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Instituto de Psicologia

*Programa de Pós-Graduação em Psicologia*



**PERCEPÇÃO DE RISCO, ESTRATÉGIAS DE ENFRENTAMENTO E  
CONSUMO DE BEBIDAS ALCOÓLICAS DURANTE A PANDEMIA DA  
COVID-19**

JÔNATAS REIS BESSA DA CONCEIÇÃO

SALVADOR – BAHIA  
2022

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COVID-19**

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## TERMO DE APROVAÇÃO

PERCEPÇÃO DE RISCO, ESTRATÉGIAS DE ENFRENTAMENTO E CONSUMO DE  
BEBIDAS ALCOÓLICAS DURANTE A PANDEMIA DA COVID 19

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“Tudo o que fizerem, façam de todo o coração, como para o Senhor, e não para os homens, sabendo que receberão do Senhor a recompensa da herança. É a Cristo, o Senhor, que vocês estão servindo.”

Colossenses 3:23,24

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## Resumo

**Objetivo:** A presente tese de doutoramento teve por objetivo avaliar e estimar um modelo de relações entre os domínios cognitivos e emocionais da percepção de risco, estratégias protetivas e de autoproteção em *coping*, consumo de bebidas alcólicas como estratégia de *coping*, uso abusivo de álcool, depressão, impulsividade, estresse e ansiedade de adultos brasileiros, durante o período de pandemia. **Métodos:** o estudo foi dividido em duas partes: na primeira foram desenvolvidas e validadas 3 escalas (percepção de risco, *coping* e consumo de álcool durante a pandemia), na segunda foi estimada uma análise de redes entre as variáveis. **Resultados:** as três escalas desenvolvidas apresentaram evidências psicométricas relacionadas ao conteúdo, estrutura interna, com variáveis externas e índices de fidedignidade dentro do esperado, aumentando a probabilidade de se fazer inferências dos resultados obtidos a teoria dos construtos avaliados e suas estabilidades de escore. Observou-se relações fracas (<30), moderadas (>30) e fortes (>50) entre variáveis de saúde mental, sociodemográficas, *coping*, consumo de bebidas alcólicas e percepção de risco sobre a covid-19. **Discussão/Conclusão:** constatou-se que as variáveis ligadas à saúde mental (especificamente: depressão, estresse e ansiedade) apresentaram maior centralidade (em termos de força, proximidade e intermediação) na rede de relações entre variáveis, sendo estes pontos chaves para possíveis intervenções em futuras pandemias, buscando assim promover estratégias adaptativas de *coping* e evitando um consumo mal-adaptativo e/ou abusivo de bebidas alcólicas.

**Palavras-Chave:** covid-19, *Coping*, Percepção de Risco, Consumo de Álcool, Saúde Mental



## **Abstract**

Objective: This doctoral thesis aimed to evaluate and estimate a model of relationships between the cognitive and emotional domains of risk perception, protective and self-protection strategies in coping, consumption of alcoholic beverages as a coping strategy, abusive use of alcohol, depression, impulsivity, stress, and anxiety of Brazilian adults during the pandemic period. Methods: the study was divided into two parts: in the first, 3 scales were developed and validated (risk perception, coping and alcohol consumption during the pandemic), in the second, a network analysis between the variables was estimated. Results: the three scales developed presented psychometric evidence related to the content, internal structure, with external variables and reliability indices within the expected, increasing the probability of making inferences from the results obtained to the theory of the evaluated constructs and their score stabilities. Weak (<30), moderate (>30) and strong (>50) relationships were observed between mental health, sociodemographic, coping, alcohol consumption and risk perception about covid-19. Discussion/Conclusion: it was found that the variables related to mental health (specifically: depression, stress, and anxiety) presented greater centrality (in terms of strength, closeness and betweenness) in the network of relationships between variables, these being key points for possible interventions in future pandemics, thus seeking to promote adaptive coping strategies and avoiding maladaptive and/or abusive consumption of alcoholic beverages.

**Keywords:** covid-19, Coping, Risk Perception, Alcohol Consumption, Mental Health

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## LISTA DE SIGLAS E ABREVIATURAS

<b>covid-19</b>	Novo Coronavírus
<b>SARS-COV-2</b>	Novo Coronavírus
<b>M</b>	Média
<b>Md</b>	Mediana
<b>Dp</b>	Desvio Padrão
<b>Sd</b>	Standard Deviation
<b>Pct</b>	Percentile
<b>IQ</b>	Intervalo Interquartil
<b>X<sup>2</sup></b>	Chi-Quadrado
<b>df</b>	Graus de liberdade
<b>x<sup>2</sup>/df</b>	Chi-Quadrado por graus de liberdade
<b>CVC</b>	Coeficiente de validade de conteúdo
<b>K</b>	Índice de Fleiss Kappa
<b>C.R</b>	Composite Reliability
<b>EFA</b>	Exploratory Factor Analysis
<b>RDWLS</b>	Robust Diagonally Weighted Least Squares
<b>KMO</b>	Kaiser-Meyer-Olkin
<b>OPA</b>	Optimum Parallel Analysis
<b>PA</b>	Parallel Analysis
<b>RMSEA</b>	Root Mean Square Error of Approximation
<b>CFI</b>	Comparative Fit Index
<b>TLI</b>	Tucker–Lewis index
<b>MIREAL</b>	Mean of Item Residual Absolute Loadings
<b>E.V(%)</b>	Explained Variance
<b>ECV</b>	Explained Common Variance
<b>Único</b>	Unidimensional Congruence
<b>IRT</b>	Item Response Theory
<b>a</b>	Item discrimination of the main item factor
<b>Thershold (d1,d2,d3,d4)</b>	Item difficult parameter
<b>G-H Index</b>	Generalized H index.
<b>WHO</b>	World Health Organization
<b>PCS</b>	Pandemic Coping Scale
<b>ALCOS</b>	Alcohol Consumption Scale
<b>ABEP</b>	Associação Brasileira de Empresas de Pesquisa
<b>AUDIT</b>	Teste de Identificação de Transtornos Devido ao Álcool
<b>DASS21</b>	Escala Adaptada de Depressão, Ansiedade e Stress – 21
<b>ABIS</b>	Escala Barratt de Impulsividade Abreviada
<b>PHERPS</b>	The Public Health Emergency Risk Perception Scale
<b>CEP-IPS UFBA</b>	Comitê de Ética em Pesquisa do Instituto de Psicologia da Universidade Federal da Bahia
<b>SCSQ</b>	Simplified Coping Styles
<b>E.D</b>	Emotional Domain
<b>C.D</b>	Cognitive Domain
<b>N</b>	North
<b>NE</b>	Northeast
<b>MW</b>	Midwest
<b>SE</b>	Southeast
<b>S</b>	South
<b>NHE</b>	Non-Higher Education
<b>HE</b>	Higher Education.

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## **Apresentação**

A presente tese foi concebida e desenvolvida em um período inédito na história neste século, que foi a pandemia do novo coronavírus. Após a covid-19 ser decretada como epidemia a nível mundial, foi instituído, em março de 2020, o estado de alerta no país e uso dos métodos preventivos de combate ao vírus, como por exemplo: uso de máscaras, álcool em gel e isolamento social. Por conta deste fenômeno, pesquisadores de todo mundo precisaram se adaptar, usando de flexibilidade cognitiva e controle inibitório, para realizar pesquisas de qualidade em um contexto totalmente adverso. Uma forma eficiente para este período foi o uso de *surveys online* que puderam ajudar a captar respostas dos indivíduos que estavam em quarentena e isolamento.

Usando deste método, o pesquisador que vos escreve, pôde investigar relações entre percepção de risco em covid-19, *coping* durante a pandemia, aspectos desenvolvimentais e sociodemográficos, saúde mental e uso abusivo e consumo de bebidas alcólicas. Para tanto, ao longo da tese, foram discutidos na introdução fatores necessários para a tomada de decisão, buscando enfatizar a decisão para o consumo de bebidas alcólicas, e os impactos da pandemia na saúde mental, percepção de risco, atitudes e comportamentos das pessoas.

Mais adiante, os objetivos, hipóteses e métodos são apresentados, mostrando critério e cautela na condução do estudo, apesar das dificuldades ocasionadas pela pandemia. Em termos de resultados, para se chegar ao estudo das relações das variáveis supracitadas no parágrafo acima, foi necessário construir e validar três diferentes escalas que até o momento de execução da pesquisa não existiam no contexto brasileiro, foram

elas: Percepção de Risco sobre covid-19 e Isolamento Social (Artigo 1); *Coping* na Pandemia (Artigo 2); e Consumo de Álcool (Artigo 3).

A partir destes, foi possível utilizar um método de análise sistemático de estrutura, relativamente novo na área da psicologia, chamado análise de redes. Esse tipo de método busca romper com a concepção causal de traços latentes, oriundos da modelagem de equações estruturais e path analysis, utilizando a lógica ambientalista para analisar como as variáveis interagem entre si, no qual o impacto é uma variável específica, pode modificar toda uma configuração de uma rede de relações (Artigo 4).

Para além do ineditismo, o uso deste método, buscou corroborar na identificação das variáveis de maior influência nas redes adjacentes, ajudando em uma tomada de decisão que busque uma intervenção mais eficiente e rápida no que tange as variáveis de percepção de risco em covid-19, *coping* durante a pandemia, aspectos desenvolvimentais e sociodemográficos, saúde mental e uso abusivo e consumo de bebidas alcólicas. Por fim, no final desta tese, é apresentada uma discussão, considerações finais e referências.

## **Introdução**

### **Tomada de Decisão em relação ao Consumo**

A tomada de decisão pode ser definida como capacidade de se escolher uma entre tantas alternativas disponíveis no momento. Este é um processo cognitivo que envolve o uso de diferentes tipos de processamento, como, por exemplo, o intuitivo, analítico e homeostático (Costa et al., 2018). Este construto se relaciona a vários aspectos da vida, pois em todo momento, o ser humano está identificando, analisando riscos, discriminando possibilidades e selecionando opções na vida diária usando critérios quantitativos e qualitativos para embasar a decisão (Negulescu & Doval, 2014).

Em termos da operacionalização deste construto, faz-se necessário pensar que existe uma infinidade de fatores que podem estar influenciando a tomada de decisão dos indivíduos. Estes fatores podem ser categorizados didaticamente entre fatores individuais e contextuais (Kluwe-Schiavon et al., 2018). Os primeiros, estariam associados a características do indivíduo, sua história e seu presente, como por exemplo: gênero, humor, traços de personalidade, idade, psicopatologias e aspectos cognitivos. Já os fatores relacionados ao contexto, são característicos do ambiente que se relacionam à tomada de decisão, como: magnitude de perdas e ganhos, saúde, aspectos éticos, questões financeiras e tempo de ação e sua consequência (Kluwe-Schiavon et al., 2018)

Um outro aspecto que influencia a tomada de decisão das pessoas é o viés e heurísticas, também chamado de atalhos mentais dos indivíduos. Estes são oriundos de um histórico de reforçamento e automatização de crenças, pensamentos e experiências, e corroboram em aliviar a carga cognitiva necessária para se chegar a uma decisão. Apesar de muito utilizada, estes atalhos mentais apresentam uma maior probabilidade ao erro, pois, suas generalizações podem não ser compatíveis com a situação decisória no momento (Sternberg & Sternberg, 2016).



Existem algumas definições de heurísticas na literatura utilizadas no processo da tomada de decisão cotidiana (Sternberg & Sternberg, 2016). A representatividade é um atalho mental em que o indivíduo julga a probabilidade de um fenômeno por sua obviedade de ocorrência ou o quão é representativo a população e o nível de aleatoriedade observada no fenômeno (Sternberg & Sternberg, 2016). Um exemplo de sua execução é quando o indivíduo avalia que é melhor se proteger com uma máscara de um vírus, baseado em sua perspectiva de probabilidade em ser contagiado dado as altas taxas e frequência de infecção do vírus.

Já a heurística da disponibilidade, sugere que os julgamentos são feitos com base no grau de facilidade de lembrar situações relevantes ao fenômeno (Sternberg & Sternberg, 2016). Sua ação pode se associar ao consumo de drogas lícitas, ou ilícitas, para compensar uma situação aversiva. Em que um indivíduo com um histórico prévio de uso de substâncias para *coping*, pode ser induzido a usar esta estratégia para compensar um sofrimento, buscando o “alívio” de curto prazo gerado.

A heurística de ancoragem e ajuste se relaciona à ajustabilidade de avaliações baseados por pontos de referência (Sternberg & Sternberg, 2016). Este gatilho mental pode se relacionar a percepção que os indivíduos podem ter em um caso de calamidade, em que se baseando em notícias, sejam elas falsas ou não, o indivíduo toma como referência, julga as alternativas e modula as suas decisões não só de como percebe o fenômeno, mas também como age em torno do fato.

Em relação a neuropsicologia do consumo, pode-se observar que os indivíduos são movidos por emoções para comprar produtos, somados a um processo mais racional, utilizando mecanismos de tomada de decisão. A tomada de decisão inclui um quadro complexo de emoções e racionalizações (Kemp et al., 2018). Para além disso, é válido destacar as possibilidades de influência para além do indivíduo. A *Nudge Theory*, por

exemplo, sugere que mudanças, ainda que pequenas, na arquitetura da tomada de decisão podem mudar a frequência dos comportamentos decisivos das pessoas, isto é, mudanças no ambiente podem influenciar a decisão de indivíduos sem medidas coercitivas (Thaler, 2018). De acordo com esta teoria, mudanças específicas em espaços, mídia ou sociedade podem influenciar inconscientemente o comportamento das pessoas, sejam estes adaptativos ou não (Thaler, 2018).

Ao comprar um produto, os consumidores aceitam realizar um pagamento por um preço (custo), porque acreditam que o ganho de satisfação hedônica pelo produto (benefício) é maior. Com base nisso, o consumidor, através de mecanismos de tomada de decisão, busca avaliar o custo-benefício e suas interações no processo de compra (Panzone & Talmi, 2016). Por outro lado, ainda não há um consenso em como os indivíduos estimam a utilidade geral de um produto, avaliando o possível custo-benefício (Malloy-Diniz et al., 2018; Panzone & Talmi, 2016).

Indo nesta direção, alguns autores têm sugerido que os indivíduos tendem a avaliar os valores com base em seu contexto atual, dando maior ênfase às perdas, enfatizando a perspectiva da influência de estados afetivos na tomada de decisão (Costa et al., 2018; Kluwe-Schiavon et al., 2018; Leandro Fernandes Malloy-Diniz et al., 2018). Portanto, pode-se observar que o consumo apresenta uma valoração psicológica significativa para além da utilidade funcional do produto, isto é, valores e estados psicológicos motivam o consumo (Mandel et al., 2017).

A autodiscrepância é um conceito que sugere uma incongruência da autopercepção do indivíduo e como este deseja estar ou se ver. Um exemplo desse construto, pode ser visto em um indivíduo que deseja estar em um lugar com amigos, porém necessita ficar em isolamento social. A partir disso, o indivíduo pode se utilizar de

consumo de produtos, como por exemplo, bebidas alcóolicas, muitas vezes em demasiado visando lidar com essa incongruência autoperceptiva (Mandel et al., 2017).

Uma forma efetiva de se avaliar a tomada de decisão exige analisar o conceito de risco (Kluwe-Schiavon et al., 2018). Os comportamentos de risco são aqueles que aumentam a variabilidade de resultados negativos, prejudiciais ou perigosos ao indivíduo ou para o outro. Portanto, tarefas que avaliam a tomada de decisão devem buscar identificar padrões de comportamento de propensão ao risco (Costa et al., 2018; Kluwe-Schiavon et al., 2018).

Por esta via, o estudo de metanálise Iyer et al. (2019) que contou com a participação e análise de 231 amostras e mais de 75000 consumidores, sugeriu que os estados de humor e o autocontrole do consumidor são mediadores da relação dos processos psicológicos afetivos/cognitivos com o comportamento de compra impulsivo. Este achado corrobora com as afirmações ligadas a importância da motivação na tomada de decisão (Iyer et al., 2020).

O presente estudo foi desenvolvido em um período inédito na história recente. O novo coronavírus, ao entrar em mutação, permitindo o contágio em seres humanos surgiu como uma doença de altas e rápidas taxas de contágio em todo o mundo, gerando uma sobrecarga extensa dos sistemas nacionais de saúde (Resende et al., 2020). Apesar de seu ineditismo, os efeitos têm sido largamente estudados, sendo que a pandemia da covid-19 tem sido comparada a eventos traumáticos como guerras e outros desastres (Panagiotidis et al., 2020).

### **Impactos da Pandemia/Isolamento social na saúde mental e consumo de bebidas alcóolicas**

Durante o período de pandemia do covid-19, diversos governos e instituições utilizaram estratégias de isolamento social como uma medida de combate à infecção

(World Health Organization, 2020). Alguns estudos apontam que este isolamento pode indicar possíveis efeitos negativos para a qualidade de vida, com consequências negativas à saúde mental (Bezerra et al., 2020; Charles et al., 2021; da Silva et al., 2020; Malizia, 2021; Serafim et al., 2020). Crises ocasionadas por períodos de pandemia podem demarcar um aumento de exposição às decisões que envolvam riscos para o indivíduo. Pandemias afetam a saúde física e comprometem a integridade psicossocial, resultando em um aumento do sofrimento psicológico e uso de estratégias desadaptativas entre as pessoas (Serafim et al., 2020).

O isolamento social tende a provocar reações psicológicas relacionadas a níveis de irritabilidade, estresse, medo excessivo e ansiedade, que impactam negativamente na habilidade de tomada de decisões coerentes, bem como estratégias adaptativas (da Silva et al., 2020). Os efeitos negativos da pandemia, bem como as mudanças obrigatórias na rotina pessoal e familiar causadas por ela, podem ser considerados com traumatização indireta e se associam a comportamentos e reações disfuncionais, a exemplo do abuso no consumo de álcool, automedicação equivocada, compulsões, depressão, ansiedade e impulsividade (da Silva et al., 2020). Com isso, o período pandêmico, atrelado ao isolamento social, pode estar relacionado à estratégias adaptativas e mal-adaptativas, que podem ser adotadas pela população em geral ou por uma população específica (Hui Chew et al., 2020).

Baseado nesta premissa, a literatura indica que o estresse é um importante fator de risco para o início e a manutenção do uso indevido de álcool (Bränström & Pachankis, 2018; Galea et al., 2020; Lyvers et al., 2020; Ornell et al., 2020; Sola et al., 2019). Esse consumo indevido e/ou abusivo é uma das principais causas de mortes, apresentando cerca de três milhões de óbitos associadas no mundo (World Health Organization, 2019).

Em alguns casos, o consumo a longo prazo pode desencadear em um distúrbio do uso de álcool em indivíduos (Liang et al., 2020).

Pouco se sabe sobre como a saúde e o bem-estar são afetados nas atuais medidas de isolamento realizadas por estados, instituições e pessoas. Os potenciais efeitos na saúde pública durante o isolamento a longo prazo, acerca do uso indevido de álcool, são desconhecidos. Contudo, um fator de risco para início e manutenção do uso indevido de álcool, assim como para o distúrbio alcoólico, é uma tomada de decisão comprometida na avaliação de sua efetividade, que está associada à impulsividade, sugerindo um comportamento de agir sem uma reflexão adequada (Clay & Parker, 2018).

O período de isolamento pode levar a um aumento no uso indevido de álcool, recaída e desenvolvimento do distúrbio em indivíduos em risco (Clay & Parker, 2020). Este uso desadaptativo de álcool pode acarretar uma maior demanda de indivíduos aos serviços de saúde que, neste momento, já estão sobrecarregados e sob pressão. Observa-se também que o uso abusivo do álcool pode estar associado à impulsividade cognitiva, que é decorrente de estratégias de tomada de decisões desadaptativas (Kovács et al., 2017). Para além dos fatores de saúde mental, o tédio causado pelo isolamento social pode ser um fator de influência para o consumo exacerbado de bebidas alcólicas (Malizia, 2021; Vanderbruggen et al., 2020), bem como, a percepção de risco obtida da pandemia pode influenciar em estratégias de enfrentamento que possam ocasionar dano ou proteger o indivíduo (Dryhurst et al., 2020; Schneider et al., 2021).

A pandemia do vírus da covid-19 tem ocasionado implicações em várias áreas como econômicas, saúde física e psicológica. A literatura indica possíveis direcionalidades e associações entre as variáveis de percepções de risco, estratégias de *coping* e medidas de saúde mental neste período em relação ao consumo de bebidas alcólicas (Bhuiya et al., 2021; Bränström & Pachankis, 2018; Dryhurst et al., 2020;

Galea et al., 2020; Gerhold, 2020; Krok & Zarzycka, n.d.; Lyvers et al., 2020; Medical Association, 2020; Ornell et al., 2020; Panagiotidis et al., 2020; Sola et al., 2019).

O presente trabalho buscou avaliar as variáveis supracitadas em uma perspectiva ambientalista, ou seja, evitando direcionalidades promovidas por métodos de regressão ou modelagem de equações estruturais, e utilizando a análise de redes psicológicas (Epskamp et al., 2018). Este é um método exploratório que usa a concepção quantitativa abdutiva, em que o construto em si não é visto como uma variável latente implícito a um conjunto de itens, mas sim um sistema de relações causais entre os próprios indicadores (Machado et al., 2021).

Neste tipo de método, que é relativamente novo na literatura, se hipotetiza que o seu sistema complexo composto por indicadores é obtido por uma relação causal entre eles, isto é, a análise de rede é uma estrutura de covariâncias observadas entre indicadores empíricos. Ao se observar uma rede de variáveis, pode-se constatar nodos, que são as variáveis psicológicas representadas pelo escore total das escalas ou itens específicos, e arestas, que são representações de conexões entre os nodos (Machado et al., 2021).

Observa-se que a conexão entre os nodos pode ser positiva ou negativa, bem como existe um grau de força, como por exemplo, nulo, fraco, moderado e forte. Observa-se que as arestas são representadas pelo coeficiente de correlação parcial, controlando os efeitos de outras variáveis. A análise de redes apresenta medidas de centralidade, nomeadas de força, proximidade e conectividade, que buscam: descrever quais variáveis são mais fortemente centrais em termos de influenciar as demais variáveis da rede (força), quais são as variáveis que apresentam uma menor distância ponderada em relação as demais variáveis (proximidade), e quais variáveis apresentam um caminho mais rápido entre os vértices (conectividade) (Machado et al., 2021).

A partir desta análise, será possível entender o sistema de relações entre as variáveis de percepções de risco, estratégias de *coping* e medidas de saúde mental, consumo de bebidas alcoólicas e aspectos sociodemográficos durante a pandemia, bem como quais são as variáveis com o maior grau de influência e rapidez de resposta de mudança na manifestação da rede. Este dado pode corroborar para o entendimento de possíveis consequências e subsidiar decisões futuras para o auxílio de profissionais e intervenções específicas para o público adulto e idoso no consumo de bebidas alcoólicas, principalmente em um período de pandemia e isolamento social.

## **Objetivo**

A presente tese teve por objetivo avaliar e estimar um modelo de relações entre os domínios cognitivos e emocionais da percepção de risco, estratégias de resolução de problemas e de autoproteção em *coping* na pandemia, consumo de bebidas alcólicas, uso abusivo de álcool, depressão, impulsividade, estresse e ansiedade de adultos brasileiros, durante o período de pandemia.

## **Objetivos Específicos**

Objetivo 1: Construir e analisar as fontes de evidências de validade e precisão das escalas desenvolvidas e utilizadas neste projeto (Escala de Percepção de Risco sobre COVID-19 e Isolamento Social, *Coping* na Pandemia e Consumo de Álcool).

Objetivo 2: Identificar as associações entre a percepção de risco, estratégias de enfrentamento, intensidade e frequência de sintomas psiquiátricos, diante do consumo de bebidas alcoólicas durante a pandemia.

## **Hipóteses**

Hipótese Nula 1: As escalas desenvolvidas não apresentarão indicadores de evidência de validade dentro dos parâmetros sugeridos pela literatura para validação.

Hipótese de pesquisa 1: As escalas desenvolvidas apresentarão indicadores de evidência de validade, dentro dos parâmetros sugeridos pela literatura para validação.

Hipótese Nula 2: Serão encontradas associações nulas, fracas ou não significativas entre as variáveis de percepção de risco, estratégia de enfrentamento, indicadores de saúde mental (escalas de sintomas psiquiátricos) e o consumo de bebidas alcólicas durante a pandemia.

Hipótese de pesquisa 2: Serão encontradas associações de magnitudes moderadas e fortes entre a percepção de risco, estratégias de enfrentamento, indicadores de saúde mental (escalas de sintomas psiquiátricos) e o consumo de bebidas alcoólicas durante a pandemia.

## **Métodos**

A tese apresentou um método quase-experimental com corte transversal, sendo dividido em duas partes (Harrison, Reilly & Creswell, 2020). A primeira, foi utilizada



para a construção e busca de evidências de validade de três escalas (denominadas de Percepção de Risco sobre covid-19 e Isolamento Social, *Coping* na Pandemia, Consumo de Álcool), e a segunda parte foi realizada uma análise de redes para estimar as relações entre variáveis e medidas.

### ***Amostra***

O presente projeto contou com uma amostra composta por 950 indivíduos brasileiros, de 18 a 90 anos ( $m = 34,55$ ;  $dp = 12,91$ ). O critério de inclusão foi o indivíduo apresentar a idade compatível com as faixas etárias propostas pelo projeto. Já os critérios de exclusão, são o de não assinatura do termo de consentimento e livre esclarecido; e referir a apresentação de quaisquer transtornos neuropsiquiátricos que não estejam em remissão ou medicado, que impeçam a execução das escalas. A técnica de amostragem utilizada foi a não-probabilística de “bola de neve”, sendo que todas as respostas foram coletadas de maneira online por intermédio de um Survey (Parker, Scott & Geddes, 2019).

Salienta-se que os participantes foram convidados por intermédio das redes sociais a realizar um *survey online* pela plataforma *Google Forms*. 951 indivíduos responderam a declaração de concordância de participação da pesquisa (TCLE), após acessar o *link*, sendo que 99,99% destes aceitaram a participação. O período de coleta ocorreu entre 17 de agosto de 2020 até 11 de maio de 2021.

### ***Instrumentos***

Escala sociodemográfica - Critério Brasil da Associação Brasileira de Empresas de Pesquisa - ABEP: Escala que envolve aspectos sociodemográficos dos participantes, sugerindo às classificações de estratos sociais baseados em indicadores de consumo, renda familiar e escolaridade (Associação Brasileira de Empresas de Pesquisa, 2020);

Escala de Percepção de Risco sobre covid-19 e Isolamento Social é um instrumento desenvolvido durante a tese (Artigo 1) que avalia a percepção dos indivíduos

sobre covid-19 e Isolamento Social. Trata-se de uma escala desenvolvida com 20 itens com resposta do estilo de medida *Likert* em que 0 equivale a discordo totalmente e 4 equivale a concordo totalmente. O objetivo inicial do instrumento foi de avaliar duas dimensões da percepção de risco: o domínio cognitivo e o domínio emocional.

Escala de *Coping* na Pandemia é uma escala desenvolvida durante a tese (Artigo 2) para medir o nível de habilidades de enfrentamento usadas em situações de pandemia. Inicialmente, foi desenvolvida com base na teoria prática de enfrentamento (Guo et al., 2020) e foi construída para extrair dois fatores (Resolução de Problemas e Autoproteção) e 21 itens, adotando a resposta da escala *Likert* em que 0 = discordo totalmente; 1 = discordo; 2 = nem concordo nem discordo; 3 = concordo; 4 = concordo plenamente. Os respondentes devem responder às assertivas com base em seu comportamento durante o período de pandemia.

Escala de Consumo de Alcool (ALCOS) é um instrumento desenvolvido, durante esta tese (Artigo 3), para avaliar os níveis de consumo de bebidas alcoólicas durante o período de pandemia do covid-19. Inicialmente, o ALCOS foi construído a partir de um modelo unidimensional, e 25 itens desenvolvidos a partir da contextualização de itens relacionados aos hábitos de consumo em um cenário de pandemia, isolamento social, quarentena e suas consequências emocionais e comportamentais. No entanto, também é possível generalizar seu uso em um cenário não pandêmico. O instrumento adotou a resposta da escala *Likert*, em que 0 = discordo totalmente; 1 = discordo; 2 = nem concordo nem discordo; 3 = concordo; 4 = concordo plenamente. Os respondentes devem responder as assertivas com base no seu Consumo de Bebidas Alcoólicas durante o período de pandemia.

Teste de Identificação de Transtornos devido ao Alcool (AUDIT): teste composto por dez questões de autorrelato, formulado em escala *Likert*, que foi desenvolvido para

avaliar o consumo de álcool nocivo, ou de risco, recomendado pela Organização Mundial de Saúde (de Micheli et al., 2017);

Escala Adaptada de Depressão, Ansiedade e Stress – 21 (DASS 21): busca avaliar a partir de uma escala de autorrelato sinais e sintomas de depressão, estresse e de ansiedade. O resultado do instrumento é apresentado em níveis de intensidade (Martins et al., 2019);

Escala Barratt de Impulsividade Abreviada (ABIS): é uma escala de autopreenchimento composta por treze itens relacionados às manifestações da impulsividade, tendo como base o modelo teórico proposto por Ernst Barratt (de Paula et al., 2020).

### ***Procedimentos***

Para a condução deste estudo, os links sobre a participação na pesquisa foram disparados em redes sociais diversas, como Facebook, Instagram, Whatsapp e Twitter. Para que o indivíduo pudesse participar da pesquisa, fez-se necessária a autorização eletrônica de consentimento, que era apresentado, após acessar o link, ler o Termo de Consentimento Livre e Esclarecido, e marcar a opção de que está ciente e aceita participar do estudo.

Após a autorização, os indivíduos da amostra responderam às escalas supracitadas no projeto, de maneira eletrônica e de duração média de 10 minutos. Foi explicado, nos links de divulgação da pesquisa e no Termo de Consentimento e Livre Esclarecido, os direitos e deveres dos participantes, seguindo todas as orientações éticas previstas na Resolução CNS No 466, de 12 de dezembro de 2012.

Salienta-se que estas escalas são abertas ao público e que a tese está associada ao projeto guarda-chuva sobre “Investigação das características preditivas nos processos do comportamento de consumo/compra” (CAAE:33563720.1.0000.5686) com o parecer

favorável do Comitê de Ética em Pesquisa do Instituto de Psicologia da Universidade Federal da Bahia (CEP-IPS UFBA).

### ***Procedimentos Estatísticos***

Para a primeira parte do projeto, o de desenvolvimento e validação das escalas de: a) Percepção de Risco sobre covid-19 e Isolamento Social; b) *Coping* na Pandemia; e c) Consumo de Álcool (durante a pandemia), realizou-se a análise semântica por Índice Fleiss-Kappa (Falotico & Quatto, 2015; Giardiello et al., 2015) e Coeficiente de Validade de Conteúdo (Yusoff, 2019), para a concordância entre os juízes, esperando-se encontrar valores sugeridos na literatura em ambos os procedimentos (CVC >0,83/ K > 0,60) (McHugh, 2012; Yusoff, 2019).

Para investigar as propriedades psicométricas dos instrumentos desenvolvidos para a condução do estudo, foi utilizado o índice de fidedignidade composta para o cálculo da fidedignidade/consistência interna dos itens dos instrumentos, visto que esta medida apresenta um dado de maior precisão, pois é calculado a partir das cargas fatoriais dos itens obtidos pela Análise Fatorial (Valentini & Damásio, 2016).

Mais adiante, os modelos dos instrumentos desenvolvidos foram analisados por intermédio de Análises Fatoriais Exploratórias, apresentando um dado relacionado a de evidências baseadas na estrutura interna (Damásio, 2012).

Para a segunda parte do estudo, foi realizada uma análise de redes com os escores obtidos pelos fatores das escalas de percepção de risco sobre covid-19, estratégias de enfrentamento (*coping*) durante a pandemia e de consumo de álcool em período de isolamento social, uso abusivo de álcool (AUDIT), escala abreviada de impulsividade (ABIS), escala de depressão, estresse e ansiedade (DASS21) e dados sociodemográficos e desenvolvimentais.

Apesar do foco principal desta segunda parte ser o de analisar os nodos centrais de influência da rede estabelecida (Machado et al., 2021), pode-se observar que estas análises podem também servir como evidências de validade baseadas em variáveis externas, sendo possibilitadas por procedimentos de convergência, divergência e critério (AERA et al., 2014). Isto é, possibilitado pelas correlações parciais entre os nodos, ou seja, as escalas desenvolvidas e as escalas de ansiedade, impulsividade, depressão, consumo abusivo de álcool, bem como aspectos sociodemográficos e desenvolvimentais (idade e sexo).

Evidencia-se que normas de classificação em níveis regionais e nacional foram geradas, para todas as escalas desenvolvidas nesta tese. Estatísticas descritivas foram utilizadas para caracterizar os aspectos sociodemográficos da amostra, bem como análises inferenciais (Field et al., 2012).

## **Resultados**

A tese apresenta quatro artigos em que são relacionados às escalas de percepção de risco (Artigo 1), estratégias de enfrentamento (Artigo 2), consumo de álcool (Artigo 3) e um sobre as relações entre medidas destes instrumentos com variáveis sociodemográficas e de saúde mental (Artigo 4).

É válido ressaltar que todos os artigos desta tese foram produzidos em inglês para uma ampliação do alcance da divulgação dos resultados à literatura internacional, por intermédio de revistas de alto impacto.

Salienta-se que a construção destas escalas ocorreu por um ineditismo global da pandemia do novo coronavírus, bem como, a falta de instrumentos no contexto brasileiro que avaliasse os construtos supracitados. Mesmo sabendo que no momento da defesa desta tese, estaremos em uma fase distinta da época da coleta, pôde-se observar que o estudo promoveu contribuições em termos de produtos (escalas) a serem usadas, como

base, no futuro em alguma possível pandemia de escala global, bem como dados sobre relações entre as variáveis de percepções de risco, estratégias de *coping* e medidas de saúde mental neste período em relação ao consumo de bebidas alcoólicas, e quais variáveis apresentaram um maior grau de influência que puderam impactar (positivamente ou não) toda esta rede avaliada.

## **Artigo 1**

### **Psychometric Properties of Risk Perception Scale about COVID-19 and Social Isolation**

#### **Abstract**

Risk perception is a concept related to the decision-making process and allows people to perceive the hazards around the context and choose the best prevention methods to avoid them. The COVID-19 pandemic is a remarkable era in which people must adopt protective methods, such as social isolation, to reduce the possibility of being contaminated by the virus. This study provides the development, psychometric properties, and norms of Risk Perception about COVID-19 and Social Isolation. The analysis suggested good expert agreement about the adjustment of content and items scale and the factor analysis suggested two factors named emotional and cognitive domains. The composite reliability suggested internal consistency of the scale and its factors. All the results of this study suggest that this scale presents construct validity evidence, thus it is a reliable instrument. This new instrument may be used to evaluate risk perception about the COVID-19 and Social Isolation.

**Keywords:** Risk Perception, Exploratory Factor Analysis, Reliability

## **Introduction**

Perception is defined as a process that occurs when a perceptual object or idea is developed in mind and reflects the properties of the external world (Sternberg, 2017). Daily, people use the perception processes to interact with the world and execute activities. The perception allows a better comprehension of the characteristics of contexts lived and its possible risks. Based on the perception of any risk, individuals can produce efficient methods to prevent and care about themselves and their community (Qiao et al., 2020).

The perception of risk or the perceived risk is a cognitive psychology concept used in different areas, as consumer behavior (Zhan et al., 2020); E-commerce (Bertea, 2010), Tourism (Holland, 2020; Zhan et al., 2020), intention or hesitation in use of vaccines (Karlsson et al., 2021; Gagneux-Brunon et al., 2021; Thaker, 2021), Sports (Travert, Maïano & Griffet, 2017) and prevention attitudes against different diseases such as COVID-19 and Flu (Detoc et al., 2020; Fisher et al., 2020; Karlsson et al., 2021; Dryhurst et al., 2020). Beyond that, this construct is seen as a fundamental factor on decision-making (Zhan et al., 2020).

Conceptually, perception of risk may be defined as the subjective evaluation about the probability of an individual experiencing an injury, illness or/and death (Qiao et al., 2020). It also involves an interpretation of the world and the hazards that someone may be exposed to (Cori, Bianchim Cadum & Anthonj, 2020). Paek & Hove (2017) suggest that this concept is divided into two factors: the first one is a cognitive factor, which is related to the severity and susceptibility perceived about the potential danger; and the second factor is named emotional domain, which is associated with the feelings related to the risk perceived. On the same hand, there is a holistic approach of the model



integrating cognitive and emotional domain tradition with social cultural paradigm and relevant individual differences (van der Linden, 2015).

Qiao and colleagues (2021) suggest that residence and socioeconomic status (SES) have influenced risk perception process and its responses about it. In this paper, Quiao et al (2021) results suggested that people in socioeconomic vulnerability showed lower levels of attention on risk perception factors than people from wealthier socioeconomic status.

The COVID-19 is an infectious and dangerous disease with negative effects on the wellbeing and health of the society, causing an epidemic of acute respiratory syndrome (Qiao et al., 2020; Dryhurst et al., 2020). Intending to reduce the fatality and the potential of contamination of the COVID-19 virus, some recommendations such as the use of the face masks, hand hygienization, use of the alcohol gel and social restrictions or isolation were implemented in countries (Bedford et al., 2020). In the same direction, the risk perception factors can provide a high frequency and intensity of protective behaviors and willingness to be vaccinated (Qiao et al., 2020). So, the mapping of the risk perception levels of people about a pandemic and implications of the social isolation can help to understand the collective perception of people and promote effective interventions intending to reduce the risk of the population.

It can be noted that a theoretical construct like risk perception needs a well described concept to provide efficient possibilities to evaluate it. In literature, there are some studies and instruments which intend to promote this assessment. Shen et al (2021), for instance, developed a risk perception scale of public health emergencies in China following the risk perception theory. The scale was named PHERPS and presented three factors (Severe Risk Perception, Unknown Risk Perception and Dread Risk Perception) in its model ( $\chi^2/df = 1.384$ ; RMSEA = 0.028; CFI = 0.995; TLI = 0.995, Total Cronbach's

alpha = 0.793); Shahin and Hussien (2020) used the Standard questionnaire on risk perception of an infectious disease outbreak, an instrument with seven domains (Participant's knowledge, Perception of the seriousness of COVID-19, Perception of Susceptibility to COVID-19, Perception of Efficacy and Self-efficacy in Dealing with COVID-19, Intention to perform preventive measures against COVID-19, Motivating/Hindering factors affecting the intention to perform preventive measures, Information needs assessment) to investigate the risk perception regarding COVID-19 outbreak in general population in Middle East Survey; Lifshitz, Nimrod and Bachener (2016) developed an eight-item Risk Perception Scale. Its results suggested a bifactor model (later-life risks and terror risks) in which presented a Total Cronbach's alpha = 0.92 and an explained variance of 75.17%; Zhan and colleagues (2020) developed a scale related to tourism and risk perception in which presented four factors (Health, Financial, Social and Performance). The scale presented good reliability Cronbach's alpha = 0.95.

Even with all the studies and scales developed about the risk perception theme, the literature presents some limitations of this kind of evaluation in Brazil, mainly in relation to risk perception related to COVID-19 and social isolation. For example, Brazilians had COVID-19 high risk perception when having health professionals' proximity or living with individuals with high risk to COVID-19 (Giordani et al., 2021). However, the SES of some groups of Brazil's population can influence the attention driven in the risk perception of the virus and their responses to avoid, or not, contamination (Qiao and Colleagues, 2021). The development, validity and generation of norms of a risk perception scale in Brazil can contribute to the mapping of this theoretical construct in Brazil's population and allowing future associations of other variables, promoting new models about the theme, primarily in a pandemic context.

Based on this argument, the aim of the present study was to develop, analyze evidence of validity and promote norms of a risk perception scale. The Risk Perception Scale about COVID-19 and Social Isolation was developed initially with 20 items by the authors of this paper guided by risk perception theory, using the assumptions of cognitive and emotional domains. The scale presented in its item's situations about the understanding of the possible risks perceived that the COVID-19 and social isolation can provide to the personal and community lives and how the tester acts based on its perceptions. The hypotheses of this study are: 1) The expert analysis will present a good fit of interrater and agreement analysis; 2) The Exploratory Factor Analysis will retain two factors (Emotional and Cognitive Domains); 3) The internal consistency of the data will suggest an adequate reliability about the scale and its factors.

## **Methods**

### *Type of Study*

This is an exploratory and psychometric study conducted with respondents in all five regions of Brazil and it was divided in three parts intending to provide evidence of validity based on content: internal structure and reliability of the scale and norms about the instrument.

### *Participants*

The first step of this study was composed of seven participants to do the expert analysis related to the evidence of validity based on the content of the scale. All the

experts had at least a master's degree and are specialists in cognitive psychology or neuroscience. The inclusion criteria to participate in this study as an expert were: presenting an experience on the field of psychological assessment with more than five years; presenting at least a specialization (*lato sensu*) on the field of cognitive psychology or neuroscience in your schooling; and being a professor at a university. All the expert's samples who were accepted to participate in this study were from Brazil.

The second part of the study consisted of procedures associated to check evidence validity based on the internal structure. This step was composed by 758 participants of all five regions of Brazil whose ages varied from 18 to 87 (Mean = 34,09; Std = 13,04). 72,82% of this sample self-referring to the female sex and 61.87% of the participants presented the university education completed as schooling level (Table 1). The inclusion criteria to participate in this study step were presenting an age more or equal to 18 years old; having an internet connection which allows the execution of the Google Forms platform to respond to the scale online; reading and accepting the free and informed consent participation of the study. The exclusion criteria implemented of this study were self-referred any difficulties or psychiatric or neurological injuries that could compromise the understanding and the responses of the Google Forms protocol, the denial of the Google Forms application and present an age below to 18 years old.

Table 1. Descriptive Statistics of the Sample

	N	%
<b>Sex</b>		
Male	208	27,4
Female	550	72,6
<b>Region</b>		

North	26	3,4
Northeast	504	66,5
Midwest	6	0,8
Southeast	176	23,2
South	46	6,1
<b>Schooling</b>		
Non-Higher Education Degree	288	38,0
Higher Education Degree	470	62,0
<b>Age</b>		
Md (IQ)*	31	(23 – 41)

\*Md = Median; IQ = Interquartile Interval

### *Procedures*

For the first part of this study, we used the Kappa Index and the Content Validity Index to analyze the agreement of the experts about the face validity and construct which the scale intends to evaluate. Seven experts were invited by an e-mail message to analyze and respond to a second scale which questioned about the commands, adequacy and how suitable is the content of the scale. After the acceptance of the invitation, the expert received the risk perception scale about COVID-19 and a second assessment scale about it. This first step of the study lasted 30 days to be completed.

The second part of the study was executed after the expert analysis and was composed to five steps: the first one was the verification of the factorization of data collected, executed by Kaiser-Meyer-Olkin and Bartlett test (Damasio, 2012); the second one was the optimal implementation of parallel analysis to determine the number of the

factors of this scale (Timmerman & Lorenzo-Seva, 2011); the third procedure was the exploratory factor analysis to understand what model fits better to the scale propose (Damasio, 2012); the fourth step was the reliability to evaluate the homogeneity of the scale items by the composite reliability (Valentini & Damasio, 2016); and the last one was to provide norms of this scale (Pasquali, 2014).

## Instruments

The instrument of this study is composed by The Risk Perception Scale about COVID-19 and Social Isolation that intends to evaluate the perception of the individuals about COVID-19 and Social Isolation. It was a 20-item developed scale with the Likert style response in which 0 is equivalent to totally disagree and 4 is equal to totally agree. The initial purpose of the instrument was to evaluate two dimensions of the risk perception: the cognitive domain and the emotional domain. The model adjustments and reliability indexes of the scale will be analyzed in this present study.

## Data analysis Procedures and Criteria

The Analyses and the plots of this paper were computed using R programming, version 4.0.3 (R Core Team, 2020) and Factor Software, version 11.04.02 of Windows (Ferrando & Lorenzo-Seva, 2017). The criteria used to parsimony results of the Fleiss Kappa Index of inter-rater reliability was the  $k > 0.60$  to the total scale, which suggests a substantial agreement among the experts (McHugh, 2012). Further, the IVC criteria used in this study was based on the study of Yusoff (2019), whose  $IVC > 0.83$  suggests an acceptable agreement of experts about individual items

and the total of the scale. The results of these measures are associated with the evidence of validity based on content.

Furthermore, to provide the results related to evidence of validity based on internal structure and reliability, some criteria were implemented. The Kaiser-Meyer-Olkin criteria based on values  $> 0.50$  as a cut-off, as suggested by Field (2013). An optimal implementation of Parallel Analysis (PA) was computed to suggest the number of factors that the scale should retain (Timmerman & Lorenzo-Seva, 2011). The EFA analysis and adjusted model criteria used to this study were: polychoric matrices and Robust Diagonally Weighted Least Squares (RDWLS) as an extraction method of the EFA (Asparouhov & Muthen, 2010); factor loadings  $\geq 0.30$ ; Robust promin rotation method (Lorenzo-Seva & Ferrando, 2019c); Root Mean Square Error of Approximation (RMSEA)  $< 0.08$ ; Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI)  $> 0.90$  (Wang & Wang, 2019); item discrimination and thresholds parameters by Reckase parametrization (Reckase, 1985). To analyze the reliability, a composite reliability was computed, following the criteria of values above 0.70 to suggest an adequate reliability (Valentini & Damasio, 2016).

Deciding the best way to present the norms of this scale, some paths were executed before. The first one was a Shapiro-Wilk normality test which suggested nonparametric analysis of Kruskal Wallis and a Mann-Whitney test to independent sample to both domains evaluated on the scale. In case of a significant result in those methods it was used Bonferroni correction in pairwise comparative methods. Thus, after those analyses of possible group differences, general and specific normative groups were computed, i.e., descriptive analysis, like mean, standard deviation and percentile values.

## Ethical Considerations

All the procedures described in this study were executed after the authorization and approval of the Federal University of Bahia Ethical Research Committee in Psychology Department (CAEE: 33563720.1.0000.5686), following the criteria established by the Helsinki Declaration.

## Results

The evidence of validity based on content executed with experts' analyses were computed using two different measures. They were chosen to confirm the agreement of the experts who participated in this process with a double-checked resource. The instrument Risk Perception Scale about COVID-19 and Social Isolation was developed with 20 item (Table 1). The experts evaluated the capacity of understanding, content fit of the scale on the construct desired, item execution and adequacy of each item to the public of destination, i.e., adult population. According to the criteria adopted to this process, it can be noted that both agreement indexes (CVI >0.83; K > 0.60) suggest a good adequacy of the construct's content and item understating of the scale (Table 2).

Table 2. Initial 20-items of the Risk Perception Scale of COVID-19 and Social Isolation

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01 - The COVID-19 pandemic is a threat to my life
02 - The COVID-19 is not more lethal in comparison to another respiratory diseases
03 - It is probable that my family and/or friends get infected by COVID-19
04 - It is unlikely that I get infected by COVID-19
05 - If I get infected by COVID-19, my health will be severely injured
06 - The COVID-19 will bring damages to me
07 - The increasing of cases of COVID-19 infection is not a reason for me to be concerned of.

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08 - I can protect myself from COVID-19 infection		
09 - The information about the real conditions of COVID-19 pandemic is not clear enough		
10 - If I get infected by COVID-19, I will not be afraid to infect others		
11 - I am following the COVID-19's social isolation recommendations		
12 - The COVID-19's social isolation experience is not being exhausting		
13 - I cannot remain in COVID-19's social isolation anymore		
14 - The social isolation did not cause impacts on my life		
15 - The social isolation is important to the control of COVID-19		
16 - The social isolation to the control of COVID-19 should not be over		
17 - The COVID-19's social isolation implies more damages than benefits		
18 - The COVID-19's social isolation did not bring troubles to my family		
19 - I am concerned with my finances because of the COVID-19's social isolation		
20 - I have found difficulties to relax since the COVID-19's social isolation began		
Agreement Index based on instrument content	CVI	Fleiss Kappa
	0.95	0.64 (0.57 – 0.71)

Furthermore, to check the internal structure analysis, the Kaiser-Meyer-Olkin and the Bartlett test supported the possibility to execute an exploratory factor analysis - EFA (KMO = 0.77;  $X^2 = 3400.1$ ,  $df = 78$ ,  $p < 0,01$ ). To estimate the quantity of factors of this data, the optimal implementation of parallel analysis was done to retain the factors. The results suggested a model with two factors (Figure 3). Based on it, the EFA was run with the "Robust Diagonally Weighted Least Squares (RDWLS)" as an estimation method, robust promin rotation and the base analysis of this procedure was on polychoric correlation matrices, because the scale uses a Likert scale style to responses. The Item

Response Parameters of item-difficult (thresholds) and discrimination were also computed in this analysis.

Comparing the 20-item scale which passed on the content validity, the EFA suggested the deletion of 7 items (3, 4, 6, 7, 8, 9, 13), because its factorial charges were below 0.30. After these procedures, the analysis was executed once more following the same steps. The results of the analysis with the remnants items suggested that the total proportion of explained variance of this scale was 0,4881, i.e., the two factors selected explain a huge part of the data's variability (Table 3).

Table 3. Factor Analysis of Perception Risk Scale about COVID-19

	<b>Threshold</b>						
	<i>C.D</i>	<i>E.D</i>	<i>a</i>	<i>d1</i>	<i>d2</i>	<i>d3</i>	<i>d4</i>
<b>Item 01</b>	0.584		0.737	-2.162	-1.637	-0.868	0.240
<b>Item 02</b>	-0.467		-0.527	-0.276	0.509	1.050	1.983
<b>Item 05</b>	0.505		0.597	-1.713	-0.648	0.512	1.212
<b>Item 10</b>	-0.476		-0.561	1.435	2.054	2.367	2.720
<b>Item 11</b>	0.578		0.705	-2.585	-1.829	-1.199	-0.163
<b>Item 12</b>		0.709	1.015	-0.453	0.389	0.914	1.704
<b>Item 14</b>		0.784	1.253	-0.166	0.774	1.480	2.498
<b>Item 15</b>	0.948		2.859	-6.699	-5.394	-4.399	-2.882
<b>Item 16</b>	0.708		0.994	-2.134	-1.450	-0.875	0.225
<b>Item 17</b>	-0.703		-0.985	0.025	0.958	1.724	2.359

<b>Item 18</b>	0.666	0.889	-0.774	0.210	0.816	1.743
<b>Item 19</b>	-0.354	-0.378	-1.354	-0.822	-0.327	0.327
<b>Item 20</b>	-0.637	-0.863	-1.500	-0.790	-0.150	0.712
<b>E.V (%)</b>	0.289	0.199				
<b>C.R</b>	0.839	0.773				

Note. F1 = Factor 1; F2 = Factor 2; C.D = Cognitive Domain; E.D = Emotional Domain; a = item discrimination to its factor (IRT); Threshold (d1, d2, d3, d4) = Categories interceptions about item difficult (IRT); E.V (%) = Explained Variance of Model; C.R = Composite Reliability.

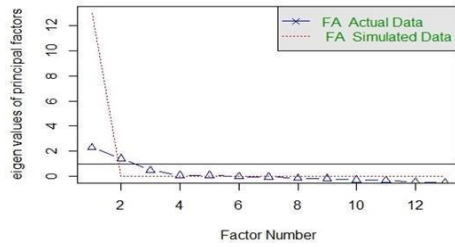
The fit indices of the EFA suggested an acceptability of the model of two factors to this scale ( $X^2 = 3917.843$ ;  $df = 78$ ;  $X^2/df = 50.228$ ;  $RMSEA = 0.07$ ;  $CI = 0.050 - 0.080$ ;  $CFI = 0.937$ ;  $TLI = 0.907$ ), according to the criteria adopted to this study. The reliability of the scale suggested an acceptable level of homogeneity ( $C.R > 0.70$ ) when analyzed the total of Composite Reliability ( $C.R = 0.896$ ) and to each factor (Table 3) (Valentini & Damasio, 2016). Regarding the item's Thresholds, no unexpected response pattern was found. Thus, it means that to surpass a smaller category to a larger category of all the item's scale, it will be requested a higher level of the latent trait of the respondent.

a) Parallel Analysis Results

Variable	Real-data % of variance	Mean of random % of variance	95 percentile of random % of variance
1	32.2771*	15.5955	18.7000
2	22.0837*	13.9735	16.2700
3	10.2839	12.5831	14.3937
4	6.7603	11.2586	12.5172
5	6.0052	10.0726	11.1841
6	4.9275	8.8665	9.9922
7	4.2946	7.6742	8.8934
8	4.2218	6.5004	7.7302
9	3.3035	5.2496	6.6891
10	2.5795	4.0406	5.4594
11	2.3248	2.7367	4.3354
12	0.8581	1.4487	2.8320

\* Advised number of dimensions: 2

b) Plot of Parallel Analysis of RPC scale



c) Plot of the Exploratory Factor Analysis of RPC scale

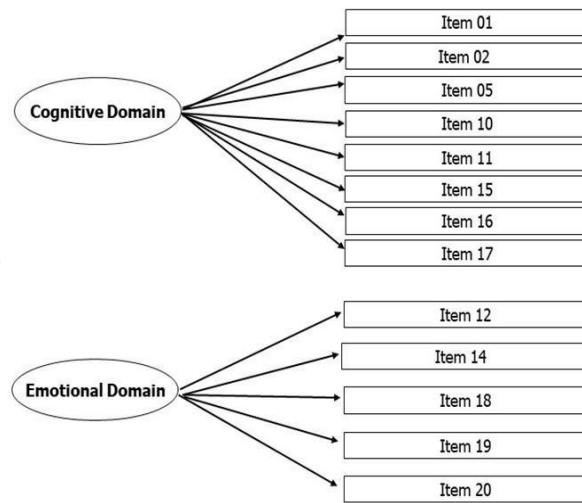


Figure 1. Results of Parallel Analysis and Exploratory Factorial Analysis

Additionally, normalization results suggested that there are no differences between region ( $p > 0.05$ ), Sex ( $p > 0.05$ ) and Cognitive Domain in schooling ( $p < 0.05$ ). On the other hand, a significant result was found in Emotional Domain among Schooling levels ( $p = 0.001$ ), related specifically to differences in High School and University Education samples ( $p = 0.001$ ) (Figure 3). Based on these results, it can be observed that were computed General and Schooling specific norms to both domains scores (Table 4). It can be inferred that high scores in cognitive domain means a high likelihood to perceive the COVID-19, as a real threat to health and the social isolation as a protective strategy to coronavirus. On the same hand, high scores in emotional domain means emotional comfort about the adoption of the social isolation, as a preventive strategy against COVID-19.

Table 4. Classifications to Risk Perception Scale about COVID-19 and Social Isolation

General Norm	Schooling Norm
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	C.D				E.D	
	C.D	E.D	NHE	H.E	NHE	H.E
N	758	758	288	470	288	470
Mean	24,91	6,91	25,16	24,75	6,04	7,45
Std. Deviation	4,90	4,56	4,78	4,98	4,07	4,76
05 <sup>th</sup> Percentile	16,00	0,00	18,00	16,00	0,35	0,00
25 <sup>th</sup> Percentile	22,00	3,00	22,75	22,00	3,00	4,00
50 <sup>th</sup> Percentile	26,00	6,00	26,00	26,00	5,00	7,00
75 <sup>th</sup> Percentile	28,00	10,00	28,25	28,00	9,00	11,00
95 <sup>th</sup> Percentile	31,00	15,00	31,00	31,00	13,00	16,00

*Note.* C.D = Cognitive Domain; E.D = Emotional Domain; NHE = Non-Higher Education degree; H.E= Higher Education degree;

## Discussion

COVID-19 and social isolation risk perception are interpretations of the danger made by individuals that are exposed or those who consider being exposed to the corona virus and the social isolation strategy. This analysis of hazard probabilities is divided in two main domains, named of: Cognitive and Emotional domains. Based on these interpretations, people can adapt and choose the best behaviors and mechanisms to avoid the risk of danger and live in a safely way (Qiao et al., 2020; Cori, Bianchim Cadum & Anthonj, 2020; Paek & Hove, 2017). Based on these concepts and the results of this paper, it can be assumed that the Risk Perception Scale about COVID-19 (RPSC) presented evidence which suggested being fitted with the adaptation of the main concept of risk perception about COVID-19 and social isolation context. This assumption was based on both results of the expert analysis agreement computed by CVI and Kappa Indexes,

suggesting that the scale measures what proposes and the adequacy of the construct and understanding of all the initial 20 items developed on the scale (McHugh, 2012; Yusoof, 2019). The expert analysis related to the evidence validity based on content is an initial assessment about if the content and the construct which the scale proposes to measure is correctly defined (AERA et al, 2014).

The two factors perspective of the risk perception was found on the scale, where Items related to the severity or susceptibility of how dangerous the condition can be to the individual lives (cognitive domain) and Items associated to feelings about the conditions of risk (emotional domain), fitting the factorial structure of the scale with the international literature suggestion (Qiao et al., 2020; Qiao et al., 2021; Paek & Hove, 2017). The original 20-item scale developed by the authors of this paper was reduced to 13-item scale. Furthermore, after the evidence validity based on content and internal structure collected, the norms proposed to the population can help professionals to measure the levels of their patients and make the best decisions for them.

This study has some limitations. The first of them is the lack of sample in non-higher education degree. Perhaps, the small number of participants in this condition was obtained because of the data collection that has been occurred through online Google Forms, limiting the access of people with low years of study. Another limitation noted was the lack of other sources of validity evidence, such as: relation to other variables (convergent, discriminant and criteria validity) as a consequence of testing and response process (AERA et al, 2014). Further studies should provide these other sources of evidence validity to the collection of more trustiness that the scale measures what it proposes. On the same hand, this scale opens one more possibility to analyze relations of its factors with other variables, as mental health disorders, which can promote the

understanding of possible associations and the generation of new cognitive models (Pacico, Hutz, Schneider & Bandeira, 2015; AERA et al., 2014).

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## **Artigo 2**

### **Psychometric Properties of the Pandemic Coping Scale (PCS)**

#### **Abstract**

The COVID-19 pandemic and its preventive methods related to social isolation and quarantine have pointed to a huge change in global behavior. The perception of the hazards of the virus and contamination, as well as obligatory routine changes have impacted negatively on the well-being and mental health of people during this period. To handle this context, humans adopted strategies to cope and deal with the hazards and daily situations. However, there is a lack of studies and instruments which measure practical coping in COVID-19 pandemic. Thus, this paper presents the development and evidence validity of the Pandemic Coping Scale (PCS), which is a two-factor instrument (Problem-Solving and Self-Protection Attitudes) that presented adequate psychometric measures (CVC > 80; RMSEA = 0.08, CFI = 0.94, TLI = 0.90; CR > 80) and classification scores. It is hoped that this scale may be useful and help professionals in the world to evaluate practical coping strategies during pandemic.

**Keywords:** Coping, Scale, Mental Health, Pandemic, COVID-19

## **Introduction**

Social distance and quarantine, resulting from the coronavirus (COVID-19) pandemic, are a threat to the mental health and well-being of individuals in general (Fernández Cruz et al., 2020; Brooks et al., 2020). Goyal et al (2020) indicate that the COVID-19 context favors the development of mental disorders and intensifies disorders already diagnosed. Factors such as the gap of treatment and prevention strategies, high rate of contagious, deaths, and the depletion of economic performance in all the world have contributed to the increasing stress levels and likelihood of dysfunctional psychological symptoms (Kar, Kar & Kar, 2021).

Throughout the globe, some preventive methods to avoid the spreading of the virus have been implemented by countries, such as: handwashing, alcohol in gel, masks use, and social distance/isolation, i.e., quarantines (WHO, 2020). Wang et al (2020) stated that the achievement of the correct information about COVID-19 and effective handwashing negatively impact anxiety and depression symptoms. On the other hand, previous evidence suggests that quarantined subjects had higher levels of psychological distress showing more anger, anxiety, depression, hopelessness, and fear of contagion (Brooks et al., 2020; Rogers et al., 2020; Rubin & Wessely, 2020; Fernández Cruz et al., 2020). The COVID-19 pandemic has impacted people's lives in many aspects, whether individual (all kinds of fear - of the unknown, illness, death, isolation, uncertainty about the future, physical and financial insecurity) or at a social level (economic recession, educational limitations, unemployment) and ended up becoming recurrent stressors in the daily lives of the population (Calina et al., 2021; Grossman et al., 2020). Furthermore, it has changed people's lifestyles, those who have shown an increase in risk behaviors and decision-making (Malta et al., 2020).

Coping strategies are an attempt to manage suffering and lead the individual to adapt to a stressful event (Rettie & Daniels, 2021). In a pandemic context, two main types of coping strategies are implemented by people. The first is the general coping style which can be defined as cognitive and behavioral management patterns to an internal or external demand that is recognized. The second strategy is practical coping which represents the likelihood of executing a behavior during pandemic periods (Guo, Feng, Wang & Ijzendoorn, 2020). Based on these concepts, Guo et al (2020) identified that cognitive and prosocial behaviors were associated to less mental health problems and the lockdown impacts in mental health must not be underestimated in which the adoption of treatments in cognitive coping behaviors can help on the depletion of the maleficent implications of the pandemics.

The subjects' psychosocial and physical health are influenced by sociodemographic factors, stressful events, and personal resources, which include, for example, personality, perceived control, etc (Fernández Cruz et al., 2020; Yıldırım, Geçer, & Akgül, 2021). Individuals who are not able to efficiently regulate their emotions are more prone to stress and more vulnerable to life's situational changes (Buecker et al. 2020; Gubler et al., 2020). Therefore, it is necessary to implement coping strategies to handle the adverse context, to prevent increasing disorders, reduce suffering and care for health (Viana & de Lira, 2020).

Even with all the studies about the effects of the coping strategies and the impacts of pandemic and lockdown strategies in mental health, at the present moment, it is found a gap of instruments which assess specifically the level of coping styles during pandemics. In literature, some surveys or free texts were used to collect data about this theme (Kar, Kar & Kar, 2020; Hensen et al., 2021). However, there are validated instruments in coping used in pandemic context, such as: Simplified Coping Style

Questionnaire (SCSQ) which provides two measures named by emotion-focused coping and problem-focused coping. Its internal consistency presented adequate (Cronbach's  $\alpha > 0.80$ ) in both domains and in full scale (Guo et al, 2020); Practical Coping Behavior Scale which presents 12 items concerning specific coping behaviors (Guo et al, 2020); Lockdown Questionnaire C/C COVID-19 that is 9 factors scale with 41 items that assess the relation of isolation to different cognitive strategies of emotion regulation. Its adjustment model indexes were adequate in which RMSEA = 0.04 and TLI = 0.96 (Fernandéz Cruz et al., 2020).

Observing the demand of new instruments to evaluate the practical coping style during pandemic and social isolation, because of the unprecedented of the coronavirus and its implications, the Pandemic Coping Scale (PCS) was developed. This scale was built to be a two-factor scale intending to evaluate the levels of the adoption of problem-solving and self-protection attitudes and strategies do deal with COVID-19 pandemic. Based on this, the aim of this paper is to present the psychometric properties of the PCS and its norms to the Brazilian population, as well.

## **Methods**

### *Type of Study*

This is an exploratory and psychometric study conducted in a sample composed of people from the North, Midwest, South, Southeast and Northeast, i.e., all the geopolitical regions of Brazil. The data were collected following three steps: firstly, expert analysis for obtaining a measure of clarity/relevance from the scale. This result is related to the content validity analysis; secondly, the scale's model and its reliability were computed intending to provide evidence of validity based on the internal structure; and

further, normative data for the Brazilian sample were computed, based on percentile, mean and standard deviation.

### *Participants*

The first step of this study counted with six expert judges to evaluate the content of the scale developed. All experts presented a clinical and academic experience of at least 5 years in the neuropsychology, cognitive psychology field, construction and validation of instruments. Moreover, the second and the third step of the study were composed of 758 participants from all the five regions of Brazil, self-referring their gender as male or female, with ages in 18 to 87 years old ( $M = 34.09$ ;  $SD = 13.03$ )

Tabela 1. Descriptive Analysis of the Sample

	N	%
<b>Gender</b>		
Male	208	72,6
Female	550	27,4
<b>Region</b>		
North	26	3,4
Northeast	504	66,5
Midwest	6	0,8
Southeast	176	23,2
South	46	6,1
<b>Schooling</b>		
Non-Higher Education	288	38,0
Higher Education	470	62,0

### *Procedures*

The evidence of validity based on the content of the scale was the first procedure to be computed, intending to have suggestions about the clarity and relevance of the coping items developed to the scale. Therefore, the statistical procedure to obtain a quantitative value about the expert judgments was the Content Validity Coefficient (CVC). Similarly, it was provided with a space for qualitative suggestions, in the case of the experts having insights that the relevancy or clarity of the items developed could be improved. Each expert had 30 days to respond to the evaluation of the scale and return it to the authors. Based on these procedures, the researchers may have specifics and total feedback about the item's competence.

Furthermore, the informed consent term and the scale were introjected in Google Forms platform to promote the online collection of data. The participation in this procedure demanded the reading and signing of the informed consent term on the first online protocol page. Thus, after the participation agreement, the participants were directionated to the second protocol page, i.e., the page with the PCS items, being allowed to answer the scale items about their perception of coping levels in pandemic situations.

All the procedures described in this study were executed after the authorization and approval of the Federal University of Bahia Ethical Research Committee in Psychology Department (CAEE: 33563720.1.0000.5686), following the criteria established by the Helsinki Declaration.

### *Instruments*

The Pandemic Coping Scale (PCS) is a scale developed to measure the level of coping skills used in pandemic situations. Initially, the PCS was developed based on



practical coping theory (Guo, Feng, Wang & Ijzendoorn, 2020) and was building to extract two factors (Problem-Solving and Self-Protection Attitudes) and 21 items, adopting the Likert scale response in which 0 = strongly disagree; 1 = disagree; 2 = nor agree neither disagree; 3 = agree; 4 = strongly agree. The responders should answer the assertions based on their behavior during the pandemic period.

#### *Data Analysis Procedures and Criteria*

The Analyses and the plots of this paper were computed by R programming, version 4.0.3 (R Core Team, 2020) and Factor Software, version 11.04.02 to Windows (Ferrando & Lorenzo-Seva, 2017). Moreover, the measurement criteria used for evidence validity based on content were the CVC according to Yusoff 's study (2019), whose CVC value above 0.83 suggests an acceptable agreement of experts about the clarity, understanding and relevance of the item's content.

Firstly, all inverted items were converted to positive measures. Further, preliminary analyses were conducted to suggest the possibility to compute a factor analysis and the number of its factors. Thus, the criteria used were Kaiser-Meyer-Olkin above 0.70 and significant Bartlett Test ( $p < 0.05$ ), according to the suggestion of Damasio (2012); and Optimal Parallel analysis to extract the number of factors from the data collected about the scale (Timmerman & Lorenzo-Seva, 2011). Moreover, exploratory factor analysis was computed, adopting the loading factors above 0.3 (Lorenzo-Seva & Ferrando, 2019c), polychoric matrices and Robust Diagonally Weighted Least Squares (RDWLS) as an extraction method of the EFA (Asparouhov & Muthen, 2010), Robust promin rotation method (Lorenzo-Seva & Ferrando, 2019b); Root Mean Square Error of Approximation (RMSEA) below 0.08; Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) above 0.90 (Wang & Wang, 2019); Construct

Replicability by Generalized H indexes of H-Latent and H-Observed (Ferrando & Lorenzo-Seva, 2018); Item Response Theory parameters of discrimination and thresholds (Reckase, 1985); and composite reliability was conducted to provide evidence about the homogeneity of item scale (Valentini & Damasio, 2016).

Based on the normality analysis test results on data, comparative methods such as Kruskal Wallis and Mann-Whitney test for independent samples were computed to analyze the scale`s domains extracted among the groups of gender, region, schooling, and aging. Further, descriptive statistics, like mean, standard deviation and percentile values were computed to provide norms of the scale developed.

## Results

The Content Validity Coefficient of the Scale suggested an adequate index in general to content analysis related to item's relevance to scale, its understanding and pertinence of the construct indicated. Two items were excluded because they presented a CVC level below the cut-off criteria used in this study ( $CVC > 0.83$ ).

Table 2. Content Validity Coefficient of PCS items

Items of the Scale	CVC	CVC Updated
1- I try to understand what the pandemic is about	0.92	0.92
2- I have been utilizing social isolation to do things I couldn't do because of the routine	0.98	0.98
3- I try to keep a different routine in my daily life	0.88	0.88
4- I have avoided watching the news about the pandemic	1.00	1.00
5- I have only come out of social isolation when it is very necessary, as I understand the importance of this.	1.00	1.00

6- I have taken the possible precautions to avoid being contaminated (constantly handwashing, wearing a mask, sanitize the environment and hands with alcohol)	0.90	0.90
7- I try to keep in touch with friends and family even at a distance	1.00	1.00
8- I tend to think that this pandemic situation will result in something good in the end	0.90	0.90
9- When I feel anguished, I avoid doing something I like to distract myself at this moment (Focus in regulate the emotion).	0.85	0.85
10- When I feel scared during the pandemic, I try to take a deep breath and relax.	0.94	0.94
11- Despite the recommendations, I've been leaving home, because I can't stand to be isolated anymore.	0.89	0.89
12- I have been eating in an unhealthy and unbalanced way	0.88	0.88
13- I do not rely on my family and friends in times of vulnerability during the pandemic	0.90	0.90
14- I think that as I'm not from the risk group, I don't need to worry about it (the pandemic)	0.89	0.89
15- I don't talk and I don't want to know more about the pandemic/social isolation	0.96	0.96
16- I have tried to stay active by doing physical activity even at home	0.95	0.95
17- I have been trying to talk to people close to me.	0.99	0.99
18- I have slept irregularly during the pandemic/social isolation	0.97	0.97
19- During the pandemic, I try to get involved in some pleasurable activities (reading, watching TV, listening to music...)	0.95	0.95
20- I take care of the quality of my sleep	0.77	-
21- I think the coronavirus is just a flu and it has a low fatality rate.	0.79	-
Total CVC	0.92	0.93

After these procedures, the PCS containing nineteen items was run in a Brazilian adult sample. Obtaining 758 participants of this step of validity evidence. Before the

computing of the factor analysis, the Kaiser-Meyer-Olkin and significant Bartlett test were executed to analyze the capacity of conducting a factor analysis with the data collected, in which the results indicated an adequate KMO (0.72) and Bartlett Test (2870,9;  $p < 0,01$ ).

The Optimized Parallel Analysis suggested the retention of two factors from the scale items. However, the Exploratory Factor Analysis computed suggested 07 items presented factor loadings below 0.30. Thus, these inadequate items were excluded, and a new Exploratory Factor Analysis was conducted with the remaining items in which remained with the suggestion of a two factors model (Table 2), with a positive weak inter-factor' correlation ( $r = -0.17$ ) and a total explained variance of 47,86%. On the same hand, the Unidimensional Congruence (UniCo = 0.76; CI = 0,72 – 0,83), Explained Common Variance (ECV = 0.56; CI = 0,51 – 0,60) and Mean of Item Residual Absolute Loadings (MIREAL = 0.38; CI = 0,32 - 0,42) indexes suggested no evidence of unidimensionality on the scale (Ferrando & Lorenzo-Seva, 2018).

Table 3. Factor Analysis, Reliability and Construct Replicability

Items	Factors		Threshold				
	Problem-Solving	Self-Protection	a	d1	d2	d3	d4
02	0,52		0,62	-1,75	-1,25	-0,61	0,29
05		-0,89	-2,15	-4,66	-3,33	-2,11	-0,12
06		-0,54	-0,69	-3,13	-2,71	-2,42	-1,41
07	0,36		0,39	-1,98	-1,56	-1,15	-0,26
08	0,46		0,52	-1,17	-0,61	0,15	0,85
09	0,77		1,22	-3,28	-2,40	-1,27	0,02
10	0,67		0,93	-2,31	-1,63	-0,59	0,33
11		0,95	2,86	-0,19	-1,63	3,00	5,03
14		0,49	0,56	1,21	1,86	2,28	2,65
16	0,48		0,46	-0,86	-0,39	-0,03	0,51
17	0,58		0,71	-2,55	-1,89	-1,06	-0,10
19	0,67		0,92	-2,99	-2,36	-1,65	-0,58
E.V (%)	27,13	20,73					
C.R	0,79	0,73					
G-H Index							

H-Latent	0,83	0,93
H-Observed	0,83	0,81

Note: a = item discrimination of the main item factor; d = thresholds (item difficult parameter);

E.V% = Explained Variance of the model; C.R = Composite reliability; G-H Index = Generalized H index.

Based on the theory used to develop the scale and covariance pattern of the 12 remaining items analyzed, the factors` scale were named by problem-solving and self-protection attitudes domains. The model's scale adjustment indexes suggested adequate measures, according to the criteria established for this study (RMSEA = 0.08, CFI = 0.94, TLI = 0.90). Additionally, the construct replicability indexes suggested a high likelihood of stability related to the factors extracted in future studies using the scale. Thus, these results above can suggest an evidence that this scale presents a two-factor model. Moreover, the composite reliability measures were computed to analyze the internal consistency of the full scale and its factors extracted. According to the criteria used by this analysis and its results, it has been suggested that the scale presents an adequate homogeneity among the items (Total CR = 0.88). Further, to analyze the IRT parameters, the inverse items were converted, allowing the analysis of the difficult and discrimination. On this direction, the items of the scale varied low to strong in discrimination parameter (a = 0.39 to 2.86) and manifested in a hierarchical pattern of categories score in its threshold, i.e., difficult ITR's parameter (Table 3).

Table 4. Classifications of Pandemic Coping Scale (PCS)

General Norms	Problem-Solving	Self-Protection
M	23,61	4,40
SD	4,96	2,72
05 Pct	15,00	9,00
25 Pct	20,00	6,00
50 Pct	24,00	4,00
75 Pct	27,00	3,00

95 Pct	31,00	0,00
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M = Mean; SD = Standard Deviation; Pct = Percentile

Percentile and average and standard deviation norms were calculated for both factors extracted by the EFA results (Table 4). Both factor scores are calculated by the sum of the items. It should be informed that the items 05 (I have only come out of social isolation when it is very necessary, as I understand the importance of this.) and 06 (I have taken the possible precautions to avoid being contaminated (constantly handwashing, wearing a mask, sanitize the environment and hands with alcohol)) should be converted in invert measures before calculated the sum of the self-protection attitudes. Thus, high scores in problem-solving factor means high likelihood to involving in productive activities which helps to deal with emotional and functional stress and problems caused by COVID-19. On the other hand, low scores in self-protection factor means a strong likelihood to avoid attitudes in which can increase the probability of being infected by COVID-19 (Table 4).

Likewise, comparative methods were implemented to analyze possible difference mean scores among gender, schooling, and region groups in both factors scale. The Welch Two Sample T-test suggested significant mean differences by gender in which, female group presented better scores in Problem-Solving ( $t = 4,02$ ;  $df = 389,427$ ;  $p < 0,01$ ;  $d = 0,32$ ). However, nonsignificant difference was found in Self-Protection attitudes by gender ( $t = -0,89$ ;  $df = 376,321$ ;  $p < 0,37$ ;  $d = 0,07$ ). In relation to schooling groups, significant difference was found in both factors where Non-Higher Education presented higher scores in Problem-Solving ( $t = -2,06$ ;  $df = 611,101$ ;  $p = 0,04$ ;  $d = -0,15$ ) and Higher Education presented better score in Self-Protection attitudes factor ( $t = -2,01$ ;  $df = 630,333$ ;  $p = 0,05$ ;  $d = -0,15$ ). A Kruskal-Wallis test was conducted with Region groups

among PCS factors. However, there were found no significant difference among the groups ( $p > 0,05$ ).

Table 5. Specific Classifications of the Pandemic Coping Scale (PCS) to Gender, Region, and Schooling

Schooling	Problem-Solving					Self-Protection				
	NHE	HE				NHE	HE			
<0,05										
M	23,14	23,90				4,15	4,55			
SD	4,92	4,97				2,63	2,76			
05 Pct	14,35	15,00				8,65	9,00			
25 Pct	20,00	21,00				6,00	6,00			
50 Pct	24,00	25,00				4,00	4,00			
75 Pct	27,00	27,00				2,00	3,00			
95 Pct	30,00	31,00				0,00	0,00			
<b>Region</b>	N	NE	MW	SE	S	N	NE	MD	SE	S
M	23,77	23,74	21,33	23,5	22,67	5,23	4,26	2,83	4,80	4,09
			4							
SD	4,37	5,00	4,80	5,02	4,65	2,22	2,60	2,31	2,97	3,01
05 Pct	16,75	15,00	15,50	15,0	15,25	8,00	9,00	5,75	10,0	8,00
			0						0	
25 Pct	21,25	21,00	20,00	20,0	21,00	7,00	6,00	4,50	7,00	5,00
			0							
50 Pct	23,00	25,00	20,50	24,0	23,00	5,50	4,00	2,50	5,00	4,00
			0							

75 Pct	27,00	27,00	24,00	27,0	26,00	4,00	2,00	1,25	3,00	2,00
				0						
95 Pct	31,00	31,00	27,25	31,0	28,00	2,00	0,00	0,25	0,00	0,25
				0						
<b>Gender</b>	<b>Male</b>		<b>Female</b>		<b>Male</b>		<b>Female</b>			
<0,05										
M	22,47		24,04		4,54		4,34			
SD	4,75		4,98		2,70		2,72			
05 Pct	14,00		15,00		9,00		9,00			
25 Pct	19,00		21,00		6,00		6,00			
50 Pct	23,00		25,00		4,00		4,00			
75 Pct	26,00		27,00		3,00		2,00			
95 Pct	29,00		31,00		0,00		0,00			

M = Mean; SD = Standard Deviation; Pct = Percentile; N = North; NE = Northeast; MW = Midwest; SE = Southeast; S = South; NHE = Non-Higher Education; HE = Higher Education.

## Discussion

The PCS was developed to assess individual levels of coping strategies executed during pandemic and social isolation. The scale presented an adequate two factor model which provides a total and specific (Problem-Solving and Self-Protection attitudes) score of coping. The factors extracted by the factor analysis items were associated with the literature of coping strategies in pandemics (Gou et al, 2020).

During the development of the first version of the scale, i.e., PCS 21 items, it could be noted the exclusion of inadequate items which presented measures below the cut-offs on the different sources of validity investigated in this study. This process is



related to the validity evidence whose scale developer executes a variety analysis to gather evidence about adequacy and consistence of the with its content, construct, and items. Based on these results, inferences of the relation of the construct in human behavior can be made based on a cumulative knowledge evaluated and gathered (AERA, APA & NCME, 2014).

Furthermore, this study presented norms based on the data collected by a sample from all the regions of Brazil with a range of 18 to 90 years old. Based on the voluntary sample available and the whole context of data collection in pandemic, this paper promoted general norms. However, it is suggested in future studies the analysis of item bias (Differential Item Functioning) of the scale to understand the need of adaptation or anchoring vignettes in the items by different groups. It also suggested the promotion of new and robust specific norms by region, social economic status, or gender groups. This paper presented general and specific norm classification. However, the interpretation should be used with precautions, because of the limitation of the data collection period, i.e., online collection in pandemics. Thus, it is suggested, in the future, more studies with different types of sociodemographic and regional characteristics to increase the robustness of the PCS norm. It can be informed that, the actual classification was computed using percentile, mean and standard deviation, because using them it allows to calculate z-score.

The PCS can have a relevant impact on society, as knowing how the person is behaving in a distress context of pandemics and social isolation can provide support to understand which are the most effective strategies and help professionals to implement coping-based intervention strategies. Consequently, by using them it will be possible to protect the individual's health, since previous research indicates that effective coping strategies contribute to general health protection (Yıldırım, Akgül & Geçer, 2021).

The main limitation of this study was the data collection of the responses using online surveys only. Unfortunately, this kind of questionnaire favors people with higher instruction, socioeconomic status or access to electronic devices and the internet. This can imply in a biased participant sample and reflect inaccurately the reality of the construct manifestation in people. Even after this limitation, Hense et al (2021) stated about these situations that the adaptation, such as online surveys research had to be run during pandemic to allow the continuation of research. Nevertheless, it is suggested the collection of new responses in paper and pencil approach in future studies and a DIF analysis among the different data collection approaches and groups, after the social isolation quarantine by pandemic, to understand the necessity of adaptation of the scale.

In conclusion, the PCS is a two-factor scale developed to assess the level of the use of coping strategies during pandemic and social isolation. Its indices suggested an adequate adjustment and its norms can help professionals in mental health to monitor patients on the coping construct.

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### **Artigo 3**

#### **Psychometrics Properties of Alcohol Consumption Scale (ALCOS)**

##### **Abstract**

Alcohol consumption can be associated with a coping strategy to deal with an uncomfortable situation. Some studies stressed the levels of alcohol consumption during pandemics. However, there is a lack of validated instruments that measure this phenomenon, as a coping strategy during a pandemic context. This study aimed to develop and analyze the validity of evidence based on content, internal structure, external variables and promote norms of the Alcohol Consumption Scale (ALCOS). Different samples were used to conduct the analysis of this paper. To compute the validity of evidence-based content, six experts agreed to participate in this process. For the other analysis conducted, the sample was composed of 555 participants from all five regions of Brazil. The results suggested evidence that the instrument assesses the desired phenomenon. The final version of the ALCOS suggested a unifactorial model with 14 items with high levels of internal consistency and association with a gold standard instrument with similar construct, i.e., AUDIT.

*Keywords:* alcohol consumption, scale, pandemics, mental health, validity

## **Introduction**

The pandemic of the new coronavirus (SARS-CoV-2) has been representing a major public health problem in the world, infecting millions of people and bringing significant and unexpected changes in several orders, both individual and institutional (World Health Organization [WHO], 2020). The disease caused by this virus (COVID-19) is a rapidly spread infectious disease that can cause mild symptoms of severe pneumonia with organ function damage (Ahn et al., 2020). The WHO (2021) confirmed over 144 million cases around the world. In Brazil, the milestone of 14 million cases occurred until April 2021 (Ministério da Saúde [Ministry of Health], 2021).

Recent evidence indicates that one of the main causes of changes in habits involving the COVID-19 pandemic concerns the intervention measures adopted by the authorities to reduce the transmission of the virus and consequently the infection of people. One of the main measures is the social restriction, which consists of citizens' need to be at home as long as possible, avoiding going out on the streets (Garcia & Duarte, 2020).

This need or obligation to be restricted to a single environment can also have an effect on the mental health of individuals (Ahmed et al., 2020). It may be considered also a risk factor for the increasing development of mental disorders, adding to other aspects such as socioeconomic inequalities, food insecurity, physical inactivity, and more (Campion et al., 2020). The evidence points out that this whole scenario involving changes in habits and lifestyle may be associated with increased alcohol consumption during the COVID-19 pandemic either (Malta et al., 2020). These changes are among the factors that influence this consumption and can be categorized in two ways: First, consumption due to the restriction on the sale of alcoholic beverages and social



gatherings, and second, due to interruptions in work and education during a pandemic (Callinan et al., 2021).

Despite of the changes in relation to alcohol consumption during the pandemic, its impact is not clear yet, once the patterns of consumption before the pandemic and the difference between demographic groups should affect the way the individual deals with it during that time. Thus, Barbosa et al. (2021) claim the disproportionate impact of the pandemic on racial and ethnic minorities might compound existing disparities in the consequences of excessive alcohol consumption. An issue that usually involves this context of changing habits and life caused by crises is the stress, according to some studies, stress would be the key element involved in an increasing alcohol consumption during the COVID-19 pandemic (Callinan et al, 2021).

Based on the relationship between stress and increment in alcohol consumption, studies have put alcohol as a coping mechanism in times of crisis at both micro and macro levels (Avery et al., 2020). Skrzynski and Creswel (2020) suggested that beverage consumption can be associated with a coping strategy to alleviate the Negative Affect. Therefore, some studies indicate that alcohol may be used to mitigate responses to stressful and traumatic events like the COVID-19 pandemic (Ogueji et al., 2021). In the same direction, the evidence already seen above point that suffering during the COVID-19 pandemic may be directly and indirectly involved with external and internal factors, when testing a theoretical model based on factors Wardell et al. (2020) propose in their results that having children at home, depression, less social connection, loss of income and living alone are factors that may have motivated the use of alcohol as coping at the beginning of the SARS-CoV-2 pandemic. All the present context of COVID-19 pandemic has promoted a high risk of excessive consumption of beverages what it may imply an

increase of multiple negative consequences (Churakova et al., 2017; Grossman et al., 2020; Skrzynski & Creswel, 2020).

The evaluation alcohol beverage levels consumption may help professionals to map the profile of patients of individual sat-risk situations, promoting an adjusted and personal intervention (Dhalla & Kopec, 2007). In all the world, the gold standard of instruments to assess beverage consumption is the Alcohol Use Disorders Identification Test (AUDIT) which is responsible for substantial morbidity and mortality (López et al., 2019). The AUDIT is a 10 items scale, which seven assesses the harmful use and dependence on alcoholic beverages and the other three were included to measure the quantity and frequency of consumption.

On the same hand, the literature has been appointed to other instruments that assess beverage consumption, such as: CRAFFT, which is a brief screening instrument that assesses alcohol and other substance use disorders. According to the psychometric review of the scale made by Dhalla, Zumbo & Poole (2011), CRAFFT showed modest to adequate internal consistency values ranging from 0.65 to 0.86; the Cage Questionnaire for Alcohol Misuse is another instrument that assesses alcohol abuse and dependence. Based on the revision of psychometric studies about the scale, executed by Dhalla & Kopec (2007), it can be noted adequate values of Specificity (0.90) and Sensibility (0.71) to promote the diagnosis of psychiatric patients.

However, there is a lack of instruments that passed to the process of validity and assesses the level of using the alcohol beverage as a coping strategy during the pandemic. Some studies conducted such as Grossman et al. (2020) used a survey questionnaire as an instrument to assess beverage consumption during pandemics. Along some significant moments, such as a pandemic, specific instruments can help to measure how a scenario like this can impact people in different ways.

This information can guide specific interventions related to the coping strategy and alcohol consumption. A psychometrically validated instrument can provide scientifically robust results with important details like items, domains, assessment forms, and measurement properties, offering accurate, valid, and interpretable data for the population's health assessment (Souza et al., 2017).

Based on it, the authors reviewed the literature about the alcohol consumption related to coping strategy to build and develop a scale about this construct. Thus, the aim of this study was to develop and analyze evidence of validity based on Content, Internal Structure, and External Variables of the Alcohol Consumption Scale (ALCOS).

## **Methods**

### *Type of Study*

This is an exploratory and psychometric study conducted in Brazil, in which was evaluated evidence of validity based on content; internal structure and reliability of the ALCOS and it was computed its norms.

### *Participants*

Different samples were used to conduct the analysis of this paper. To compute the validity of evidence-based content, six experts agreed to participate in this process. 20% of the experts had a PhD degree and 80% had a master's degree diploma. All of the experts invited had experience of more than 5 years of teaching about psychology and cognition disciplines in Brazilian universities or colleges.

The further step counted with a sample composed of 555 participants from all of the five regions of Brazil. The age average computed was 34.33 (sd = 12.82; median = 32; min = 18 and max = 87). 70% of them are self-referred as female gender. 65,22 %

signaled that they are residents from the Northeast of Brazil, followed by Southeast (23.78%), South (7.56%), North (2,53%) and Midwest (0.91%). 63.43% of the participants referred to have a higher education degree, 36.57% have a high school degree complete.

### *Procedures*

All experts were invited by e-mail to analyze and respond to a second scale which questioned the commands, adequacy and how suitable is the content of the scale. After the acceptance of the invitation, the experts received the ALCOS and a second assessment scale about it. It was given 30 days after the experts agreed to respond back to the researchers.

After the analysis of the agreement of the items with the experts' responses, the data with the items selected as adequate were collected from a Brazilian sample. The scale was introjected in Google Forms platform to promote the online collection of data. The participation in this procedure demanded reading and signing the informed consent term on the first online protocol page. Thus, after the participation agreement, the participants were directionated to the second protocol page, i.e., the page with the ALCOS items, being allowed to answer the scale items about their perception of Alcohol Consumption in your context.

The Kaiser-Meyer-Olkin and Bartlett test were conducted to analyze the adequacy of factorisation of the data obtained (Damásio, 2012). Further, an Optimized Parallel Analysis (OPA) was computed to determine the number of factors that may be retained on the scale's model (Timmerman & Lorenzo-Seva, 2011). Based on the number suggested by the OPA, an exploratory analysis was conducted to analyze the ALCOS model and its fit indexes (Damásio, 2012). Additionally, the reliability of the factors

extracted by the scale was computed to analyze the level of homogeneity of items (Valentini & Damásio, 2016); a multivariate Linear Regression was computed to provide the evidence of validity based on external variables, i.e., associations among the alcohol consumption as a coping strategy with sociodemographic, developmental and abusive alcohol consumption constructs. It must be highlighted that general population norms were plotted (Pasquali, 2014).

### **Instruments**

The Alcohol Consumption Scale (ALCOS) is an instrument developed to evaluate the levels of beverage alcohol consumption during the COVID-19 pandemic period. Initially, the ALCOS was built based on a unidimensional model and 25 items - some items were based on the other scales such as the AUDIT -, developed from the contextualization of items related to consumption habits in a scenario of pandemic, social isolation, quarantine and its emotional and behavioral consequences (e.g., “I drink when I feel lonely”; “ I have been drinking more to keep up with my friends (on video call or in person)”). The instrument adopted the Likert scale response, in which 0 = strongly disagree; 1 = disagree; 2 = nor agree neither disagree; 3 = agree; 4 = strongly agree. The responders should answer the assertives based on their Alcohol Beverage Consumption during the pandemic period.

The Alcohol Use Disorders Identification Test (AUDIT) is a self-reported questionnaire that assesses alcohol use, drinking patterns and alcohol-related issues. In Santos et al (2012) study, the Brazilian version of the scale presented a bifactorial model in which  $\alpha$ Cronbach to factor 1 = 0.84 and factor 2 = 0.69. However, in this paper, only the Total Score of the AUDIT (Sum of the items) was used to measure the association of the ALCOS and AUDIT scores.

### *Ethics statement*

The Ethics committee of the Psychology Institute of the Federal University of Bahia approved all the procedures of this study (under CCAE code: 33563720.1.0000.5686) and it was obtained a written informed consent from all participants.

### *Data Analysis Procedures and Criteria*

The Analyses and the plots of this paper were computed by R programming, version 4.0.3 (R Core Team, 2020) and Factor Software, version 11.04.02 to Windows (Ferrando & Lorenzo-Seva, 2017). The criteria used to parsimony results of the IVC were based on the study of Yusoff (2019), whose  $IVC > 0.83$  suggests an acceptable agreement of experts about individual items and the total of the scale. These results are associated with the evidence of validity based on content.

To provide the results related to evidence of validity based on internal structure and reliability, some criteria were implemented:  $KMO > 0.50$  (Field, 2013); Optimal Parallel Analysis (Timmerman & Lorenzo-Seva, 2011); Polychoric matrices and Robust Diagonally Weighted Least Squares (RDWLS) as an extraction method of the EFA (Asparouhov & Muthen, 2010); factor loadings  $\geq 0.30$ ; Robust promin rotation method (Lorenzo-Seva & Ferrando, 2019c); Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI)  $> 0.90$  (Wang & Wang, 2019); item discrimination and thresholds parameters by Reckase parametrization (Reckase, 1985); Unidimensionality Assessment indexes of Unidimensional Congruence (UniCo)  $> 0.90$ , Explained Common Variance  $> 0.80$  and Mean of Item Residual Absolute Loadings (MIREAL)  $< 0.30$  (Ferrando & Lorenzo-Seva, 2018); Construct Replicability of Generalized H Indexes by H-latent  $> 0.90$  and H-Observed  $> 0.80$  (Hancock & Mueller, 2000); and composite reliability (C.R)  $> 0.70$  (Valentini & Damásio, 2016).

To analyze the validity evidence-based on external variables, it was computed associationist methods with the ALCOS score with Audit Total score and sociodemographic variables. Moreover, descriptive statistics and comparative methods were computed to generate the general norms of the ALCOS.

## Results

Initially, the validity evidence-based data suggested that all the 25 items of the ALCOS were adequate in terms of relevance, understanding and pertinence ( $IVC > 0.83$ ). It can be noted that the IVC measures vary from 0.85 to 1.00, in which items 01, 04, 18 presented the highest levels of agreement among the experts, while items 02, 21, 23 presented the lowest agreement measures (Table 1). In general, the Total IVC of ALCOS was above the Yusoff (2019) cut-off criteria ( $IVC's\ ALCOS = 0.95$ ).

Table 1. Content Validity Index of ALCOSs' Items

Item	ALCOS's CVI
1. In the last month, drinking has been part of my routine	1.00
2. I have been drinking to feel agitated/excited	0.85
3. I have been drinking more on weekends	0.99
4. I feel less worried when I drink.	1.00
5. I drink when I'm very anxious	0.96
6. I have been drinking to feel more relaxed	0.98
7. I drink when I feel bored	0.96
8. I drink when I feel lonely	0.96
9. Currently, I don't have a specific day or time to drink	0.95
10. Lately I have been drinking to feel good	0.96
11. When I'm feeling vulnerable, drinking hasn't helped me to feel good	0.94
12. I am currently consuming more alcoholic beverages than 3 months ago.	0.98
13. In the last month, I couldn't stop drinking when I thought that I had already drunk enough	0.95
14. If there's no one to suggest me to stop drinking, I keep my alcoholic beverage consume	0.98
15. Currently, I don't think about whether or not I drink too much.	0.93

16. I try to control my alcohol consumption by setting limits on quantity.	0.95
17. I try to control my alcohol consumption by setting limits on drinking days.	0.95
18. I don't care about the amount of alcohol consumed when I'm not committed the next day.	1.00
19. Daily obligations prevent me from drinking as much as I want	0.93
20. I can't have fun drinking alone	0.95
21. Over the past few months, my family and/or friends have worried about the amount of alcohol I consumed.	0.92
22. My family and friends don't care about how often I drink	0.92
23. Fear and/or sadness make me drink	0.90
24. I have been drinking more to keep up with my friends (on video call or in-person)	0.99
25. When I'm in social isolation, my main distraction is drinking	0.94
Total	0.95

Further, the data collected in 555 participants suggested the possibility to conduct the Exploratory Factor Analysis (KMO = 0.92; Bartlett = 6314.8 (df = 91; P < 0.01)). Thus, an Optimal Parallel Analysis was conducted and suggested the retention of one factor for the ALCOS (Explained Variance = 0.60). The proponent model suggested the exclusion of 11 items (11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24), because of the unfitting of the loading factors above the criteria adopted (> 0.30). After the exclusions, a new EFA was computed, and the suggestions of Explained Variance and number of factors retained kept the same. In agreement with this finding, the unidimensionality indexes reinforced the suggestion of a unifactorial model (UniCo = 0.98; ECV = 0.89; MIREAL = 0.20). One more evidence of the unifactorial model of the ALCOS can be found in construct replicability indexes of Generalized H, which suggested stability of the factor's replication in future studies using the scale (H-Latent = 0.95; H-Observed = 0.89).

Table 2. Factor Loadings, IRT Parameters and Reliability of the Remaining Items Of ALCOS

Remaining Items	Beverage Consumption	a	b1	b2	b3	b4
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1. In the last month, drinking has been part of my routine	0.79	1.31	-0.24	0.30	0.65	1.20
2. I have been drinking to feel agitated/excited	0.81	1.42	0.01	0.56	0.92	1.59
3. I have been drinking more on weekends	0.63	0.81	-1.07	-0.50	-0.16	0.57
4. I feel less worried when I drink.	0.74	1.12	-0.76	-0.40	0.11	0.93
5. I drink when I'm very anxious	0.85	1.66	0.17	0.59	1.04	1.55
6. I have been drinking to feel more relaxed	0.80	1.35	-0.68	-0.28	0.09	0.91
7. I drink when I feel bored	0.85	1.64	0.18	0.59	0.90	1.43
8. I drink when I feel lonely	0.81	1.40	0.42	0.90	1.19	1.73
9. Currently, I don't have a specific day or time to drink	0.62	0.80	1.25	1.77	2.03	2.64
10. Lately I have been drinking to feel good	0.82	1.47	0.09	0.48	0.90	1.45
12. I am currently consuming more alcoholic beverages than 3 months ago.	0.73	1.07	0.25	0.56	0.83	1.30
13. In the last month, I couldn't stop drinking when I thought that I had already drunk enough	0.60	0.75	1.62	2.18	2.48	2.77
23. Fear and/or sadness make me drink	0.79	1.32	0.56	0.93	1.31	1.79
25. When I'm isolated, my main distraction is drinking	0.75	1.15	0.87	1.31	1.71	2.24

Furthermore, the reliability of the scale suggested consistency and homogeneity among the remaining items of the scale (C.R = 0.95). The IRT parameters of discrimination (a) and difficult/threshold (b) of the scale were computed. It may be noted that the first IRT's parameter presented low to moderate levels, varying from 0.75 to 1.66. On the same hand, the difficult parameter has shown progressive reference values among the thresholds categories, varying from very easy to very hard item difficult (Baker & Kim, 2017).

Table 3. Measures From Validity Evidence Based on External Variables With ALCOS Score

External Variable	Beta	Beta (95%)	Confidence	Standard	t	P-value
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			Interval	Beta		
Ageing	-0.08	-0.15	-0.01	-0.08	-2.12	0.03
Audit Total Score	1.49	1.34	1.65	0.63	18.55	<0.01
ABEP Total Score	0.10	0.02	0.19	0.08	2.43	0.01
Gender (Male)	-1,94	-3.90	0.10	-0.07	-1.95	0.05
Schooling	1.49	0.06	2.91	0.07	2.05	0.04

Intending to gather validity evidence based on external variables, it was computed a multiple linear regression (MLR) among Ageing, Audit Total Score, ABEP Total Score, Gender, and Schooling, such as independent variable and ALCOS score, such as a dependent variable. This procedure analyzed the prediction and association levels of these variables. The method used in MLR was “ENTER” ( $R^2_{adj} = 0.40$ ;  $p < 0.01$ ), followed by the Dublin-Watson residual analysis ( $DW = 1.73$ ). These results suggested a parsimonious model among the variables used. It may be observed that all the variables presented in association with the ALCOS score, in which the Audit Total Score, another and well-consolidated alcohol beverage scale had the highest beta value. It may be highlighted that the sociodemographic variables, i.e., ABEP Total Score, Gender and Schooling presented significant associations with the ALCOS score in a lower level than Audit Total Score (Table 3).

Comparative Methods were computed to analyze possible differences in ALCOS score among different groups. The T-test method for independent samples used with the gender group suggested no significant differences in ALCOS score means (Female = 15.84 (13.40), Male = 17.83 (13.12),  $p > 0.11$ ). In the same direction, the ANOVA method with the regions of Brazil in ALCOS scores suggested no statistical significance in their variances ( $F = 0.87$ ,  $df = 550$ ,  $p = 0.48$ ; N = 12.35 (13.94), NE = 16.09 (13.19), MW = 15.40 (18.78), S = 19.14 (15.50), SE = 16.92 (12.75)). However, a significant result in

the T-test of ALCOS score with Schooling Groups ( $t = -3.0504$ ,  $df = 478.67$ ,  $p\text{-value} < 0.01$ ) was found.

Table 4. Descriptive Analysis and Norms about ALCOS Score

	Schooling		
	ALCOS Total Score	High School Degree	Higher Education Degree
Mean	16.42	14.26	17.67
Std. Dev	13.34	11.86	13.99
MAD	14.83	11.86	14.83
Min	0	0	0
Percentile 05	0	0	0
Percentile 25	5	5	5
Percentile 50	14	12	15
Percentile 75	25	21	26
Percentile 95	44	39	47
Max	55	50	55

Note: MAD: Median Absolute Deviation

## Discussion

The ALCOS is a scale developed to assess the levels of alcoholic beverages use as a coping strategy. During pandemics, alcoholic beverage consumption and other mental health diseases increased, because of the period of vulnerability caused by the contamination and social isolation context (Calina et al., 2021). Based on this statement, after the construction of the ALCOS items, sources of validity evidence were tested to analyze the adjustability of the scale with its assessment propose.

The experts' analysis, related to the source of validity evidence based on content, suggested an adequate agreement that the items present relevance, understanding and pertinence with the theoretical/practical construct to be evaluated, i.e., it was collected evidence that represents the alcohol beverage consumption as a coping strategy (Yussof, 2019). In this paper, the validity evidence based on content was calculated by Content

Validity Index, because of the amount of evidence in the literature about your good standard measures used in psychometrics (Yussof, 2019).

Furthermore, Exploratory Factor Analysis suggested a unidimensionality of the scale. It reinforced the expectation of the scale's developers who had built the ALCOS to present a one-factor measurement, i.e., levels of alcoholic beverages used as a coping strategy. The indexes of the instrument endorsed the amount of evidence-based on the internal consistency of the model proposed by the ALCOS, increasing the likelihood to execute trustworthy assumptions of the scales' score. In the same direction, the homogeneity of the scale presented consistent results, which means that the items of the instrument measure the same construct (Damásio, 2012; Valentini & Damásio, 2019). Moreover, the multivariate regression stresses one more piece of evidence related to the construct evaluated by the ALCOS.

The results converge with the literature in which there are associations among levels of alcoholic beverage use as a coping strategy and abusive use of alcohol (Calina et al., 2021; Churakova et al., 2017; Grosman et al., 2020); ageing (Malta et al., 2020); and gender (Calina et al., 2021). Specifically, to the association of schooling and socioeconomic status and levels of alcoholic beverage use as a coping strategy, it can be noted that, in this paper, the direction of the prediction was the opposite of what is suggested by literature (Calling et al, 2019). A possible explanation of this phenomenon is a cognitive workload caused by job's adaptation, such as work from home style and the increasing of the job's demands which has aroused a huge part of people with high socioeconomic status or schooling levels. These factors may be increased psychological distress and alcohol consumption as well (Rodriguez, Litt, & Stewart, 2020). Another explanation of it may be associated with the affordability of alcoholic beverages and/or

money income to be used and accessed by these social classes in the direction of alcohol consumption (Grosman et al., 2020).

The ALCOS is a scale which intends to evaluate levels of alcoholic beverage use as a coping strategy. Mainly, the scale can be used in a pandemic context. However, the source of evidence selected general items about coping behaviors with alcohol consumption. Thus, the scale can be used in other environments or scenarios. Even with the sources collected, this study presents some limitations, such as the disparity of the gender and region groups proportions; the lack of analysis executed in the psychiatric samples and the association of the scale with other mental health scales. Nevertheless, this paper presented a convergence of evidence which allows inferring that ALCOS evaluate the construct aimed, its general and specific norms for schooling. Other studies may be run to evaluate its adequacy and applicability for different contexts.

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## **Artigo 4**

### **Associations of COVID-19 Risk Perception, Coping, Mental Health, and Alcohol Consumption: a Network Analysis.**

#### **Abstract**

The appearance of coronavirus affected different areas all over the world. Health systems, economies, education, mental health, etc. were some of the areas impacted by COVID-19. Risk perception may influence the coping strategies used to deal with the pandemic's contexts. One of these coping strategies may be alcohol consumption, which can be maladaptive when consumed in high doses. At the same time, pandemic seem to increase the frequency and intensity of mental health symptoms. Thus, the objective of this paper was to investigate the association among sociodemographic, mental health, risk perception, and coping variables in relation to COVID-19, social isolation, and alcohol consumption. Network analysis plotted suggested relations among mental health variables with coping strategies, alcohol consumption, risk perception, and sociodemographic measures. So, interventions in mental health, adaptive coping strategies, and risk perception of people may be helpful to the population and the avoidance of abusive use of alcohol during pandemics.

#### **Keywords**

COVID-19, Mental Health, Risk Perception, Alcohol, Coping

## **Introduction**

In 2019 the new coronavirus was introduced in all the world, such as a high-speed contagious virus to humans. After the first case, many changes and adaptations had to be implemented in society, as an example: quarantine, social distancing/isolation; the use of masks, handwashing (WHO, 2020). Data from worldometers.info (2020) suggested that 39000 people around the world had died and three-quarters of a million people were infected and diagnoses with COVID-19. These situations implied in emotional effects, increasing worry, less psychological well-being, depression, anxiety, and stress symptoms (Qiao et al, 2021; Lopes & Nihei, 2021).

The Coronavirus impacted different areas such as health systems, economies, and education hardily (Mesa Vieira et al., 2020; Qiao et al, 2021). The pandemic context causes many problems in psychological, sociological, and medical area (Pfefferbaum & North, 2020). All these probable changes had an impact on mental health consequences, such as: increase of the anxiety, fear, and depression symptoms (Ogueji, Asagba & Constatine-Simms, 2021) and alcohol consumption or its abusive use (Wu et al, 2008).

At the same time, the pandemic was followed by huge information flux by different sources, causing misinformation. This phenomenon is called infodemia. Infodemia is defined as a large increase in the volume of information associated with a specific subject, which can multiply exponentially in a short time due to a specific event. In this situation, rumors and misinformation arise, as well as manipulation of information with dubious intent (Garcia & Duarte, 2020). Based on that, this misinformation may shape the risk perception of people, i.e, subjective assessments about the hazards of experiencing an injury, death, or illness (Quiao, 2021). Further, the risk perception may impact on behaviors in daily life, intensity and frequency in mental health symptoms or

psychological well-being feelings, modulating the coping strategies of the individuals to handle their personal situations during pandemic (Quiao, 2021; Ornell, Schuch, Sordi & Kessler, 2020; Gerhold, 2020; Lopes & Nihei, 2021; Ogueji, Asagba & Constantine-Simms, 2021).

Gathering all these factors in a pandemic context, it is understandable that this period is associated with a huge stressor that causes vulnerable feelings in the population (Ornell, Schuch, Sordi & Kessler, 2020; Mesa-Vieira et al, 2020; Qiao et al, 2021). When a stressor trigger is perceived by a person, his organism looks for a way to promote a homeostasis response to deal with. These responses are called coping strategies. During pandemics, practical coping, i.e., the way that people are likely to behave in the COVID-19 context, was used frequently to deal daily life of the population (Lazarus & Folkman, 1984; Guo et al, 2020). The literature stresses that the increase in the intensity and frequency of the mental health symptoms is observed in different disease outbreaks, such as severe acute respiratory syndrome (Gardner & Moallem, 2015; Park et al, 2018), Ebola (Ji et al, 2017; Asagba et al, 2021) and COVID-19 (Okoloba et al, 2020; Gao et al, 2020, Ornell et al, 2020).

On the same hand, it is assumed that the risk perception and sociodemographic status of the population may influence the way to deal with the pandemic context (Quiao et al, 2021). One of the most used coping strategies is the alcohol consumption, in which increased substantially during pandemics (Ogueji, Asagba and Constantine-Simms, 2021; Grossman, Benjamin-Nellon and Sonnenschein, 2020). In the same way, the whole context of pandemic, risk perception, and the maladaptive of coping strategies may influence on intensity and frequency of the mental health symptoms in population, increasing the prevalence of mental health diseases around the world (Ornell et al, 2021; Lopes & Nihei, 2021; Guo et al, 2020).

Understanding the relation of these factors in a pandemic's context as COVID-19 pandemic may help the mapping of possible key points to make interventions and promote psychological well-being and adaptive coping strategies, mainly with the increasing of the alcohol consumption during this period. Thus, the objective of this paper was to investigate the association among sociodemographic, mental health, risk perception and coping variables in relation to COVID-19, social isolation, and alcohol consumption.

## Methods

### *Participants*

This study was conducted with 950 participants from all the five regions of Brazil. Most of the respondents were residents in Brazilian northeast (69.05%; n = 656); self-referred as female (74.10%, n = 704); the average of the age of the respondents was 34.55 years; and 32.95% (n = 313) of the sample was from B2 social class (Table 1).

Table 1. Descriptive analysis of the Sample

	N	%
<b>Region</b>		
North	28	2.95
Northeast	656	69.05
Midwest	21	2.21
Southeast	188	19.79
South	57	6.00
<b>Sex</b>		
Male	246	25.90

Female	704	74.10
<b>Socioeconomic</b>		
<b>Status</b>		
A	247	26.00
B1	234	24.63
B2	313	32.95
C1	110	11.58
C2	42	4.42
D/E	4	0.42
<b>Age</b>		
Mean	34.55	
Standard Deviation	12.91	
Median	32.00	
Interquartile Interval	23 - 42	

#### *Data Collection and Ethical Procedures*

The data of this study were collected during August up to October 2021. The online protocol used was built in Google Forms platform and spread by different sources of social media, such as: e-mail, Facebook, Instagram, and WhatsApp.

The protocol was composed by five blocks: the first part was related to sociodemographic and socioeconomic characteristics; the second was associated with the risk perception about COVID-19 and Social Isolation; the third was about mental health matter; the fourth was related to coping strategies in pandemic; and the last block was associated with alcohol consumption.

The self-report method was applied to collect data from the sample. To minimize the bias effect of among the participants, it was used the anonymous data collection form. This study presented no missing or outliers in these data. However, if this occurred, analyzes with and without outliers would be performed for a comparison, and analysis of possible data exclusion, as well as participants who presented missing in their answers would be excluded from the study.

The snowball sampling technique was applied to collect data. All the respondents had to authorize previously their participation on this study. All the steps of this study conduction were initiated after the approval of the Ethical Committee in Psychology of the Federal University of Bahia (CAEE: 33563720.1.0000.5686) and followed all the Helsinki Declaration Guidelines.

### *Instruments*

#### *Socioeconomic Status (SES)*

Brazilian Criteria of the Brazilian Research Association of Enterprises (Socioeconomic Status Scale, ABEP, in Brazilian Portuguese) are a scale which assess socioeconomic status (SES) based on the consumer goods achieved, schooling of the main responsible of the family, the access of the public services, promoting a final score that suggests an approximated socioeconomic status of the tester. The SES categories and their familiar monthly income of the ABEP are A: USD = 4472,82; B1: USD = 2053,15; B2: USD = 1072,99; C1: USD = 599,04; C2: USD = 355,57; D/E: USD = 160,18 (ABEP, 2020).

#### *Risk Perception*



Risk Perception Scale about COVID-19 and Social Isolation is a scale which assess the cognitive and emotional domains related to the risk perception of COVID-19 and Social Isolation. This scale presents two factors called by Cognitive (CD) and Emotional (ED) domains with good reliability (Composite reliability: Total Instrument = 0.89; CD = 0.83 and ED = 0.77) and internal structure measures ( $X^2 = 3917.843$ ,  $df = 78$ ,  $X^2/df = 50.228$ ; RMSEA = 0.07; CI = 0.050 – 0.080; CFI = 0.937; TLI = 0.907). High scores in cognitive domain mean a high likelihood to perceive the COVID-19, as a real threat to health and the social isolation as a protective strategy to coronavirus. In the same way, high scores in emotional domain mean emotional comfort about the adoption of the social isolation, as a preventive strategy against COVID-19 (Bessa, 2022).

### *Coping*

Pandemic Coping Scale is a scale which evaluates the capacity of Problem-Solving (PS) and Self-Protection attitudes (SP) as practical coping strategies during the COVID-19 pandemic period. Its internal structured suggested a two-factors instrument, named by Problem-Solving and Self-Protection attitudes, and presented adequate psychometric measures (RMSEA = 0.08, CFI = 0.94, TLI = 0.90). Both factors had adequate reliability values (Composite Reliability: Total Instrument = 0.88; PS = 0.79 and SP = 0.73). High scores in protective-strategies factor mean high likelihood to involving in productive activities which help to deal with emotional and functional stress and problems caused by COVID-19. On the other hand, low scores in self-protection factor mean a strong likelihood to avoid attitudes in which can increase the probability of being infected by COVID-19 (Bessa, 2022).

### *Alcohol Consumption*

Alcohol Consumption Scale (ALCOS) is a scale used to assess the risk of alcohol consumption as a coping strategy. This scale presented a factor structure with adequate measures (CFI = 0.98; TLI 0.97; UniCo = 0.98; ECV = 0.89; MIREAL = 0.20) and an adequate reliability (Composite Reliability = 0.95). High scores in this instrument suggest a higher risk of alcohol consumption as a coping strategy during pandemic period (Bessa, 2022).

The Alcohol Use Disorders Identification Test (AUDIT) is a self-reported questionnaire that assesses the use of alcohol, drinking patterns, and alcohol-related issues. The Brazilian version of the scale presented a two-factors model in which  $\alpha$ Cronbach to factor 1 = 0.84 and factor 2 = 0.69 (Santos et al, 2012). This study used total score of the audit (sum of the items) and high scores in this scale mean abusive alcohol consumption measure.

### *Mental Health*

Abbreviated version of the Barratt Impulsiveness Scale (ABIS) is a scale that assess aspects of the impulsivity, such as: motor impulsivity, attentional problems, and non-planning. Its reliability and internal structure presented adequate measures ( $\alpha$ : attention = .71; motor = .64; non-planning = .69; RMSEA = 0.08; CFI = 0.97) (Coutlee, Politzer, Hoyle & Huettel, 2014).

Depression, Anxiety and Stress 21 Item (DASS 21) is a self-report scale composed by 21 items with three subscales (depression, anxiety, and stress). The Internal Consistency - Cronbach Alpha - obtained for the Depression subscale was 0.92, for Stress was 0.90 and 0.86 for anxiety (Vignola, 2013).

### *Data Analysis Procedure*

Descriptive analysis was conducted with data intending to obtain the profile of the sample characteristics, their responses, and the normality of the data (Shapiro Wilk > 0,05). Further, a Gaussian graphical model, regulated by  $l_1$  (LASSO) with EBIC's model selection was estimated to obtain a better interpretation of the analysis (Foygel and Drton, 2010). The Hyperparameter criterion used in this study to select the most adjusted model was 0,5. The model plotted was a network in which nodes represented the risk perception, coping, mental health, socioeconomic status and alcohol consumption variables. On the other hand, the edges represented the relations among the variables selected by this study. The criteria used by the partial correlations were suggested by Epskamps and Fried (2018), which: 0.1 = small effect; 0.3 = moderated effect; and > 0.5 = large effect.

It analyzed the most important variables in the network analysis. The Strength Centrality Index suggested the more central variables on the network relation. The Betweenness Index represents the number of times that a node is in a short path between two other nodes in the network. The Closeness Index suggested the average of the shortest path among one node and the others inside the network (Opsahl et al., 2010). The Expected Influence Index was computed to understand what nodes higher possibility have of activating its adjacent nodes in case of being activated previously (Machado, Cunha and Vissoci, 2021). All these indexes were standardized and presented in z-score.

It also investigated the edge's precision and stability of the centrality indexes. Firstly, it estimated a network model using a non-parametric bootstrap with 1000 re-samples and a case-dropping (Epskamp et al, 2018). Further, a Coefficient of Stability (CS), using a maximum proportion of the cases that can be dropped with 95% of accuracy, was analyzed. In this study, the cutt-offs of CS were values above 0,5 (Epskamp et al, 2018). All the analyses were computed by R version 4.0.3 (R Team, 2020) through

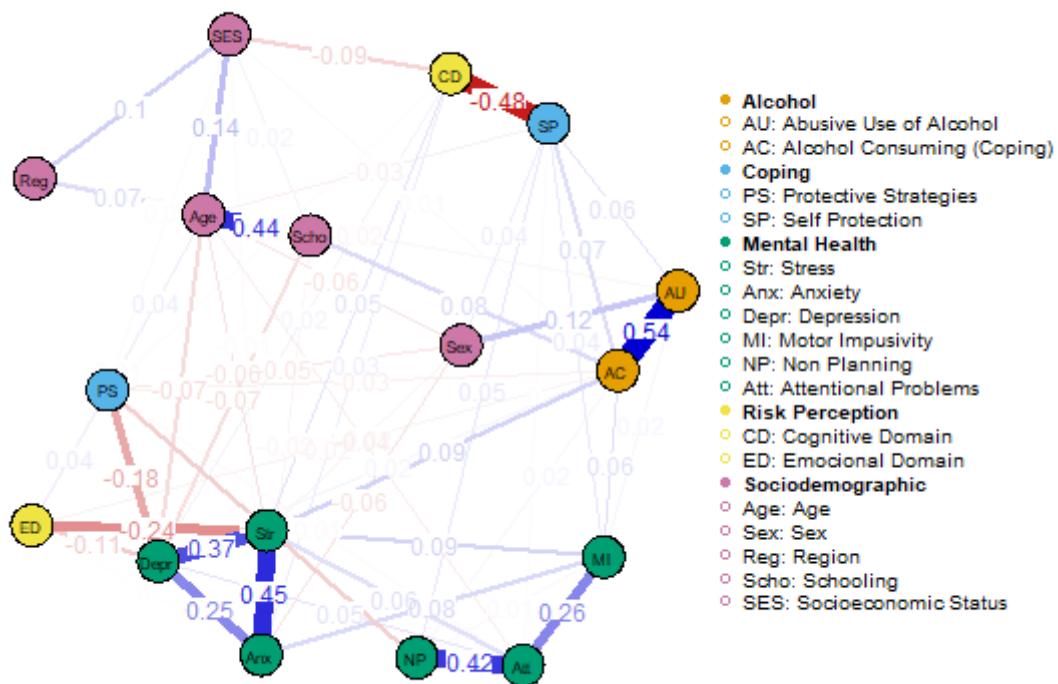
summarytools (Comtois, 2021), bootnet (Epskamp, Borsboom and Fried, 2017) and qgraph (Epskamp et al, 2012) packages.

## **Results**

Based on data, it can be noted that the network analysis suggested relations among the variables computed. They were grouped into five categories named by: Sociodemographic, which consists of Age, Sex, Region, Schooling, And Socioeconomic Status; Risk Perception, which is composed of The Cognitive and Emotional Domain of the COVID-19's risk perception; Mental Health, which was shaped by Stress, Anxiety, Depression, Motor Impulsivity, Non-Planning, Attentional Problems Measures; Coping, that was formed by Protective and Self Protection strategies; and Alcohol, that is shaped by Alcohol Consuming And Abusive Use Of Alcohol Measures (Figure 1).

The visual inspection of the network plotted suggested many connections among the nodes. In relation to the Risk Perception variables, the results suggested moderate negative effects among Cognitive Domain and Self-Protection Strategies ( $r = -0.48$ ), which can mean that individuals who perceived coronavirus, as a real threat to health and the social isolation as way to protect themselves from the virus presented more chances to adopting Self-Protection Strategies to avoid the contagions of the COVID-19. It is important to highlight that the Self-Protection measure is inverted, i.e., high scores in this indicator mean less adoption of Self-Protective Strategies against COVID-19. Cognitive Domain in Risk Perception presented a negative small correlation with Socioeconomic Status ( $r = -0.09$ ) and positive small correlation with Stress ( $r = 0.05$ ).

Figure 1. Network Structure of the variables and its categories (N = 950)



The Emotional Domain presented a small negative association with Stress ( $r = -0.24$ ) and Depression ( $r = -0.11$ ). It means that people who were used to adopting preventive strategies against COVID-19 presented low levels of Stress and Depression measures. Emotional Domain presented a small correlation with Protective-Strategies ( $r = 0.04$ ).

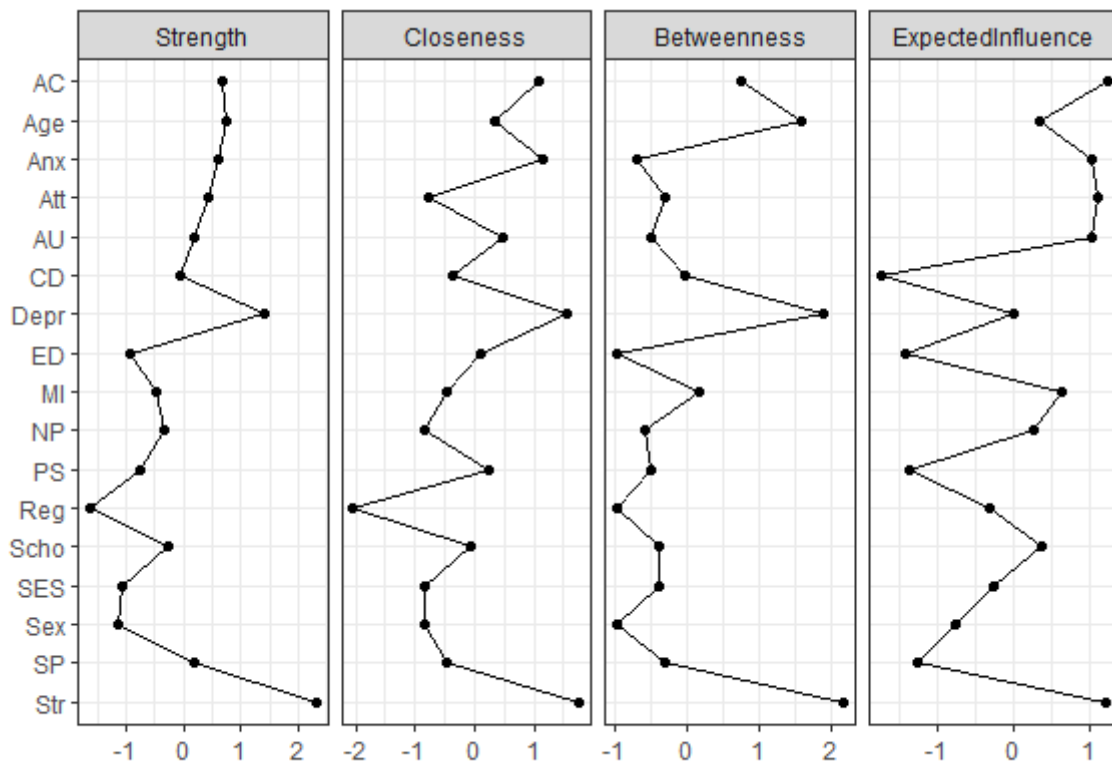
The coping factor of protective-strategies presented a negative correlation with depression ( $r = -0.18$ ), assuming that people who promoted different activities to deal with the emotional and functional demands of COVID-19 had low scores in depression. On the other hand, protective-strategies associated positively with age ( $r = 0.04$ ). Further, self-protection factor presented positive small correlation with alcohol-consuming ( $r = 0.07$ ), abusive use of alcohol ( $r = 0.06$ ), non-planning ( $r = 0.05$ ), motor impulsivity ( $r = 0.04$ ), and sex ( $r = 0.04$ ). Thus, it may be inferred that people who avoided to adopt

protective strategies against COVID-19 had high scores in alcohol consumptions measures, impulsivity variables and presented a more probability to self-referred as male.

Observing the mental health measures, it may be noted that the depression variable is associated positively with stress ( $r = 0.37$ ) and anxiety ( $r = 0.25$ ). Nevertheless, it was negatively associated with age ( $r = -0.07$ ) and schooling ( $r = -0.07$ ). In the same way, stress presented a positive correlation with anxiety ( $r = 0.45$ ), attentional problems ( $r = 0.06$ ), motor impulsivity ( $r = 0.09$ ), alcohol-consuming ( $r = 0.09$ ), and cognitive domain ( $r = 0.05$ ). However, it was found negative association of stress with age ( $r = -0.06$ ). Anxiety correlated positively with motor-impulsivity ( $r = 0.08$ ). Attentional problems were positive correlated with non-planning ( $r = 0.42$ ) and motor impulsivity ( $r = 0.26$ ).

It can be also noted a strong effect between alcohol-consuming and abusive use of alcohol which suggests that people who presented high scores in alcohol consumption, as a coping strategy showed high scores in abusive use of alcohol ( $r = 0.54$ ). Alcohol consuming presented positive correlation with motor impulsivity ( $r = 0.06$ ) and schooling ( $r = 0.08$ ). In the same way, abusive use of alcohol correlated with sex ( $r = 0.12$ ). Further, correlations among sociodemographic variables suggested positive correlation in age with schooling ( $r = 0.44$ ), socioeconomic status ( $r = 0.14$ ), region of Brazil ( $r = 0.07$ ; Southeast, as a reference). It was found also a positive correlation between socioeconomic status and region ( $r = 0.10$ ).

Figure 2. Centrality Plot of the Network Data

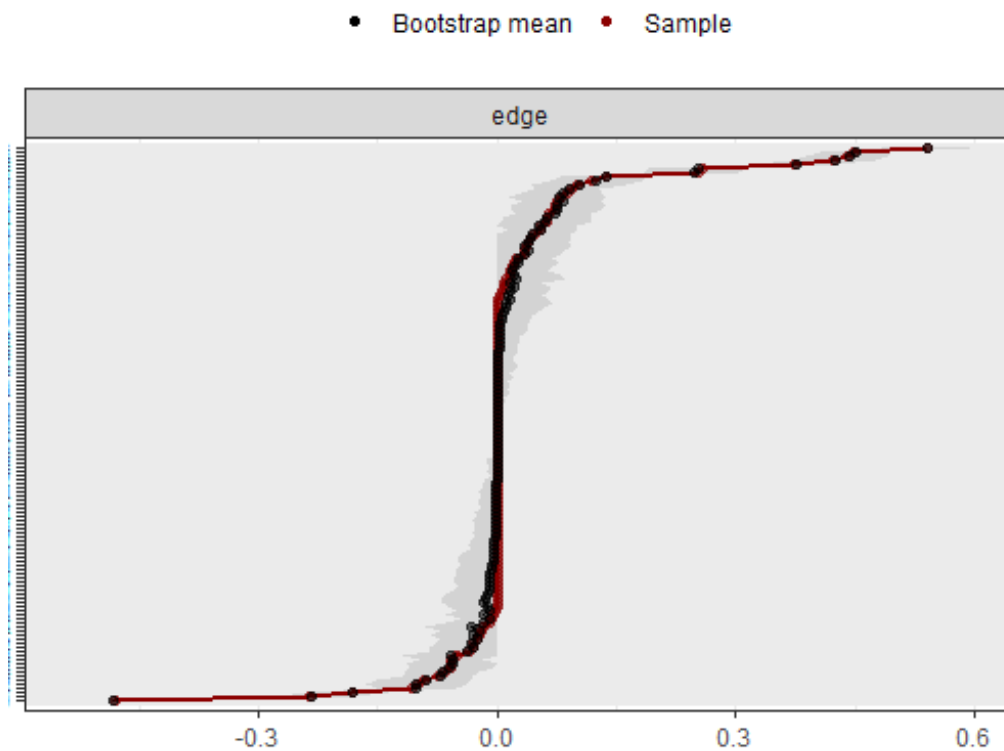


Note: AC = Alcohol Consuming (Coping); Anx = Anxiety; Att = Attentional Problems; AU = Abusive Use of Alcohol; CD = Cognitive Domain; Depr = Depression; ED = Emotional Domain; MI = Motor Impulsivity; NP = Non-Planning; PS = Protective Strategies; Reg = Region; Scho = Schooling; SES = Socioeconomic Status; SP = Self Protection; Str = Stress.

On the network analysis, it may be noted that Stress and Depression presented the highest Strength, Closeness, And Betweenness Centrality Indexes, i.e., according to these measures, they are most central in the network (Figure 2). Stress, Depression, Anxiety, and Alcohol-Consuming presented the highest levels of Closeness which means if any intervention affects these variables, so it will increase substantially the likelihood to impact speedily other variables inside the network. In the same way, Stress, Depression and Age presented high Centrality in Betweenness which means that they are important to spread information through the network, i.e., make interventions on them impact the adjacent nodes. Analyzing the centrality Index of Expected Influence, it may be noted that the variables which present more influence on the network Are Stress, Abusive Use

of Alcohol, Attentional Problems, Anxiety, And Alcohol-Consuming. Thus, according to this index, interventions in these variables may impact in other nodes of the network.

Figure 3. Accuracy of the Edges of the Network Data and Bootstrap analysis



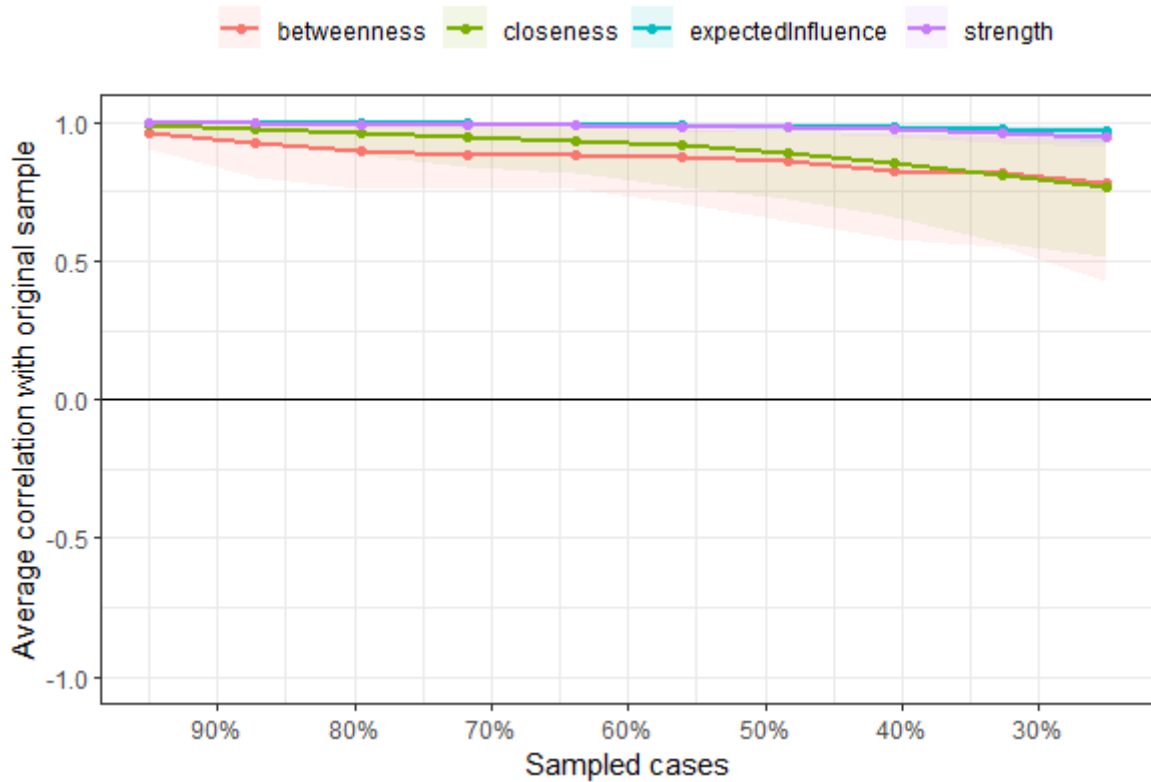
The precision of the edges was verified by the confidence intervals, through non-parametric bootstrapping with 1000 re-samples (CI 95%). The figure 3 plot presents an evidence of narrowed confidence interval which suggests a more accurate estimation of the edge of the network.

The stability of the indexes of Centrality estimated in the network, suggested a light decreasing of the Closeness and Betweenness when the sample cases are reduced (30%). However, this decrease means no impact in the stability of network centrality data, because all the centrality indexes were above 0.50 (Figure 4). On the same hand, reinforcing this assumption, the coefficient of data Stability of this study suggested a good fit stability ( $CS > 0.50$ ) of the different percentage of data in relation to the bootstrap



analysis, in which Betweenness = 0.52, Closeness = 0.52, Expected Influence = 0.75 and Strength = 0.75.

Figure 4. Centrality Stability of network data



## Discussion

Network analysis is a kind of abductive and exploratory method which allows to estimate a statistical model on data, represented by a weighted network with observed variables (Epskamp, Borsboom & Fried, 2018; Machado, Cunha & Vissoci, 2021). On the contrary of exploratory and confirmatory factor analysis or structural equations modelling that promote extractions of latent variables which influence the manifestation of the items, network analysis seeks to understand the mutual relation of variables, working together in a huge integrated network (Machado, Cunha & Vissoci, 2021).

Thus, it may be observed that in our network plotted by five main categories (Sociodemographic, Risk Perception, Coping Strategies, Mental Health and Alcohol), a

major part of the variables correlated with each other. Specifically, it may be suggested that interventions in Stress and Depression can promote changes in different relational variables in a pandemic context. Studies suggest that Stress and Depression symptoms increase substantially during different disease outbreaks and periods of vulnerability (Gardner & Moallem, 2015; Park et al, 2018; Ji et al, 2017; Asagba et al, 2021; Okoloba et al, 2020; Gao et al, 2020, Ornell et al, 2020). Thus, the execution of interventions and an efficient mental health support system on them may help in the promotion of the psychological well-being of the population (Lopes & Nihei, 2021; Ornell et al, 2020; Kar, Kar & Kar, 2021).

The Closeness data suggested that beyond of Stress and Depression, Anxiety and Alcohol-Consuming are also variables that if an intervention is implemented on them, the response of the change and impact on the adjacent nodes will be quick and effective. This result reinforces the need to promote Mental Health Strategies in periods of vulnerability because strategies with a focus on them may be more effective, speedy, and may impact in Risk Perception and Coping Strategies used during pandemics. Based on these assumptions, it may be also noted that Coping measures of the network presented associations with Mental Health and Alcohol measures. These results are associated with the study of Lopes and Nihei (2021) which analyzed that psychological well-being dimensions and adaptive copings may be protective factors during a pandemic crisis. Kar, Kar and Kar (2021) suggest that public education of Coping Strategies and Stress management may be an important weapon to the population handle with COVID-19 pandemic.

In relation to the Betweenness, beyond Stress and Depression, Age was presented as a Central node on the network in this index. Perhaps, it happened because Age has an important role and influence in other Sociodemographic variables, such as Schooling,

SES, and region of Brazil. However, it may be stressed that older people presented low measures of Depression and Stress. A similar result was found by Kar, Kar, and Kar (2021) who suggested that Mental Health problems were prevalent in students, 20 to 30 years old, and with university education. Understanding the Age factor may be important to address specific interventions for groups intending to change the manifestation of the network, mainly in Mental Health measures.

The Expected Influence Index suggested Stress, Attentional Problems, Abusive Use of Alcohol, Alcohol-Consuming, And Anxiety as the central variables in the network. This may be one piece of evidence that in a network like plotted in this paper, intervening in Mental Health and Alcohol Consumption are essential to avoid maladaptive coping strategies such As Abusive Use of Alcohol in pandemic. Grossman, Benjamin-Neelon and Sonneschein (2020) suggested in their study that the participants who reported be stressed by COVID-19 context presented more Alcohol Consumption. Similarly, Ogueji, Asagba and Constatine-Simms (2021) found that fear of COVID-19 associated negatively with substance use. However, this relation was not significant in this study. Even though, intervening in Alcohol Consumption Strategies, mainly in crisis period, may also be helpful to public health and population (Grossman, Benjamin-Neelon and Sonneschein, 2020).

It is important to highlight some results about the Risk Perception and Coping Strategies, even when their domains did not present as central on the network. The partial correlations of the cognitive domain suggested that people who perceived pandemic as a real threat adopted the self-protection strategies as a practical coping to deal with the coronavirus. However, people who did not adopt the self-protection strategies presented high levels of alcohol consumption and abusive use of alcohol. In the same way, people who presented a comfort feeling to adopt social isolation and protective strategies against

COVID-19 presented low levels of stress and depression. These finds are associated with the studies of Detoc et al (2020), and Fisher et al (2020), which suggest that high levels in cognitive and emotional domains are associated to promote protective behaviors against a disease. Cognitive styles and beliefs, such as denialist or people who live based on heuristics may have more difficulty to adapt themselves to the guidelines of the social isolation and other methods against COVID-19. Thus, it can be inferred that this is the reason of the relation with fewer self-protection strategies and high abusive use and alcohol consumption. Even so, massive education from reliable sources may be helpful to promote the modification of beliefs that may be unprotective in a pandemic context and maladaptive coping as well (da Silva et al, 2020)

### **Study Limitations**

This study presents some limitations. The first one is the concentration of people of Brazilian Northeast on the sample. However, the data collection was promoted by online survey in a pandemic context, thus, even trying to spread the survey in many parts of the web. The authors were unsuccessful to increase the responses of other Brazilian regions. The second limitation is that the cross-sectional design of the study did not allow us to analyze possible changes and patterns during pandemic. The last limitation was the possibility of the bias of the response in snowball sampling. However, intending to decrease this effect, it was adopted anonymous data collection form.

### **Funding**

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### **Data Availability**

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

### **Declarations**

Ethics Approval this research was approved by the Ethics Committee of the Federal University of Bahia (CAAE: 33563720.1.0000.5686)

**Consent to Participate:** All the participants of this study signed the informed consent permission electronically.

**Conflict of Interest:** The authors declare no competing interests.

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## Discussão

Os três primeiros estudos da tese abordaram as evidências de validade relacionadas as escalas desenvolvidas. No geral, todos os estudos apresentaram dados que sugerem que se pode tirar inferências do escore obtido por eles e associar a literatura utilizada para desenvolvê-los (AERA et al., 2017; Simon Hutz et al., 2015). Dado o ineditismo do fenômeno da covid-19 e da limitação da literatura nacional em mensurar os construtos desejados para a investigação, observou-se a necessidade de desenvolvimento das escalas em questão.

A Percepção de Risco sobre covid-19 e Isolamento Social apresentou uma estrutura de dois fatores, que pôde ser associado as assertivas de domínio cognitivo, isto é, a percepção de gravidade e suscetibilidade ao perigo em potencial (covid-19) e domínio emocional, que se associa aos sentimentos relacionados a covid-19 e isolamento social. Independente da fase ou período de vivência da pandemia do novo coronavírus, observa-se que este instrumento pode ser utilizado, e até adaptado para futuras pandemias de impacto semelhante.

Mais adiante, observou-se que a Escala de *Coping* na pandemia apresentou uma estrutura de dois fatores, nomeados de atitudes de resolução de problemas e de autoproteção. A escala foi desenvolvida para medir o nível de habilidades de enfrentamento em situações relacionadas à pandemia. Similarmente, a escala de percepção de risco em covid-19 e isolamento social, é possível utilizar este instrumento em momentos diferentes da pandemia ou adaptá-lo para potenciais pandemias futuras.

A Escala de Consumo de Alcool (ALCOS) é um instrumento que apresenta um modelo unidimensional, sendo que os indivíduos devem responder às assertivas com base no seu Consumo de Bebidas Alcoólicas como estratégia de enfrentamento durante o

período de pandemia. Contudo, observa-se que o seu uso pode ser adotado para qualquer momento, seja ele em pandemia ou não.

Em termos gerais, a pandemia da covid-19 vem implicando na manifestação de diversas consequências em distintas áreas como: econômicas, físicas e mentais para sociedades de todo o mundo (Liang et al., 2020; Ogueji, Bolaji Asagba, et al., 2021; Ogueji, Okoloba, et al., 2021; Schneider et al., 2021). As mudanças bruscas de rotina, condução de estratégias preventivas, infodemia e *fakenews* têm sido fatores que modulam a maneira em que as pessoas analisam a percepção do risco de contágio ou mortalidade do vírus, bem como a forma de lidar com todas as suas implicações (Dryhurst et al., 2020; Garcia & Duarte, 2020; Mesa Vieira et al., 2020a; Schneider et al., 2021).

Estudos vêm sugerindo que pandemias como a da covid -19 apresentam uma maior probabilidade de aumento de estresse e transtornos psicológicos, como: depressão, ansiedade, transtorno do estresse pós-traumático, além de altos níveis de impulsividade e estresse (Braule Pinto et al., 2021; Liang et al., 2020; Ogueji, Bolaji Asagba, et al., 2021; Ogueji, Okoloba, et al., 2021). A partir desta premissa, o modelo de (Lazarus & Folkman, 1984) sobre as estratégias de enfrentamento vem mostrando que ao se deparar com situações que promovam desconforto psicológico, as pessoas buscam maneiras para lidar com o fato, podendo ser elas adaptativas ou não. Uma forma estratégica de *coping* muito utilizada nas sociedades globais é o consumo do álcool (Metzger et al., 2017; Skrzynski & Creswell, 2020).

Contudo, quando não manejado de maneira prudente, este tipo de estratégia de enfrentamento pode ser hipercompensado de maneira desadaptativa, ocasionando problemas no âmbito de saúde mental com o uso abusivo (Ogueji, Okoloba & Ceccaldi, 2021; Liang et al, 2020; Skrzynski & Creswell, 2019; Metzger et al., 2017).

Partindo destes estudos, os dados da presente tese apresentaram algumas considerações relacionadas à literatura. A percepção de risco sobre a covid-19 apresentou de fato relações com as estratégias de *coping* e medidas de saúde mental. Ter uma percepção de proteção associada ao isolamento social se associou a um nível menor de estresse e depressão, bem como se relacionou positivamente com o uso de estratégias protetivas para lidar com a pandemia e isolamento social.

Semelhantemente, ter consciência da severidade e suscetibilidade ao vírus se associou a necessidade de se utilizar estratégias autoprotetivas de evitação ao contágio. Porém, indivíduos que apresentam um padrão de *coping* próximo a uma perspectiva negacionista, tiveram maiores níveis de uso de álcool como estratégia de enfrentamento e uso abusivo de álcool durante a pandemia. Estes achados são corroborados pelo estudo de Detoc et al (2020), em que foi constatado que altos níveis de percepção de risco relacionados à severidade e suscetibilidade podem ser direcionadores de comportamentos de proteção contra a covid-19, bem como desejo de se vacinar. Qiao et al (2021) sugere que a percepção de risco é um precursor para comportamentos direcionados à saúde, que permite o manejo dos indivíduos para lidar ou se prevenir do possível risco.

Um outro achado desta tese foi a relação, ainda que fraca, do domínio cognitivo da percepção de risco com o status socioeconômico (SES). Qiao et al. (2021) sugeriram que esta variável pode influenciar a autoeficácia na resposta ao risco. Dentro dos dados analisados, esta relação não foi encontrada para o domínio emocional da percepção de risco, em que suas relações ficaram restritas às estratégias de *coping* e medidas de saúde mental. Salienta-se também que diferentemente do que foi encontrado no estudo de Alschuler et al. (2021), os dados da tese não encontraram relações entre os domínios cognitivos e emocionais da percepção de risco com a variável de idade. Contudo, estes

concordaram que existe uma relação entre fatores psicológicos (medidas de saúde mental) e a percepção de risco (Alschuler et al., 2021).

Em termos da rede analisada, foi constatado que intervir em variáveis relacionadas à saúde mental, como por exemplo: estresse, depressão e ansiedade podem gerar mudanças mais eficientes e rápidas não só na rede, mas também em como as pessoas percebem o vírus e suas estratégias para lidar com a situação. Estes dados, estão relacionados à sugestão do estudo de Kar et al. (2021) que uma educação pública em estratégias de manejo de estresse e *coping* podem ser protetivos à população, visto que seus dados sugeriram que trabalhadores de saúde apresentaram níveis de ansiedade, estresse e depressão menores em relação àqueles que evitavam pensar sobre a pandemia ou tinham inseguranças sobre o uso de estratégias efetivas de *coping* para lidar com a pandemia.

Ogueji, Asagba e Constantine-Simms (2021) sugeriram em seu estudo que o medo ou a ansiedade experienciada durante a pandemia tem um potencial de ativar problemas comportamentais, sendo um deles o uso de substâncias. Os estudos do Canadian Centre on Substance Use and Addiction (2020), Grossman et al. (2020) e Jarvis (2020) foram na mesma direção, apontando que durante a pandemia, as pessoas puderam aumentar o seu consumo de bebidas alcoólicas na tentativa de escapar temporariamente do estresse e ansiedade oriundos da pandemia.

### **Limitações**

Esta tese apresenta algumas limitações. A primeira é que a maior parte da amostra apresentou um nível de escolaridade e socioeconômico mais alto, por conta do método de coleta utilizado. Por conta da pandemia, o pesquisador não pôde realizar coletas presenciais, tendo que recorrer ao método de bola de neve para lograr o máximo de

participantes possíveis dentro do território do Brasil. Outra limitação da tese é o fato de que a maior parte da amostra faz parte do nordeste brasileiro. Ainda assim, visando suprimir possíveis ruídos ocasionados por esta limitação, buscou-se na análise de redes fazer o ajuste dos dados por região do país.

Uma outra limitação da tese, é que por ter um corte transversal, não foi possível avaliar possíveis mudanças ocorridas ao longo do período de coleta. Observou-se também que para evitar possíveis vieses de resposta por conta da amostragem por bola de neve, o *survey* adotado utilizou o método de coleta anônimo.

### **Considerações Finais**

A presente tese teve por objetivo investigar, avaliar e estimar um modelo de relações entre os domínios cognitivos e emocionais da percepção de risco, estratégias protetivas e de autoproteção em *coping*, Consumo de bebidas alcóolicas como estratégia de *coping*, uso abusivo de álcool, depressão, impulsividade, estresse e ansiedade de adultos brasileiros, durante o período de pandemia. Foi constatado que as variáveis relacionadas à saúde mental apresentaram relações e centralidade no que tange a influência das demais variáveis de Percepção de Risco, *Coping* e consumo e uso abusivo de álcool durante a pandemia da covid-19.

Apesar destes achados se relacionarem com o que é encontrado na literatura sobre o tema. Muita cautela deve ser aplicada nos resultados aqui observados, visto que sua amostragem não foi aleatória, mas por método bola de neve, o que conduz o pesquisador a evitar generalizações a população geral do Brasil. Ainda assim, a tese apresenta dados que podem subsidiar possíveis intervenções, principalmente em saúde mental, e conduções a pandemias futuras.

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## TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO



INVESTIGAÇÃO DE PERCEPÇÃO DA PANDEMIA DE COVID-19,  
ESTRATÉGIAS DE ENFRENTAMENTO E O CONSUMO DE ÁLCOOL

CAAE: 33563720.1.0000.5686



# Investigação de Percepção da pandemia de COVID-19, estratégias de enfrentamento e o consumo de Álcool

O(A) Senhor(a) está sendo convidado(a) a participar de uma pesquisa. Por favor, leia este documento com bastante atenção antes de assiná-lo. Este é um convite para você participar voluntariamente da pesquisa que tem por objetivo avaliar a percepção que as pessoas têm da COVID-19, isolamento social e seus efeitos psicológicos, e consumo de álcool.

Este estudo faz parte de um projeto intitulado Investigação das características preditivas nos processos do comportamento de consumo/compra (CAAE:33563720.1.0000.5686), tendo sido aprovado pelo Comitê de Ética em psicologia pelo Instituto de Psicologia da Universidade Federal da Bahia. Este é um estudo realizado pelo Laboratório de Pesquisa Clínica e Cognitiva da Universidade Federal da Bahia (NEUROCLIC UFBA).



A intenção deste projeto é investigar a percepção que as pessoas têm da pandemia da COVID-19, o isolamento social, as estratégias de enfrentamento, bem como o consumo de álcool durante este período. Portanto, estamos convidando adultos de 18 a 100 anos para, VOLUNTARIAMENTE, responder a este protocolo que tem duração média de 10 minutos. O(A) senhor(a) responderá este formulário online que contém escalas relacionadas a aspectos socioeconômicos e a sintomas relacionados a: depressão, estresse, ansiedade, impulsividade e consumo de álcool. Também será solicitado suas respostas relacionadas à percepção da pandemia e o isolamento social, bem como a sua forma de enfrentar a pandemia.

Sua participação é totalmente voluntária e é garantida a retirada de consentimento

(desistência) por parte do participante a qualquer momento, sem que haja qualquer tipo de penalidade. Asseguramos que as informações que identifiquem o participante não serão divulgadas, sendo confidenciais. Ao final da coleta, os nomes serão excluídos e substituídos por códigos para que não haja risco de identificação dos participantes. Os riscos deste estudo são mínimos, entretanto existe a possibilidade do(a) senhor(a) se sentir desconfortável emocionalmente ao responder algumas perguntas das escalas. Caso em algum momento o(a) senhor(a) se sinta excessivamente desconfortável e julgar necessário, a execução do protocolo poderá ser interrompida e os dados serão descartados.

Os resultados das avaliações serão utilizados exclusivamente para fins de pesquisa e serão divulgados em forma de tese de doutorado de um dos pesquisadores e artigos a serem publicados posteriormente. Informamos que o Comitê de Ética ao qual o projeto está submetido será informado acerca de mudanças que ocorram no decorrer da pesquisa ou mesmo da sua descontinuação, caso esta seja interrompida. Ao final da pesquisa, todo material será mantido em arquivo confidencial, por pelo menos 5 anos, conforme Resolução 466/12.

Estamos à disposição para esclarecer qualquer dúvida acerca dos procedimentos e aspectos éticos do estudo. O pesquisador responsável é Jônatas Reis Bessa da Conceição (email: [jonatas.reisbessa@gmail.com](mailto:jonatas.reisbessa@gmail.com)), Doutorando em Psicologia pela Pós-Graduação do Instituto de Psicologia, sendo orientado pelo Professor-doutor Neander Abreu, do Instituto de Psicologia da Universidade Federal da Bahia.

 [jonatas.reisbessa@gmail.com](mailto:jonatas.reisbessa@gmail.com) (não compartilhado) 

[Alternar conta](#)

**\*Obrigatório**

Declaração de concordância de participação na Pesquisa \*

- Eu aceito e concordo em participar voluntariamente desta pesquisa
- Eu recuso a minha participação nesta pesquisa

## **INSTRUMENTO DA ESCALA DE PERCEPÇÃO DE RISCO SOBRE COVID-19**

### Perception Risk Scale about COVID-19

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Item 01	The COVID-19 pandemic is a threat to my life
Item 02	The COVID-19 is not more lethal in comparison to another respiratory diseases
Item 03	If I get infected by COVID-19, my health will be severely injured
Item 04	If I get infected by COVID-19, I will not be afraid to infect others
Item 05	I am following the COVID-19's social isolation recommendations
Item 06	The COVID-19's social isolation experience is not being exhausting
Item 07	The social isolation did not cause impacts on my life
Item 08	The social isolation is important to the control of COVID-19
Item 09	The social isolation to the control of COVID-19 should not be over
Item 10	The COVID-19's social isolation implies more damages than benefits
Item 11	The COVID-19's social isolation did not bring troubles to my family
Item 12	I am concerned with my finances because of the COVID-19's social isolation
Item 13	I have found difficulties to relax since the COVID-19's social isolation began

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## INSTRUMENTO DA ESCALA DE COPING NA PANDEMIA

### Item

### Pandemic Coping Scale

- 
- 01** I have been utilizing social isolation to do things I couldn't do because of the routine
- 
- 02** I have only come out of social isolation when it is very necessary, as I understand the importance of this.
- 
- 03** I have taken the possible precautions to avoid being contaminated (constantly handwashing, wearing a mask, sanitize the environment and hands with alcohol)
- 
- 04** I try to keep in touch with friends and family even at a distance
- 
- 05** I tend to think that this pandemic situation will result in something good in the end
- 
- 06** When I feel anguished, I avoid doing something I like to distract myself at this moment (Focus in regulate the emotion).
- 
- 07** When I feel scared during the pandemic, I try to take a deep breath and relax.
- 
- 08** Despite the recommendations, I've been leaving home, because I can't stand to be isolated anymore.
- 
- 09** I think that as I'm not from the risk group, I don't need to worry about it (the pandemic)
- 
- 10** I have tried to stay active by doing physical activity even at home
- 
- 11** I have been trying to talk to people close to me.
- 
- 12** During the pandemic, I try to get involved in some pleasurable activities (reading, watching TV, listening to music...)

## **INSTRUMENTO DA ESCALA DE CONSUMO DE ÁLCOOL**

### **The Alcohol Consumption Scale (ALCOS)**

- 
- 1. In the last month, drinking has been part of my routine**

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  - 2. I have been drinking to feel agitated/excited**

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  - 3. I have been drinking more on weekends**

---

  - 4. I feel less worried when I drink.**

---

  - 5. I drink when I'm very anxious**

---

  - 6. I have been drinking to feel more relaxed**

---

  - 7. I drink when I feel bored**

---

  - 8. I drink when I feel lonely**

---

  - 9. Currently, I don't have a specific day or time to drink**

---

  - 10. Lately I have been drinking to feel good**

---

  - 11. I am currently consuming more alcoholic beverages than 3 months ago.**

---

  - 12. In the last month, I couldn't stop drinking when I thought that I had already drunk enough**

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  - 13. Fear and/or sadness make me drink**

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  - 14. When I'm isolated, my main distraction is drinking**