



DEVELOPMENT AND VALIDATION OF PRISON DYSFUNCTIONAL ANGER SCALE

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ABSTRACT

Dysfunctional anger has been linked with prison unrest, riots, jail breaks, recidivism and other forms of disruptive behaviour among prison inmates in Nigeria. Despite robust evidence of linkage between dysfunctional anger, aggression, violence and other diverse negative mental and behavioural problems in the prisons, there is dearth of indigenous and specifically designed instruments for the assessment of dysfunctional anger in the prison. The Prison Dysfunctional Anger Scales (PDAS) is a 10-item self-report inventory. The development follows a mixed sequential method. Focus Group Discussions, In-depth Interview, Key Informant Interview and pilot survey were used to generate and refine the final pool of items ($\alpha = 0.89$). Data were analysed using confirmatory factor analysis (CFA), principal component analysis, Pearson correlation analysis and cronbach alpha analysis at $p \leq 0.05$ level of significance. PDAS yielded $\alpha = 0.93$, EFA ($X^2 (120) = 3831.88$) and three factors Cognitive-Physiological Reactance ($\alpha = 0.84$), Injustice-Frustration Intolerance ($\alpha = 0.89$), and Situational Predisposing Factors ($\alpha = 0.83$) ranging from 0.56-0.85 at 67.72% of the total variance and KMO of 0.68. Confirmatory factor analysis demonstrated a good fit: GFI=0.97; AGFI=0.93; and RMSEA=0.04. Convergent validity was established with State Trait Anger Expression Inventory ($r=.43, p<.05$) and divergent validity with Rosenberg Self-Esteem Scale ($r= -.15, p<.05$). The newly developed scale demonstrated meritorious validity and faster eases of administration among the prison population.

Key words: *Dysfunctional anger, Prison Population, Cognitive-Physiological Reactance, Injustice-Frustration Intolerance, and Situational Predisposing Factors*

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INTRODUCTION

Anger is a fundamental human emotion experienced across various ages, races, and cultural backgrounds (Chen et al., 2022). It manifests along a continuum, ranging from mild irritation to intense fury or rage, often in response to perceived threats or injustices (Groh et al., 2022). Anger becomes dysfunctional when its expression is excessively frequent, intense, inappropriate, or disproportionate, potentially leading to adverse physical and mental health outcomes (Swami et al., 2022). Recently, dysfunctional anger has emerged as a significant global social and public health concern and has become particularly problematic within correctional institutions (Umegbolu & Okocha, 2022). The World Health Organization (2022) has identified dysfunctional anger as a key precursor to violence and aggressive behavior, contributing to an estimated 1.6 million deaths annually worldwide (WHO; 2010, 2002). Anger is a prevalent and often destructive emotion among incarcerated individuals, with serious implications for institutional safety and post-release outcomes (Baker et al., 2008). Dysfunctional anger has been recognised as an integral and stable feature of imprisonment and has become a major target to change during offenders'

rehabilitation (Ayub, Nasir, Ba'yah, Kadir, & Mohamad, 2016). It has been linked to incessant prison restiveness, adjustment and disciplinary problem, riots, jailbreaks and other forms of disruptive behaviours (Ayub, Nasir, Ba'yah, Kadir, & Mohamad, 2016; Rocheleau, 2011). The prevalence rate among prison inmates is higher compared to the general population (Okuda, Picazo, Olfson, Hasin, Liu, Bernardi, & Blanco, 2015; James & Glaze, 2006), while the prevalence among violent prisoners is higher than non-violent prisoners (Howells, Day, Williamson, Bubner, Jauncey, Parker & Heseltine, 2005).

Current anger assessment tools, like the Novaco Anger Scale (NAS) and the State-Trait Anger Expression Inventory (STAXI), have been widely used in both clinical and correctional settings. However, These instruments weren't made especially for the prison environment, resulting in limitations in their generalizability and accuracy when applied to justice-involved populations (Wydo & Martin, 2015). This issue is particularly pronounced in Nigeria, where the prison system faces unique challenges, including overcrowding, inadequate mental health services, and a

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highly stressful social environment (Okunola et al., 2010). This paper seeks to develop a more effective anger assessment tool by creating the Prison Dysfunctional Anger Scale (PDAS) tailored to the specific emotional and contextual needs of incarcerated individuals in Nigeria. The PDAS is designed to overcome the shortcomings of existing scales by addressing their limitations in assessing anger among prisoners.

Rational for the Development of Prison Dysfunctional Anger Scale (PDAS)

Despite robust evidence of association between dysfunctional anger, aggression, violence and other diverse negative mental and behavioural problems in the prison, there is dearth of adequate indigenous psychological instrument specifically designed for the assessment of prison dysfunctional anger in Nigeria. Most of the available assessment instruments, including the State-Trait Anger Inventory, the Multidimensional Anger Scale (MAI; Siegel 1986), the Clinical Anger Scale (CAS; Snell, Gum, Shuck, Mosley, and Hite, 1995), and the Novaco Anger Scale (NAS; Novaco, 1994) (STAXI; Spielberger, 1999) were developed for the general population and did not fully reflect the phenomenon of dysfunctional anger in

the prison milieu nor reflect the socio-cultural experience of Nigerians. Many existing anger scales were developed and validated in Western contexts, leading to potential misalignment when applied in non-Western settings like Nigeria. Scales such as the STAXI and NAS were designed for populations with different sociocultural and economic realities, which do not align with the lived experiences of Nigerian inmates. For instance, Nigerian prisoners often face distinct stressors, including extreme overcrowding, resource scarcity, and extended pretrial detentions (Ogundipe, 2013). These environmental and psychological stressors have a profound impact on emotional regulation, making it essential to develop an anger scale that captures the unique emotional dynamics within Nigerian prisons. The Nigerian prison system suffers from chronic overcrowding, with facilities often housing double or triple their intended capacities (Odekunle, 2014). This overcrowding exacerbates stress and contributes to heightened levels of anger and aggression among inmates. Existing anger scales do not adequately account for the role of these environmental stressors, limiting their applicability in assessing anger within Nigerian prisons. A new scale, such as the PDAS, would address these

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contextual factors and provide a more accurate assessment of dysfunctional anger among Nigerian inmates. Sociocultural norms around anger and aggression are important to consider when developing an assessment tool. In Nigeria, traditional values, communal living arrangements, and hierarchical structures of authority influence how anger is expressed and managed (Ajayi & Sofoluwe, 2019). Western-developed anger scales may not fully capture these sociocultural dynamics, potentially leading to inaccurate assessments. A new anger scale developed specifically for the Nigerian context would be better suited to reflect the cultural nuances of anger expression among inmates. The Nigerian prison population includes individuals with varying levels of education and cognitive abilities, which poses a challenge for existing anger scales. Many prisoners have low literacy levels, and others may suffer from cognitive impairments due to trauma or substance abuse (Alemika, 2019). Most widely used scales, such as the **NAS** and **STAXI**, assume a certain level of cognitive functioning and literacy that may not be present in Nigerian prisons, leading to potentially flawed assessments. A new scale tailored to this population would

mitigate these issues by incorporating simple language and accessible concepts.

Literature Review

Several anger assessment tools have been developed for clinical and forensic settings. The most widely used tools include The Novaco Anger Scale (NAS), the State-Trait Anger Expression Inventory (STAXI), and the Angry Cognitions Scale-Prison Form (ACS-PF). Although these scales have demonstrated utility in assessing anger, they exhibit significant limitations when applied to prison populations, particularly in non-Western contexts. The STAXI was designed to evaluate the degree of anger as a personality characteristic (characteristic Anger) and as an emotional state (State Anger). While it has been extensively used in correctional settings, its effectiveness is limited by several factors: The STAXI was developed in Western contexts and may not fully capture culturally specific expressions of anger, particularly in Nigeria, where societal norms around authority and communal living differ substantially (Foley et al., 2002). The STAXI has shown limited sensitivity in forensic contexts, with some studies indicating that it fails to identify severe anger issues in approximately half of the prison population (Foley et al., 2002).

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Novaco Anger Scale (NAS) is one of the most widely validated anger scales, designed to measure cognitive, behavioral, and physiological aspects of anger. However, it also faces limitations in prison settings: Despite its validation in various populations, the NAS still requires further exploration of its psychometric properties specifically within incarcerated groups (Baker et al., 2008). Its use in Nigerian prisons, with a unique set of environmental and psychological stressors, has not been adequately tested. Like the STAXI, the NAS relies heavily on self-reported data, which can be biased by factors such as social desirability or fear of institutional consequences, leading inmates to underreport their anger (Foley et al., 2002).

3. Angry Cognitions Scale-Prison Form (ACS-PF) was developed specifically for prison populations, focusing on angry thoughts and their influence on behavior. Despite being more tailored to incarcerated individuals, it still presents several weaknesses: The ACS-PF was initially validated in U.S. prison populations, and its application to other contexts, such as Nigeria, remains limited (Wydo & Martin, 2015). Cultural and environmental factors unique to Nigerian prisons may influence the validity of this tool. While promising,

the ACS-PF lacks extensive research in terms of its specificity in predicting violent behavior, which is a key concern for prison administrators and mental health professionals in Nigerian prisons. The Mahan and DiTomasso Anger Scale (MAD-AS) is a multidimensional measure of anger that assesses cognitive, physiological, and behavioral aspects. While it has shown utility in risk assessment, its limitations include: The emotional and cognitive responses of inmates can vary significantly between those incarcerated and those on parole, affecting the applicability of scales like the MAD-AS in the prison environment (Velotti et al., 2017). The MAD-AS may not adequately assess anger in individuals with cognitive impairments, who are overrepresented in prison populations (Schmoyer, 2005). There is therefore the need to develop an indigenous psychological instrument specifically designed for the assessment of dysfunctional anger in the prison in order to reduce over reliance on foreign instruments (Mokuolu, 2014).

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METHOD

Research Design

The mixed sequential research design (Creswell, 2003) which incorporates qualitative and quantitative methods Cross-sectional surveys, in-depth interviews (IDI), key informant interviews (KII), and focus group discussions (FGD) were used.

Research Setting

This study was conducted at the Nigerian Prisons, Abeokuta, a renowned maximum security prison, established in 1900 with a 510 inmates' capacity. The prison takes into custody all classes of prisoners, including condemned prisoners, lifers, long term and awaiting trials inmates, among others. Abeokuta is a cosmopolitan town and Ogun State's capital city in southwest Nigeria. It is popularly referred to as the gateway city as a result of proximity to neighbouring States in Nigeria and other West African Countries. The settlement is located close to a collection of rocky outcrops amid a forested savannah on the east bank of the Ogun River 77 km from Lagos and 66 km from Ibadan. As a result of urbanisation and proximity to Lagos and other West African Countries, Abeokuta accommodates various nationals and ethnic groups from different parts of Nigeria. The predominant ethnic group is Yoruba, while

English and Yoruba are the official language.

Research Participants

287 inmates with an average age of 32.8 years ($SD = \pm 7.86$) drawn from the various segments of the prison among condemned prisoners, lifers, long term and awaiting trials inmates. 258 (89.9%) of the participants were men, and the other 29 (10.1%) were women.

Instrumentation

The Prison Dysfunctional Anger Scale development follows De vellis (2012) the specified scale development method, which is broken down into various parts, each of which taps the variables of interest.

PDAS Item Pool Generation

The first step was to use of qualitative methods, including Focus Group Discussion (FGD), In-depth interview (IDI), Key Informant Interview (KII) and Anger Episode Record (DiGiuseppe & Tafrate, 2000) to generate items for the Prison Dysfunctional Anger Scale. The records of the qualitative studies were transcribed and 50 items were generated from the major themes emanating from the qualitative studies. The created items underwent expert knowledge assessment to enhance their precision and articulation.

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PDAS Item Pool Validation

The 50 items generated from the qualitative study was presented to ten professionals in forensic and clinical psychology to ensure the face and content validity (Cronbach, 1971; Nunnally, 1978; Okurame, 2002; Olapegba, 2009). The experts were made up of a Professor of Clinical/Forensic Psychology (Ph.D), 2 Senior Consultant Forensic Psychiatrist, 2 Forensic Psychologists (Ph.D and M.Sc Qualification), 2 Clinical Psychologist (Ph.D and M.Sc Qualification), and 2 Senior Prison Officers (Over 20 years in service). The average age of the experts was 35.8 (S.D = 10.4). The items were assessed in terms of clarity, appropriate expression and precision, while suggestions were made where necessary. The items were modified in accordance with the panel of experts' recommendations. Seventeen items were dropped and the thirty-three items chosen by eight of the ten experts (80% averaged aggregate percentage) to appropriately measure the construct of prison dysfunctional anger were retained.

Pilot study and exploratory factor analysis

Copies of the 33-item, updated questionnaire were brought to the field to be distributed to one hundred (n=100)

participants Nigeria Prison, Ijebu-Ode. The questionnaire was scored using a 5-point Likert-type response format, with Strongly Agree (5) to Strongly Disagree (1) representing the respondents' agreement or disagreement with each item.

PDAS Item and Factor Analysis

Item analysis and PDAS was subjected to factor analysis using the greatest likelihood approach and Varimax rotation after a pilot study. Factors with Eigen values of 1 and above were retained. Items loading on the factors were included at loading value of ≥ 0.35 . 17 items were deleted for redundancy and low reliability. Reliability of the reduced scale was calculated using the Cronbach's alpha value of ≤ 0.70 . Item total correlation was estimated to determine the consistency of item score with total score. PDAS yielded $\alpha = 0.93$, EFA ($X^2(120) = 3831.88$) and three factors Cognitive-Physiological Reactance ($\alpha = 0.84$), Injustice-Frustration Intolerance ($\alpha = 0.89$), and Situational Predisposing Factors ($\alpha = 0.83$) ranging from 0.56-0.85 at 67.72% of the total variance and KMO of 0.68. Example of PDAS items includes: Cognitive-Physiological Reactance- 'I find it difficult to concentrate when I am angry', 'I feel tired than usual when I am angry', and 'I don't sleep well when I am angry'; Injustice-Frustration Intolerance: 'Being

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sanctioned for someone else fault makes me angry’, ‘Continuous court adjournment and lack of appreciable progress in my case makes me angry’, ‘I feel angry when not being fairly treated’; Situational-Predisposing Factors: ‘Congestion and poor living condition in the prison makes me angry’, ‘Being called upon during locked-up time makes me angry’. Lastly, ‘Low quality and quantity of food served in the prison makes me angry’.

PDAS Psychometric Properties

Psychometric properties of PDAS indicate a Cronbach's alpha value of .85; split-half reliability coefficient of .82; convergent validity coefficient of .51 (when PDAS was correlated with State-Trait Anger Inventory; Spielberger, 1999) and a divergent validity coefficient of -0.15 (when PDAS was correlated with the Rosenberg Self Esteem Scale; Rosenberg, 1965). The overall PDAS was significantly correlated with its dimensions: Cognitive-Physiological Reactance ($r = 0.77$), Injustice-Frustration Intolerance ($r = 0.88$), and Situational Predisposing Factors (0.79). The norm was set at 70.58 ($n = 279$) at 1S.D. above the mean. High score above the norm (≥ 70.58) indicate high dysfunctional anger and vice versa.

The dimensionality of the new scale structure was tested using exploratory

factor analysis with varimax rotation in order to find linked factors and elucidate the underlying dimensions. One of the most popular criteria, the Kaiser Olkin Meyer criterion (i.e., eigen values greater than 1 are retained), was applied to decide how many factors should be kept. Convergent validity was evaluated and construct coefficients of reliability were calculated for the items assessing the elements that loaded.

Seventeen items (17) items were deleted for redundancy and low reliability. Reliability of the reduced scale was estimated by Cronbach's alpha value of ≤ 0.70 .

Confirmatory factor analysis

The AMOS program version 24 was utilized to assess the factor solution derived from the exploratory factor analysis for structure stability and viability utilizing the data collected from 287 prisoners. A confirmatory factor analysis compares the factor structure derived from the EFA with the factor structure in the analysis to see whether the constructs or factor structure arising from the EFA are stable and explain aspects of the scale developed in the study.

Scale Features

- 1) **Administration:** PDAS can be administered individually and in

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group and does not require the presence of the tester.

- 2) **Test Format:** Questionnaire (10 items)
- 3) **Appropriate Population:** Fluency in English language and secondary school level of education or higher.
- 4) **Administration time:** Approximately 5 minutes.
- 5) **Scoring:** Involves direct scoring with no reverse item.
- 6) **Interpretation:** Higher score indicate higher dimension of underlying construct.
- 7) **Possible Uses:** Research and hypothesis testing in general

assessment of dysfunctional anger among the prison population.

Ethical Consideration

The Neuropsychiatric Hospital's Aro, Abeokuta, Health Research Ethics Committee granted ethical permission for this study. Following an assessment of the research protocol by the Prison Medical Board, administrative clearance was also received from the Comptroller of Prisons, Ogun State. Each participant's consent was also acquired after they were fully informed of the study's non-maleficance character, their freedom to withdraw, and the confidentiality of the data collected.

RESULTS

The Prison Dysfunctional Anger Scale (PDAS) development followed a detail approach using item analysis, a study of internal consistency reliability, factor analysis, and testing of validity. The set of results shows that the scale performs well

and accurately assesses dysfunctional anger in correctional facilities.

PDAS item analysis

Psychometric properties of PDAS indicate an .85 Cronbach's alpha and a.82 split-half reliability coefficient;

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Reliability

Reliability Statistics

Cronbach's Alpha	N of Items
.909	16

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
pdas9	52.83	193.860	.522	.906
pdas10	52.64	194.420	.440	.909
pdas8	52.68	188.518	.621	.903
pdas32	52.71	190.101	.547	.906
pdas7	51.84	191.949	.589	.904
pdas5	51.99	185.570	.712	.900
pdas30	51.96	199.243	.362	.911
pdas12	52.13	186.467	.786	.898
pdas15	52.32	193.435	.529	.906
pdas4	52.10	184.902	.819	.897
pdas6	52.46	179.403	.814	.896
pdas2	51.83	197.690	.522	.906
pdas1	52.60	187.241	.644	.902
pdas16	53.13	198.236	.418	.909
pdas13	52.85	189.613	.588	.904
pdas3	52.11	194.452	.599	.904

Reliability Statistics

Cronbach's Alpha	Part 1	Value	.846
		N of Items	8 ^a
	Part 2	Value	.879
		N of Items	8 ^b
	Total N of Items		16
Correlation Between Forms			.662
Spearman-Brown Coefficient	Equal Length		.797
	Unequal Length		.797
Guttman Split-Half Coefficient			.797

a. The items are: pdas9, pdas10, pdas8, pdas32, pdas7, pdas5, pdas30, pdas12.

b. The items are: pdas15, pdas4, pdas6, pdas2, pdas1, pdas16, pdas13, pdas3.

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In this study, the Cronbach Alpha reliability of the scale was 0.91. Eight items had a split-half dependability of ($r = 0.85$), while eight items had a split-half reliability of ($r = 0.88$). The forms' correlation was (0.67). Both the Guttman and Spearman-Brown split-half coefficients were reported to be 0.80 and 0.80, respectively, for equal length.

Factor analysis

Many people believe that exploratory factor analysis is better suited for the initial phases of scale development. One of the most popular criteria for deciding how

many components to keep was Kaiser's (i.e., eigenvalues greater than 1 are preserved) criterion. The Measure of Sampling Adequacy (MSA) and the Bartlett test were used to assess the covariance present in the correlation matrix. The statistical likelihood that the correlation matrix contains significant correlations is shown by the Bartlett test of sphericity ($p = 0.00$) in this test, and the Kaiser-Meyer was 0.589, indicating outstanding sampling adequacy. $KMO = .589$, $df = 120$, $p < .000$, which is confirmed, indicates that the data matrix may be factorized.

Table 1: Kaiser-Meyer-Olkin (KMO) Measure and Bartlett's Test of Sphericity for Sampling Adequacy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.680
Bartlett's Test of Sphericity	Approx. Chi-Square	3831.882
	Df	120
	Sig.	.000

Promax rotation and the greatest likelihood approach were employed by the EFA. The variamax rotation was used because of the components' perhaps mid-range correlations. The principle component analysis extraction with varimax rotation

gave a three-factor solution that accounted for 75.27% of the variance in item responses. The three factors that were taken into consideration were therefore kept, all of which had eigenvalues greater than 1.

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Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
		1	7.065		44.156	44.156		7.065	44.156
2	2.164	13.522	57.679	2.164	13.522	57.679	3.549	22.183	46.115
5	1.607	10.044	67.723	1.607	10.044	67.723	3.457	21.608	67.723

Extraction Method: Principal Component Analysis.

Rotated Component Matrix^a

	Component		
	1	2	3
I feel tired than usual when I am angry	.850		
I don't sleep well when I am angry	.846		
I lose my appetite when I am angry	.818		
I find it difficult to concentrate when I am angry	.636		
Betrayal by other inmates makes me angry	.612		
Being sanctioned for someone else fault often makes me angry		.846	
Continuous court adjournment and lack of appreciable progress in my case makes me feel angry		.845	
When ignored or not being given the desired attention makes me angry		.717	
I feel angry in the prison		.600	
I feel angry when treated without courtesy		.591	
I feel angry when not being fairly treated by other inmates or officials		.566	
Congestion and poor living condition in the prison makes me angry			.822
Submission to orders from prison officials and inmates makes me angry			.773
Being called upon during 'locked-up' time makes me angry			.705
Lack of regular visits from relatives makes me angry			.678
The low quality and quantity of food served in the prison often annoy me			.664

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

The factors include; Cognitive-Physiological Reactance Anger, Injustice-Frustration Intolerance Anger, and Situational Predisposed Anger. The results of the scale was Bartlett's test of sphericity $\chi^2(120) = 3831.88, p < .001$; KMO = 0.68). Each dimension's items with

sufficient psychometric qualities were chosen based on three criteria: 1) the EFA results, which kept items with higher loadings on their respective factor and lower loadings on other factors; 2) the Cronbach's alpha index; and 3) the item content, which gave priority to non-

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repeating items. Cognitive-Physiological Reactance ($r = 0.77$), Injustice-Frustration Intolerance ($r = 0.88$), and Situational Predisposing Factors (0.79).

Looking at the convergence validity the scores on the Prison dysfunctional anger scale was correlated with the sub – dimensions of the scale.

Internal Convergence validity

Table 4.4 Pearson Product Moment correlation showing the relationship between Prison dysfunctional anger scale and the sub –dimensions of the scale.

	Mean	S.D	1	2	3	4
Overall PDAS	55.87	14.69	-	.777**	.888**	.796**
Cognitive Physiological Reactance	16.68	5.76		-	.524**	.399**
Injustice Frustration Intolerance	22.31	6.84			-	.615**
Situational predisposed Factors	16.87	5.19				-

** Correlation is significant at the 0.01 level (2-tailed).

The examination of Pearson correlation revealed that there was significant positive relationship between Prison dysfunctional anger scale and all the sub –dimensions of the scale ($p < .001$). increase in Cognitive physiological reactance, Injustice & frustration intolerance and Situational factors synonymous with high scores on the overall Prison dysfunctional anger scale. convergent validity coefficient of .51 (when PDAS was correlated with State-Trait Anger Inventory; Spielberger, 1999) and a

divergent validity coefficient of -0.15 (when PDAS was correlated with the Rosenberg Self Esteem Scale; Rosenberg, 1965).

External Convergence validity

Looking at the convergence validity the scores on the Prison dysfunctional anger scale was associated with the sub – dimensions of the scale.

Table 5: Pearson Product Moment correlation showing the relationship between Prison dysfunctional anger scale and STAXI scale.

	Mean	S.D	R	Sig
Overall PDAS	55.87	14.69	.43**	<.001
STAXI	16.68	5.76		

** Correlation is significant at the 0.01 level (2-tailed).

The State trait anger expression inventory and the Prison dysfunctional anger scale had a substantial positive link, according to the Pearson correlation analysis ($p < .001$).

The findings showed that the two measures had a significant association, indicating that they both captured rage disorder in a comparable way.

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Divergence validity

Table Pearson Product Moment correlation showing the relationship between Prison dysfunctional anger scale and self esteem scale.

	Mean	S.D	R	Sig
Overall PDAS	55.87	14.69	-.152**	<.001
Self esteem	27.86	4.96		

** . Correlation is significant at the 0.01 level (2-tailed).

Significantly positive relationships were found by the Pearson correlation analysis and Prison dysfunctional anger scale and self-esteem scale ($p < .001$).

Norm

A mean score of 70.58 on the Prison Dysfunctional Anger Scale was used to

establish the norm. Anger dysfunction is indicated by a high score above the mean, whereas low dysfunctional anger is indicated by a score equal to or below the mean.

Table : Normed scores for the overall Prison dysfunctional anger scale and the sub –dimensions of the scale.

	N	Mini mum	Maxi mum	Mean	S.D	Normed Mean + 1S.D
Cognitive Physiological Reactance	287	5.00	25.00	16.69	5.76	22.45
Injustice Frustration Intolerance	287	9.00	30.00	22.31	6.84	29.15
Situational Factors	287	6.00	25.00	16.88	5.19	22.07
Overall.PDAS	287	21.00	76.00	55.88	14.70	70.58

Confirmatory Factor Analysis

The Tucker-Lewis index (TLI; $\geq .90$), comparative fit index (CFI; $\geq .90$), chi-square statistic ($p > .05$), and standardized root mean square residual (SRMR; $\leq .08$; Hu & Bentler, 1999; Kenny, Kaniskan, & McCoach, 2015) were among the model fit statistics used to assess the model fit's

quality. The evaluation of multiple models revealed a non-significant fit. Six of the items were removed, demonstrating that the model fit was further improved by allowing the residuals of some things to correlate with one another and adjusting the indices of prior modifications.

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Table 43: Model fit indices and significance

Number of items	Values	Remark
Model χ^2	38.57 (13) p=.00	Not Fitted
GFI	0.97	Significant
AGFI	0.90	Significant
CFI	0.98	Significant
TLI	0.94	Significant
NFI	0.97	Significant
IFI	0.98	Significant
SRMR	0.041	Significant
RMSEA	0.08	Significant
AIC	122.57	Significant
BIC	125.93	Significant
CMIN/DF	2.97	Significant
LO-HI 90	.05 - .11	Significant

Notes: NFI (Normed Fit Index), CFI (Comparative Fit Index), AGFI (Adjusted Good Fit Index), Tucker-Lewis Index, and GFI (Goodness of Fit Index); Lower scores on the AIC and RMSEA index indicate better fit. RMSEA stands for root mean square error of approximation; AIC stands for Aikake information criterion

.A poor theoretical fit was demonstrated by the model; $\chi^2 = 38.57$, $df=13$, $p=0.00$. The X^2 statistic is no longer used as a foundation for acceptance or rejection because it is highly sensitive to sample size (Schlermelleh-Engel et al. 2003, Vandenberg 2006). As a result, the model

displayed a significant mode with $SRMR=0.04$, $TLI=0.94$, $RMSEA=0.08$, 90% CI (0.05–0.11), $CFI=0.97$, and $AGFI=0.90$. A dependable two-factor structure is supported by the results of both the EFA and the CFA, despite the EFA's somewhat better fit profile.

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Table 6: Summary of unstandardized and standardized solution 3 – Factor, 10 item model of PDAS

			3 – Factor, 10 item model of PDAS			
Cronbach Alpha (α)			0.77	0.85	0.78	Factor Loading
SPF	pdas5	I feel tired than usual when I am angry	1.64(.18)			.554
SPF	pdas15	I find it difficult to concentrate when I am angry	1.64(.18)			.882
SPF	pdas30	I don't sleep well when I am angry	1.64(.18)			.698
CPRR	pdas7	I feel angry when treated without courtesy		1.00(.00)		.698
CPRR	pdas10	Continuous court adjournment and lack of appreciable progress in my case makes me feel angry		1.31(.11)		.795
CPRR	pdas9	When ignored or not being given the desired attention makes me angry		1.23(.10)		.837
CPRR	pdas8	I feel angry in the prison		1.19(.10)		.767
IFI	pdas13	Lack of regular visits from relatives makes me angry			1.00(.00)	.677
IFI	pdas1	Submission to orders from prison officials and inmates makes me angry			1.22(.15)	.844
IFI	pdas2	I feel angry when not being fairly treated			1.30(.18)	.730

Based on the CFA results, only 10 items were confirmed as stable measure of dysfunctional anger. The items retained have higher loadings on their corresponding factor and lower loadings on other factors. The reliability of the retained

items showed that Cognitive-Physiological Reactance ($r = 0.77$), Injustice-Frustration Intolerance ($r = 0.85$), and Situational Predisposing Factors (0.78) still possessed meritorious reliability.

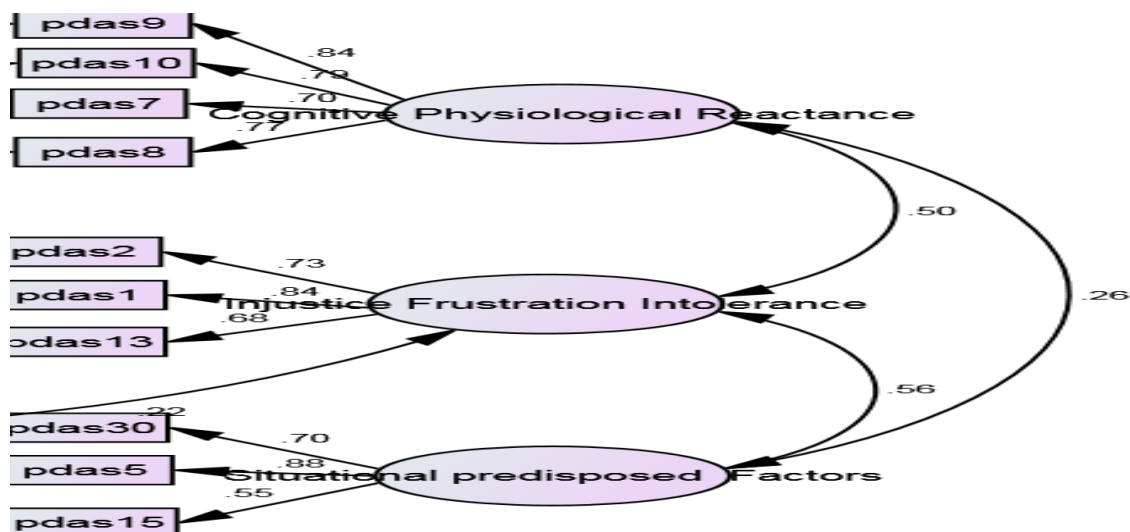
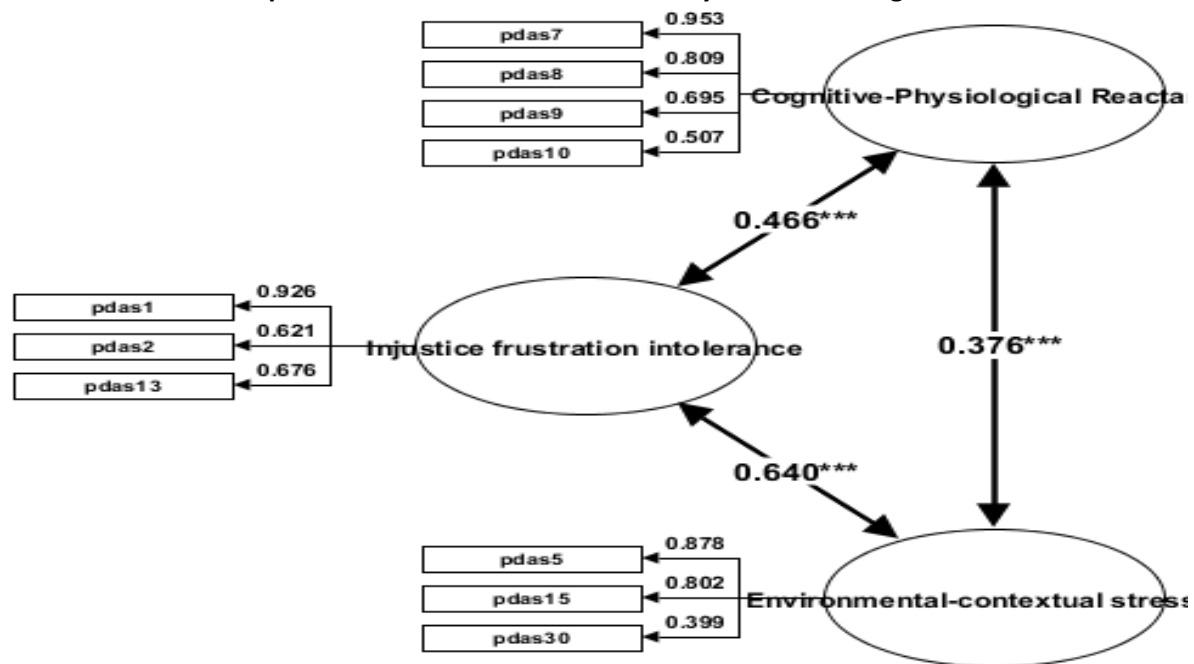


Fig 1: 3 – Factor, 10 item model of PDAS (CFI=0.97, AGFI=0.90, TLI=0.94, RMSEA=0.08 and SRMR=0.04)

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Construct Reliability

Construct reliability is a crucial aspect of psychometric evaluation, indicating the consistency of a measure across different

items. The following table summarizes the reliability coefficients for three constructs measured using Dijkstra-Henseler's rho (ρ_A), Jöreskog's rho (ρ_c), and Cronbach's alpha (α):

Table 1: Construct Reliability Coefficients

Construct	Dijkstra-Henseler's rho (ρ_A)	Jöreskog's rho (ρ_c)	Cronbach's alpha (α)
Cognitive-Physiological Reactance	0.88	0.84	0.85
Injustice frustration intolerance	0.83	0.79	0.78
Environmental-contextual stressors	0.82	0.75	0.77

These values indicate that all constructs demonstrate good reliability, as they exceed the commonly accepted threshold of 0.70 for psychological measures, suggesting that the items consistently measure the intended constructs (Tavakol & Dennick, 2011).

Convergent Validity

Convergent validity evaluates the existence of a correlation between measurements that are meant to be connected. The following are the constructions' Average Variance Extracted (AVE) values:

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Table 2: Average Variance Extracted (AVE) Values

Construct	Average variance extracted (AVE)
Cognitive-Physiological Reactance	0.58
Injustice frustration intolerance	0.57
Environmental-contextual stressors	0.52

According to established criteria, an AVE greater than 0.5 indicates adequate convergent validity, suggesting that these constructs share a significant amount of variance with their indicators (Fornell & Larcker, 1981).

Discriminant Validity

HTMT, or the Heterotrait-Monotrait Ratio of Correlations, is used to assess discriminant validity. The correlations between the constructs are shown in the following table:

Table 3: Heterotrait-Monotrait Ratio of Correlations (HTMT)

Construct	Cognitive-Physiological Reactance	Injustice frustration intolerance	Environmental-contextual stressors
Cognitive-Physiological Reactance	-		
Injustice frustration intolerance	0.48	-	
Environmental-contextual stressors	0.33	0.60	-

The HTMT values indicate that discriminant validity is maintained, as the correlations between different constructs are below the recommended threshold of 0.85 (Henseler et al., 2015).

Inter-Construct Correlations

The inter-construct correlations further illustrate the relationships between the constructs:

Table 4: Inter-Construct Correlations

Construct	Cognitive-Physiological Reactance	Injustice frustration intolerance	Environmental-contextual stressors
Cognitive-Physiological Reactance	1.00		
Injustice frustration intolerance	0.47	1.00	
Environmental-contextual stressors	0.38	0.64	1.00

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These correlations provide additional support for both convergent and discriminant validity, confirming that while related constructs show significant correlation, they also maintain distinctiveness from one another. . The strong construct reliability indicates that researchers can confidently use these measures in various contexts without concerns about inconsistent results (Tavakol & Dennick, 2011). Furthermore, the adequate convergent validity suggests that these constructs are effectively capturing the intended psychological phenomena, which can aid in developing

targeted interventions for issues like cognitive-physiological reactance and environmental stressors. The maintenance of discriminant validity underscores the importance of distinguishing between these constructs in both theoretical frameworks and practical applications. For instance, understanding how cognitive-physiological reactance differs from injustice frustration intolerance could inform tailored therapeutic approaches that address specific psychological responses to stressors or perceived injustices.

DISCUSSION

This study developed and validated an indigenous psychological instrument for the assessment of dysfunctional anger among the prison inmates. The findings of this investigation support the findings of Wydo (2003) who found significant higher reliability in the development of valid anger assessment tool. Anger assessment tool. Good reliability is indicated by alpha coefficients computed for each higher-order factor score and the total scale. The PDAS subscales and the total PDAS showed positive associations. Additionally, the study discovered high divergent and convergent validity with Rosenberg Self-

Esteem and STAXI. Overall, the study's results are consistent with Karitas' theory, which views jail as an atmosphere that incites rage and leads to the formation of violence or aggression (Karataş, 2009). Regardless of the cause, angry behaviors can lead to rebellion, altercations, physical harm, or even death (Şahin, 2006). This occurred when the tolerance (endurance) levels of the prisoners were lower. Baltas also discovered that sentiments of hatred and animosity are linked to intolerance. Anger and animosity grow prevalent among people and society due to

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intolerance, according to another study (Yazgan, 2007).

Conclusion and Recommendations

The findings of this study indicate that given the increased likelihood of rage and criminal behavior, In this study, we described the construction of PDAS. The outcome is a first indication of its construct validity and dependability. The result of confirmatory, factor analysis suggests that prison inmates sources anger vary from

different perspectives. The provision of educational programs to raise their levels of tolerance (endurance, indulgence) is thought to be advantageous. Rehabilitation includes preventive health interventions offered in correctional facilities. In this regard, it is thought that psychologists will be successful in lowering recidivism rates through their study and by offering inmates anger management education programs.

CONFLICT OF INTERESTS

The authors declare that there are no conflicts of interest.

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