|
| Agreeableness | | | | | |
| Conscientiousness | .771 | | | | |
| Emotional stability | .175 | .151 | | | |
| Extroversion | .799 | .712 | .152 | | |
| Intellect | .628 | .546 | .623 | .669 | |

Table 7

Cross Loadings (Stage 2)

| Trait personality | Agreeableness | Conscientiousness | Emotional Stability | Extroversion | Intellect |
|---------------------|---------------|-------------------|---------------------|--------------|-----------|
| Agreeableness | .782 | | | | |
| Conscientiousness | .599 | .716 | | | |
| Emotional stability | .054 | .054 | .750 | | |
| Extroversion | .584 | .531 | .081 | .789 | |
| Intellect | .377 | .312 | .212 | .373 | .783 |

Composite reliability (CR) is a measure used to assess the reliability of personality traits. CR values range from 0 to 1, with higher ones indicating higher construct reliability. Table 9 indicates that the CR for all traits is above .7. AVE was used to evaluate the extent to which variables measuring a concept reflected it. Higher AVE values indicate that the variables effectively measure the intended concept. AVE values range from 0 to 1, higher ones indicating better construct validity in explaining the variability of

the variables. An AVE value above .5 is considered good. However, the intellect trait's alpha is below .7 (.387), indicating low reliability of the construct. When the item count is only 2, Cronbach's alpha cannot be relied upon as an accurate measure of reliability. Peterson (1994) states that the item count also affects the Cronbach's alpha value. Therefore, the assessment of construct reliability should use CR and AVE to evaluate construct reliability.

Table 8
Loading Factor (Stage 2)

| Trait personality | Agreeableness | Conscientiousness | Emotional stability | Extraversion | Intellect |
|-------------------|---------------|-------------------|---------------------|--------------|-----------|
| Ag15 | .799 | | | | |
| Ag18 | .724 | | | | |
| Ag2 | .739 | | | | |
| Ag7 | .861 | | | | |
| C11 | | .716 | | | |
| C16 | | .705 | | | |
| C19 | | .709 | | | |
| C3 | | .739 | | | |
| C8 | | .712 | | | |
| Es17 | | | .759 | | |
| Es20 | | | .764 | | |
| Es4 | | | .726 | | |
| Ex1 | | | | .781 | |
| Ex14 | | | | .782 | |
| Ex6 | | | | .803 | |
| In13 | | | | | .666 |
| In21 | | | | | .884 |

Table 9
Composite Reliability and Average Variance Extracted (Stage 2)

| Trait personality | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|---------------------|------------------|-------|-----------------------|----------------------------------|
| Agreeableness | 0.789 | 0.817 | 0.863 | 0.612 |
| Conscientiousness | 0.766 | 0.773 | 0.840 | 0.513 |
| Emotional stability | 0.617 | 0.620 | 0.794 | 0.562 |
| Extraversion | 0.699 | 0.700 | 0.832 | 0.623 |
| Intellect | 0.387 | 0.439 | 0.756 | 0.613 |

Table 10
Path Analysis (Stage 2)

| | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (O/STDEV) | P Values |
|---|---------------------|-----------------|----------------------------|--------------------------|----------|
| Agreeableness -> Psychological Well-being | -0.112 | -0.088 | 0.098 | 1.150 | .229 |
| Conscientiousness -> Psychological Well-Being | 0.258 | 0.258 | 0.093 | 2.782 | .003 |
| Emotional Stability -> Psychological Well-being | 0.302 | 0.301 | 0.069 | 4.371 | .000 |
| Extraversion -> Psychological Well-being | 0.222 | 0.221 | 0.099 | 2.249 | .021 |
| Intellect -> Psychological Well-being | 0.125 | 0.132 | 0.068 | 1.826 | .104 |

Figure 3
Evaluation of Measurement Model of Stage 2

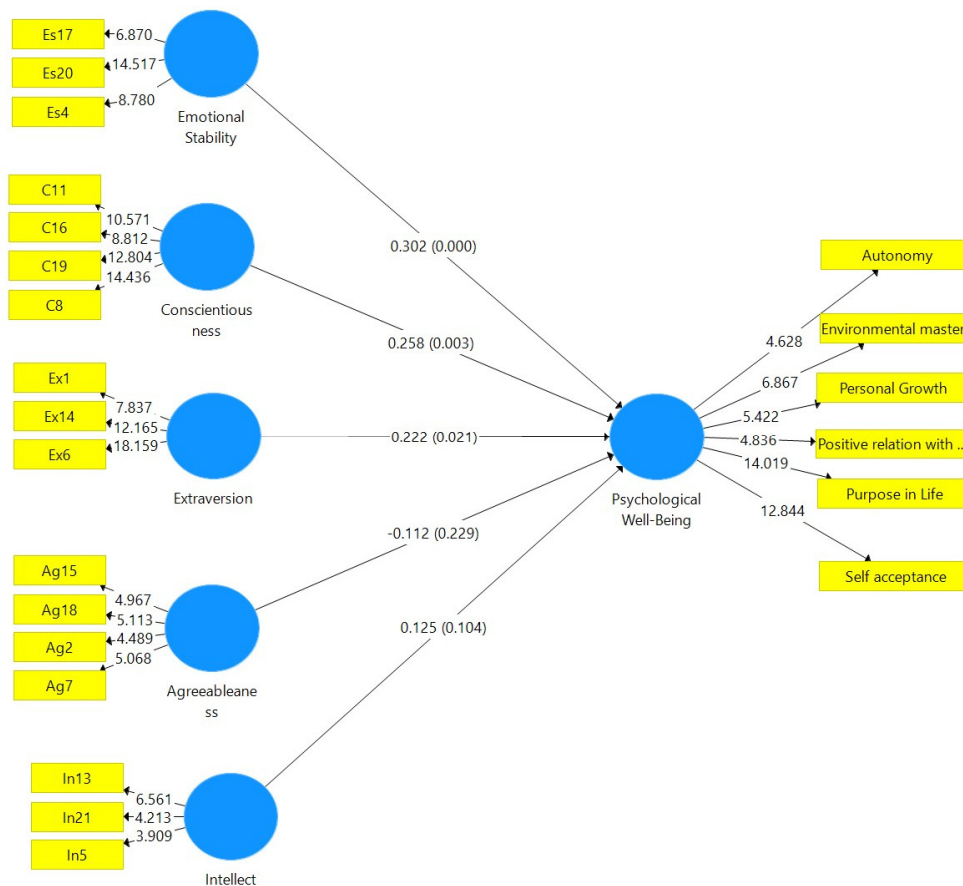


Table 10 shows that three out of the five hypotheses were accepted. Conscientiousness ($\beta = 0.258, t = 2.782, p = .003$), Emotional Stability ($\beta = 0.302, t = 4.371, p = .000$) and Extroversion ($\beta = 0.222, t = 2.249, p = .021$) have significant effects on Psychological Well-Being. However, the traits of intellect and agreeableness do not impact psychological well-being significantly ($\beta = 0.125, t = 1.826, p = .062$; $\beta = -0.112, t = 1.150, p = .228$). Figure 3 displays the evaluation of measurement model of stage 2.

Discussion

The study results suggest that specific personality traits affect the psychological well-being of caregivers of children with autism. Specifically, conscientiousness, emotional stability, and extroversion have a significant impact. On the other hand, the traits of intellect and agreeableness do not have an influence.

Explanation of the Acceptance of the Hypotheses

The research findings that the traits of conscientiousness, extroversion and emotional stability significantly influence the psychological well-being of caregivers of children with autism can be linked to various relevant theories. Within the self-determination theory (SDT) framework, conscientiousness can be viewed as a concept related to intrinsic motivation and self-regulation. SDT examines individuals' intrinsic and extrinsic motivation and how these two forms of motivation influence human behavior and development. According to SDT, three primary psychological needs are crucial for enhancing intrinsic motivation and individual well-being: autonomy, competence and relatedness. Competence refers to the need to feel competent in performing specific tasks or activities. When individuals possess competence, intrinsic motivation and well-being increase. Autonomy or self-control are important in decision-making and

actions. Individuals who feel in control and have freedom in their actions are more likely to have high intrinsic motivation. Finally, relatedness refers to feeling connected and related to others. Positive social relationships and support from others can enhance well-being and intrinsic motivation (Ryan & Deci, 2017).

Individuals with high conscientiousness tend to exhibit intrinsic motivation in caring for children with autism due to their ability to plan and organize care in a structured manner, which supports such motivation and ultimately enhances psychological well-being. Additionally, the extroversion trait can be associated with social support theory, in which extroverted individuals are inclined to have strong social networks and actively seek social support. Therefore, the trait contributes to caregivers' psychological well-being because greater access to social support resources helps them cope with stress. Finally, the emotional stability or neuroticism trait is linked to coping theory (Brebner, 2001; Liong & Yeoh, 2011), in which individuals with high emotional stability have more effective stress-coping strategies, resulting in positive results in managing stressful situations (Yakovytska et al., 2022). Similarly, caregiver autism, they can face the challenges of caring for children with autism calmly and adaptively, which supports their psychological well-being. By connecting the findings to the theories, it is possible to gain deeper understanding of why these personality traits significantly impact the psychological well-being of caregivers in the context of caring for children with autism, which can aid the development of more effective interventions to support caregivers.

Conscientiousness Impacts Psychological Well-being

This section explains the influence of personality traits on the dimension of psycho-

logical well-being in a general context, and specifically elaborates on the mechanisms through which such traits affect the psychological well-being of caregivers of children with autism. Conscientiousness is associated with organized, responsible, goal-oriented individuals who possess the ability to self-regulate, control their impulses, and perform tasks diligently and purposefully. This trait has a positive impact on all six dimensions of psychological well-being. Individuals with a high level of conscientiousness tend to have higher levels of self-acceptance; they appreciate and embrace themselves, including their strengths and weaknesses. They are also better at facing and coping with mistakes or failures with a positive attitude and take personal responsibility for their self-development process (Weiss & Costa, 2005). Moreover, highly conscientious individuals are more capable of effectively managing their environment (environmental mastery). They organize their surroundings well, plan and execute tasks efficiently, and possess the flexibility to handle challenges and adapt to changes (Srivastava et al., 2008). They also have a greater sense of clarity and purpose in seeking and pursuing life goals, with a solid inclination to set meaningful goals and direct their efforts toward achieving them (Hill & Turiano, 2014). Conscientiousness is also related to personal growth. Individuals with high conscientiousness tend to seek new tasks and challenges, learn from experience, and work hard to enhance their skills and knowledge (Wilt et al., 2012). Additionally, high conscientiousness is associated with better quality, positive relationships with others. It helps individuals become more autonomous, make decisions independently, take responsibility for themselves, and have greater control over their lives (Frazier et al., 2004).

In the context of caregivers tending children with autism, conscientiousness also contributes to

their psychological well-being. Such care can be an immensely demanding physical and emotional task. Caregivers often encounter unique and diverse challenges in managing the needs of their children, who require extra attention and intensive support. Conscientiousness traits can significantly impact the psychological well-being of autism caregivers. Children with autism often require structured routines and planning. Caregivers with high conscientiousness are more likely to organize daily activities effectively, plan necessary treatments and therapies, and manage time efficiently. This can help reduce stress and anxiety levels, providing a sense of accomplishment and control in facing daily challenges.

Extroversion Impacts Psychological Well-being

Individuals with high extroversion are described as proactive, confident, and open to new experiences. Therefore, the trait can influence their ability to effectively manage their surroundings and cope with challenges, which in turn contributes to higher environmental mastery (Lucas & Diener, 2008; Steel et al., 2008). Extroverted individuals tend to have higher levels of freedom and experience fewer constraints in organizing their lives (Fleeson et al., 2002). They take more initiative in decision-making and feel more satisfied with the control over their lives. Extroverts also seek environments that offer more opportunities for self-actualization and greater control over their lives (Helson et al., 2002).

The trait impacts on one's purpose in life (the dimension of psychological well-being) as one actively seeks diverse experiences and opportunities. Extroverted individuals can develop a broader perspective on life, allowing them to define and pursue their life goals more comprehensively and dynamically (Keyes, 2002). Individuals with high scores on the extroversion trait are more likely to have positive relationships

with others (the dimension of psychological well-being) because extroversion is associated with emotional reactivity. Those with high levels of extroversion tend to exhibit greater emotional reactivity in responding to social stimuli (Lucas & Baird, 2004). Moreover, they tend to have a greater tendency for significant personal growth since extroverted characteristics such as openness to new experiences, motivation for achievement, and supportive social relationships can facilitate development in various aspects of individuals' lives (McCrae & John, 1992).

In line with autonomy, another dimension of psychological well-being, the extroversion trait, characterized by a tendency to be social, energetic and enjoy interacting with others, indicates that individuals with moderate levels of extraversion are more likely to have higher autonomy in making decisions and managing their lives, since they can balance the acceptance of input from others and maintain control over their lives (Grant & Schwartz, 2011). Individuals with high levels of extroversion tend to have a proactive, confident, open attitude toward new experiences, which can affect their ability to manage their environment and effectively face challenges, which in turn can contribute to a higher level of environmental mastery (Fleeson et al., 2002; Richard E & Diener, 2009; Steel et al., 2008).

Individuals with high levels of extroversion tend to exhibit higher emotional reactivity in response to social stimuli (Lucas & Baird, 2004). This means that highly extroverted individuals are more emotionally responsive when interacting with others in social situations. With their communication confidence, social activity, and comfort in groups when encountering social stimuli (e.g. invitations to be friends and engaging in social activities), extroverts have opportunities to develop positive relationships with others. Furthermore, their soft communication skills

encourage them to express themselves clearly and articulate their thoughts and feelings, enabling them to build close and meaningful relationships with others. People with this trait usually seek opportunities to meet and interact with new people. They feel stimulated and energetic in social environments. With this tendency, they can develop wide social networks, meet diverse people, and expand their circle of friends.

Related to the dimension of the autonomy of psychological well-being, extroverts tend to have higher autonomy in decision-making and managing their lives, since they can balance accepting input from others and maintaining control over life (Grant & Schwartz, 2011). Moreover, extroverts tend to be active in socializing with others, engage in various social activities, and communicate with many people. Such social activities provide them with opportunities to receive positive feedback from others, such as compliments, friendship, and recognition, which can strengthen their positive self-attitude.

In general, the process by which the trait of extroversion influences the psychological well-being of individuals has been explained above. The process also relates to caregivers of children with autism. Extroverted caregivers may experience a faster process of self-acceptance compared to more introverted individuals. They seek an understanding of autism through social interactions and discussion of their experiences with others. Consequently, this can help them embrace their role as caregivers of children with autism more readily. Their extroverted nature drives them to seek training, education, and support. Parent support groups, training courses, or involvement in the autism community can provide extroverted caregivers with opportunities for personal growth. Their tendency to actively build

social relationships fosters positive social connections. They can more easily establish connections with members of autism care teams, such as therapists or teachers, which is crucial in managing their child's needs. Carers can find meaning in their lives through discussions with various people (reflecting their extroverted traits). In this process, they can listen to the various experiences and life stories of others, including other parents or caregivers of children with autism. Such discussions open their perspectives to the various ways people find meaning in caring for their children, providing inspiration, and helping them reflect on what is truly important in their role as caregiver. Extroverted caregivers may be more open to various sources of information related to autism care, and they are more creative in seeking solutions to address the challenges that arise in caring for children with autism, which relates to environmental mastery, another dimension of psychological well-being.

Emotional Stability Impacts Psychological Well-being

Emotional stability, also known as neuroticism in the five-factor personality model, is a personality dimension that reflects an individual's emotional stability (McCrae & Costa, 1987). Those possessing it can refrain from responding to emotions excessively or impulsively and are thus more capable of maintaining autonomy in decision-making and acting according to their desires and personal values.

High emotional stability, which reflects an individual's ability to manage and control their emotions, is significantly related to one's purpose in life. Individuals with high levels of emotional stability tend to have more precise and meaningful life goals. They can better identify values, goals and essential directions and persevere in pursuing their goals (Ryff & Singer, 2008). The relationship between emotional

stability and purpose in life can be understood through mechanisms involving emotional regulation, adaptability, and positive experiences. Those with high levels of emotional stability tend to be better able to manage their emotions and face obstacles, and they experience positive emotions, which all help them experience a sense of meaning and purpose in their lives.

Individuals who are behaviorally stable are generally considered to be reliable and consistent in their emotions and behaviors, which positively impacts their relationships. Roberts et al. (2007) found that emotional stability is related to increased satisfaction and relationship stability. Another factor contributing to individuals with high emotional stability being able to develop positive relationships is their ability to build effective communication. Emotional stability is associated with better communication skills, crucial for positive relationships. Studies by Bono et al. (2002) and Lai et al. (Lai et al., 2015) show that individuals with emotional stability tend to communicate more effectively, leading to higher satisfaction and quality in their relationships. Another aspect that contributes to the positive relationships of individuals with high emotional stability is their ability to provide emotional support to others. Research by Johnson et al. (2015) indicates that emotional stability positively influences the ability to provide emotional support, ultimately leading to positive relationships with others.

The trait of emotional stability enables caregivers to achieve self-acceptance more effectively. If they can manage their emotions stably, they are more likely to accept themselves as they are, including their experiences of having an autistic child. Furthermore, emotional stability also allows caregivers to attain environmental mastery. It helps them navigate the challenges and stresses that arise in caring for an autistic child effectively. Caregivers able to manage their

emotions well tend to be more patient and empathetic in their interactions with the members of autism care teams and with their child. These factors reflect both environmental mastery and positive relationships with others. Moreover, emotionally stable caregivers are more likely to seek training, education, and support to develop themselves; since they can control their negative emotions, they can focus on their child's development by participating in activities that expand their insights and promote personal growth.

Explanation for the Rejected Hypotheses

The trait of intellect does not have an impact on psychological well-being. Although many studies suggest otherwise (Anglim et al., 2020; Kokko et al., 2013), this could be due to other factors. Individuals may display high intellect but low psychological well-being because they have a low need for achievement motivation, which is caused by the reluctance to compete, a lack of self-confidence, or greater interest in non-achievement-oriented activities (Nabizadeh et al., 2019; Nisa et al., 2017). Parents who have children with autism sometimes experience despair (Hemati Alamdarloo & Majidi, 2022), which reduces their motivation to care for their children and ultimately impacts their psychological well-being.

Self-efficacy can also mediate between the trait of intellect and psychological well-being. If individuals have high intellect but low self-efficacy, their psychological well-being will be influenced (Bandura, 1997; Krok & Zarzycka, 2020; Milam et al., 2019; Siddiqui, 2015; Xie et al., 2020). This finding has implications for future research, which could investigate the possibility of variables such as achievement motivation and self-efficacy as moderators or mediators between the trait of intellect and psychological well-being in caregivers with children with autism.

Many studies have revealed that agreeableness impacts psychological well-being (Anglim et al., 2020). However, this study found the opposite, perhaps because individuals with high agreeableness tend to exhibit self-sacrifice tendencies, prioritizing the needs and interests of others, even if this involves self-sacrifice (Bono et al., 2003; Costa & McCrae, 1992). Excessive self-sacrifice can be associated with negative impacts on psychological well-being. When someone sacrifices too much without considering their needs and boundaries, this can lead to stress, emotional exhaustion, and a decrease in overall psychological well-being (Maslach et al., 2001; Righetti et al., 2020).

Individuals who are excessively kind may engage in excessive self-sacrifice and neglect their personal needs, ultimately influencing their self-acceptance. Although this research does not explicitly investigate the relationship between agreeableness and self-acceptance (a dimension of psychological well-being), the relationship between excessive self-sacrifice and personal well-being can provide an overview of potential mediators (Penley & Tomaka, 2002).

The tendency for self-sacrifice also appears to be present in parents with children with autism (Attwood, 2003; Hurlbutt & Chalmers, 2002). This finding has implications for future research, which could investigate variables such as excessive self-sacrifice as a moderator between the trait of intellect and psychological well-being. However, the study does have limitations, notably a limited sample size, which might offer only a partial representation of the population. Therefore, broader, and more representative studies are needed to confirm the findings. Additionally, the study did not comprehensively examine other potential factors which may influence caregivers' psychological well-being, such as social support, stress, and the specific characteristics of autism itself. Subsequent studies

should consider these elements to achieve a more thorough understanding of psychological well-being within this caregiving scenario.

Conclusion

The research question addressed in this study was whether personality traits impact the psychological well-being of caregivers of children with autism. The findings provide a clear answer: certain personality traits do indeed have an influence. Specifically, the traits of conscientiousness, emotional stability and extraversion were identified as having a positive influence on psychological well-being. Caregivers with higher conscientiousness levels tended to exhibit greater self-acceptance, a positive attitude towards mistakes or failures, and healthier interpersonal relationships. Emotional stability enabled individuals to manage their environment and pursue their life goals effectively, while extraversion was associated with better problem-solving abilities, effective environmental management, and positive social relationships.

Conversely, the traits of intellect and agreeableness did not significantly impact the psychological well-being of the caregivers. Intellect was unrelated to psychological well-being, while agreeableness did not significantly correlate with its six dimensions.

The study underscores the importance of considering conscientiousness, emotional stability and extraversion traits when aiming to enhance caregivers' psychological well-being. This insight suggests the potential for interventions or programs focused on cultivating these specific personality characteristics. It is essential to acknowledge that everyone possesses unique personality traits. Therefore, despite the lack of influence from intellect and agreeableness traits on the psychological well-being of caregivers of children with autism, further research is necessary to understand the factors contributing to such well-being.[]

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Conflict of Interest

There is no conflict of interest. This research project was conducted by a team of researchers involving caregivers of autistic children in several cities in Indonesia. Caregivers have been informed that their data will be part of research published in a scientific journal. Caregivers are also aware that their data will not be used for anything that may harm them or their families

Author Contribution Statement

Lisfarika Napitupulu: Conceptualization; Data Curation; Formal Analysis; Investigation; Methodology; Project Administration; Resources; Validation; Original Draft; Writing, Editing.

Tengku Nila Fadhli: Conceptualization; Validation. **Ateerah Abdul Razak**: Supervision. **Yohan Kurniawan**: Supervision. **Yanwar Arief**: Funding. **Sigit Nugroho**: Methodology.

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