AKADÉMIAI KIADÓ

Journal of Behavioral Addictions

11 (2022) 2, 600–606

DOI:
10.1556/2006.2022.00040

BRIEF REPORT

The Holistic Recovery Capital in Gambling Disorder index: A pilot study

BELLE GAVRIEL-FRIED[1]*, NIVA LEV-EL[1] and SHANE W. KRAUS[2]

[1] The Bob Shapell School of Social Work, Tel Aviv University, Israel

[2] Department of Psychology, University of Nevada, Las Vegas, NV, USA

Received: March 23, 2021 • Revised manuscript received: May 25, 2021; September 20, 2021; December 14, 2021; January 31, 2022; May 7, 2022 • Accepted: May 15, 2022
Published online: June 29, 2022

ABSTRACT

Background and aims: Recovery is a challenge for individuals coping with a gambling disorder (GD). Recovery capital (RC) is a conceptual framework describing positive external and internal (e.g., human, social, community and financial) resources that promote recovery. Negative RC relates to external and internal obstacles to recovery. To date, no scale has captured both positive and negative RC items in the gambling field. Based on the RC framework, this pilot study aimed to develop *The Holistic Recovery Capital in Gambling Disorder* (HRC-GD) instrument, and to explore its associations with recovery status, measures of psychopathology and happiness. We hypothesized that higher HRC-GD scores will be positively related to recovery and subjective happiness, but negatively linked to depression, anxiety, and gambling severity. *Method:* Recovered and non-recovered individuals with a lifetime DSM-5 GD (n = 164) completed the HRC-GD instrument, the DSM-5 GD diagnostic criteria, and measures of depression, anxiety, and subjective happiness. *Results:* Through a process of item reduction, which included a principal components analysis, 19 items were retained. Since exploratory factor analysis (EFA) yielded uninterpretable findings, an index score reflecting human, financial, community, and social resources and obstacles was calculated. HRC-GD index scores were negatively correlated with anxiety, depression, and GD symptom severity, but positively related with subjective happiness. Index scores were significantly associated with recovery status. *Conclusions:* The HRC-GD index holds promise as a new tool for measuring RC in GD. Additional research is needed to validate this index using larger and more ethnically and gender diverse clinical and community samples of individuals with GD.

KEYWORDS

positive recovery capital, negative recovery capital, recovery, gambling disorder, index development

INTRODUCTION

Addiction recovery, including gambling disorder (GD), is a process of change, and holistic improvement in the individual's well-being and life domains despite the obstacles and challenges inherent to this process (Davidson, Lawless, & Leary, 2005; Inanlou, Bahmani, Farhoudian, & Rafiee, 2020; Pickering, Spoelma, Dawczyk, Gainsbury, & Blaszczynski, 2020). Recovery capital (RC) represents the individual's strengths related to addiction recovery, and encompasses positive quantity and quality of external and internal resources (e.g., human, social, financial, and community) an individual uses and has access to during the recovery process (Cloud & Granfield, 2008; Hennessy, 2017). Cloud and Granfield (2008) described negative RC (NRC) as factors that hinder individuals from recovering from their addictions (i.e., individual attributes, personal circumstances).

Studies on individuals with substance use problems have shown that high positive RC (PRC) is associated to well-being and quality of life (Groshkova, Best, & White, 2013), but negatively associated to depression and anxiety (Best, McKitterick, Beswick, & Savic, 2015). Findings also showed that people who recovered from substance use disorder had higher levels of PRC (Best et al., 2015).

*Corresponding author.
Tel.: +971+36409151.
E-mail: bellegav@tauex.tau.ac.il

The concept of RC was first investigated in the gambling field in a study of 140 Israelis with a lifetime history of GD (Gavriel-Fried, 2018). Using the Brief Assessment of Recovery Capital scale (Vilsaint et al., 2017) adapted for gambling that consisted PRC items, the findings showed that people who recovered had higher levels of PRC than non-recovered, and PRC was negatively linked to GD severity, general anxiety and depression (Gavriel-Fried, 2018), but positively linked to spirituality and DSM-5 GD symptom improvement (Gavriel-Fried, Moretta, & Potenza, 2020a). PRC had positive links to GD symptom improvement in younger and older individuals, and in men and women (Gavriel-Fried, Moretta, & Potenza, 2020b; 2019), suggesting that PRC is an important component of GD recovery across age and gender. Gavriel-Fried et al. (2020a) recommended that future studies should capture and integrate assessments of elements that hinder and promote recovery for persons with GD.

A content analysis of interviews with 133 individuals (91 recovered) from the same sample (Gavriel-Fried, 2018) yielded two RC models that conceptualized PRC and NRC in GD (Gavriel-Fried & Lev-el, 2020, 2022). The NRC model identified 14 NRC categories such as cognitive distortions, sensation seeking (Human), conflictual social networks (Social), an environment that encourages gambling (Community), and financial distress and debt (Financial) (Gavriel-Fried & Lev-el, 2022). The PRC model yielded 12 RC positive categories including Subjective Well-Being (Human), Pro-recovery Environment and Professional Therapeutic Milieu (Community), Recovering Gamblers' Peer Group, Family (Social), and Pro-recovery Financial State (Financial) (Gavriel-Fried & Lev-el, 2020). In both cases, the elements were classified under the same four RC domains (Human, Social, Community, Financial).

Several attempts have been made to quantify the concept of positive RC in individuals with substance use problems (Burns & Marks, 2013; Groshkova et al., 2013; Sterling, Slusher, & Weinstein, 2008; Vilsaint et al., 2017), but there is no gold standard. Best, Vanderplasschen, and Nisic (2020) developed the Strengths and Barriers Recovery scale, however, their scale was specific to substance addiction recovery, and was not subjected to psychometric testing.

The current study

Given the compelling need for the development of a new measure that captures the holistic phenomenon of recovery from GD, the current pilot study aimed to develop the Holistic Recovery Capital in Gambling Disorder (HRC-GD) instrument using items from the positive and negative RC models in GD (Gavriel-Fried & Lev-el, 2020, 2022). In this study, recovery from GD was defined as a self-reported lifetime history of DSM-5 GD and in the complete absence of all GD criteria over the previous 12 months (Slutske, Piasecki, Blaszczynski, & Martin, 2010). To evaluate the initial factor structure and psychometric properties of the newly developed HRC-GD instrument we hypothesize: a) HRC-GD scores to be negatively associated with mental health symptoms, but positively associated with subjective happiness, and b) HRC-GD scores will be highest for individuals fully recovered from GD, lower for individuals with sub-threshold GD and lowest among those with GD.

METHOD

Participants and procedure

One hundred sixty-four individuals (91.5% male, mean age = 44.90, *SD* = 13.55) were recruited from three gambling treatment centers in Israel. Half the sample was married/in partnership (44.5%) or single/divorced (55.5%), with at least at high school education (53.7%) or greater (37.2%). Gambling treatment history consisted of currently in therapy – both professional and/or gamblers' anonymous (50%) and completed treatment (50%). Reported time last gambled was past week (17.1%), month (5.5%), six months (9.8%), year (11%), and more than a year ago (56.7%). Preferred gambling type was electronic gambling machines (7.9%), card games (12.8%), casino (7.3%), scratch cards (7.9%), sports betting (35.4%), stock market (4.3%) and more than one preferred method (6.1%). On average, participants reported 13.06 years (*SD* = 8.80) experiencing gambling problems. Ninety two (*n* = 56.1%) individuals were classified as being in recovery (with zero DSM-5 GD symptoms in the past year), 16.5% participants who reported between one to three GD symptoms were classified as subthreshold GD, and 27.4% reported 4 + GD symptoms in the past 12 months and classified as non-recovered.

Individuals were eligible if they were above age 18, reported lifetime DSM-5 GD criteria, and had been in treatment in the previous five years (currently in treatment, dropped out, or terminated treatment). The first appeal to the participants was made by the treatment centers. Participants who consented filled out a questionnaire in a telephone interview that lasted 20–50 min. The data were collected from July to September 2020, and individuals were compensated with $15 gift cards.

Measures

Holistic Recovery Capital in Gambling Disorder (HRC-GD) instrument. The development process of this measurement tool involved two main stages: a) Based on an extensive review of all segments of each category of PRC and NRC in GD models from previous qualitative content analyses (Gavriel-Fried & Lev-el, 2020, 2022), 32 items were formulated. b) Five experienced social workers who specialize in treating individuals with GD and three individuals with GD were asked to say whether these items were relevant and reflected either obstacles or resources with respect to recovery from GD and whether the items were clear. Based on this, several items were re-phrased. The final scale included 17 PRC and 15 NRC items (see Table 1). NRC items are reversed scored. All responses ranged from 1 *'not true at all'* to 5 *'very true'*.

Table 1. Holistic Recovery Capital Index in Gambling Disorder:
Item endorsement, means and standard deviations, skewness, and kurtosis for 32 items

Items of Human Recovery Capital - During the past year…	**NAT**	**NT**	**ST**	**T**	**VT**	**M (SD)**	**Skewness**	**Kurtosis**	**PRC/ NRC**
1. I have been busy at work or engaged in other activities.	2.4%	4.9%	9.1%	11.6%	72%	4.46 (1.01)	−1.88	2.68	+
8. I have been able to control my urge to gamble.	9.1%	3%	16.5%	11.5%	59.5%	4.10 (1.31)	−1.27	0.40	+
14. I think that the gambling industry exploits and misleads gamblers and it is impossible to make money from gambling.	3%	8.5%	12.2%	10.4%	65.9%	4.27 (1.15)	−1.38	−0.43	+
17. I have often recalled the difficult periods I have been through when I gambled very well.	**0.6%**	**1.8%**	**3%**	**9.8%**	**84.8%**	**4.76 (0.65)**	**−3.31**	**11.87**	+
28. I have felt responsible for the harm I have done to my family or people close to me.	6.1%	3%	9.1%	12.8%	68.9%	4.35 (1.16)	−1.81	2.27	+
26. I have set goals in life for myself.	3.7%	6.7%	11.6%	25%	53.%	4.17 (1.11)	−1.31	0.90	+
32. I have been satisfied with my life, and have had positive feelings such as joy, calm, and peace.	9.8%	9.1%	23.8%	22.6%	34.8%	3.63 (1.31)	−0.62	−0.69	+
3. I have experienced negative feeling such as boredom, depression, anger, or anxiety.	37.2%	14%	24.4%	11%	13.4%	2.49 (1.43)	0.44	−1.10	−
4. I believe I could earn money from gambling.	65.9%	8.5%	11%	7.3%	7.3%	1.82 (1.30)	1.56	0.46	−
5. I have had stressful events in my life (e.g., divorce, arrest, illness, death of my relatives).	57.9%	6.1%	7.9%	7.3%	7.3%	2.27 (1.66)	0.77	1.18	−
6. I have felt a great need to seek out thrills.	26.2%	14.6%	29.3%	11.6%	18.3%	2.81 (1.42)	0.17	−1.18	−
9. I have not had the willpower nor believed that I could recover from gambling.	75%	9.1%	10.4%	3%	2.4%	1.49 (0.97)	2.04	3.49	−
15. I have hidden my gambling problem from people who are close to me.	53.7%	7.3%	14.0%	9.8%	15.2%	2.26 (1.54)	0.73	−1.06	−
Items of Financial Recovery Capital - During the past year…	**NAT**	**NT**	**ST**	**T**	**VT**	**M (SD)**	**Skewness**	**Kurtosis**	**PRC/ NRC**
2. I have had no gambling debts.	33.5%	15.9%	7.3%	4.3%	39%	2.99 (1.77)	0.07	−1.80	+
21. I have not kept a lot of cash in my wallet.	10.4%	11.6%	18.9%	12.2%	47%	3.74 (1.41)	−0.67	−0.93	+
31. I have had enough money for my basic needs.	5.5%	5.5%	11.%	15.2%	62.8%	4.24 (1.18)	−1.49	1.17	+
25. I have had great financial difficulties.	32.9%	17.7%	11.6%	17.7%	20.1%	2.74 (1.56)	0.23	−1.50	−
29. I have had no place to sleep regularly.	**96.3%**	**1.2%**	**1.8%**	**0.6%**	**0%**	**1.07 (0.37)**	**5.96**	**37.0**	**−**
Items of Community Recovery Capital − During the past year…	**NAT**	**NT**	**ST**	**T**	**VT**	**M (SD)**	**Skewness**	**Kurtosis**	**PRC/ NRC**
7. My country has attempted to regulate gambling industry and reduce the harms caused by gambling.	72%	9.1%	7.3%	7.3%	4.3%	1.63 (1.15)	1.73	1.72	+
23. Treatment resources (e.g., counseling/ therapy) for problem gambling have been available to me and close to where I live.	31.1%	6.1%	6.7%	15.9%	40.2%	3.28 (1.74)	−0.33	−1.66	+
27. There have been self-help groups (e.g., GA) close to where I live.	32.3%	12.2%	9.8%	14.6%	31.1%	3.00 (1.68)	−0.02	−1.69	+
16. Gambling venues have been easy to find and accessible in my community.	8.5%	7.9%	5.5%	14.6%	63.4%	4.16 (1.33)	−1.41	0.56	−
22. I have been exposed to a lot of gambling advertisements in my community	9.1%	18.3%	15.9%	13.4%	43.3%	3.63 (1.42)	−0.50	−1.21	−

(continued)

Table 1. Continued

Items of Community Recovery Capital – During the past year…	NAT	NT	ST	T	VT	M (SD)	Skewness	Kurtosis	PRC/ NRC
24. There have been places and people that can lend me money for gambling purposes.	42.1%	10.4%	12.2%	17.1%	18.3%	2.59 (1.59)	0.33	−1.51	–
30. People in my country have not become aware that gambling can be addictive.	4.9%	12.2%	15.2%	25.6%	42.1%	3.88 (1.22)	0.83	−0.43	–
Items of Social Recovery Capital - During the past year…	**NAT**	**NT**	**ST**	**T**	**VT**	**M (SD)**	**Skewness**	**Kurtosis**	**PRC/ NRC**
10. I have been in contact with close friends who do not gamble.	**3%**	**3.7%**	**4.9%**	**7.9%**	**80.5%**	**4.59 (0.90)**	**−2.51**	**5.47**	+
11. I have been in contact with friends who gambled in the past and recovered.	53.7%	4.3%	6.7%	7.9%	27.4%	2.51 (1.77)	0.48	−1.61	+
18. My family has supported my recovery and believed in me.	10.4%	6.1%	7.9%	10.4%	65.2%	4.14 (1.38)	−1.37	0.37	+
19. My family has been involved in my financial management.	31.7%	8.5%	11.6%	12.8%	35.4%	3.12 (1.70)	−0.14	−1.69	+
12. I have been in contact with friends who gamble regularly or who have gambling problems.	42.7%	10.4%	14%	12.8%	20.1%	2.57 (1.61)	0.39	−1.46	–
13. I have not been in contact with friends who support me.	57.9%	14%	6.1%	9.8%	12.2%	2.04 (1.46)	1.07	−0.43	–
20. There have been tensions and quarrels between me and my family.	39.6%	18.3%	22.6%	8.5%	11.0%	2.33 (1.36)	0.65	−0.77	–

Note. Response options: NAT (not at all true), NT (not true), ST (somewhat true), T (true) and VT (very true). Unbalanced items were dropped (bolded) (>80% for a single item). Kurtosis (−2.0 to +2.0) and skewness (−7.0 to +7.0). PRC = Positive Recovery Capital; NRC = Negative Recovery Capital; GA = gamblers anonymous.

DSM-5 diagnostic criteria for GD. Nine yes/no items measured past year and lifetime DSM-5 GD symptoms (American Psychiatric Association, 2013). The participants responded to each item by relating to two time periods: the previous 12 months, and their lifetime GD symptoms. Two scores were calculated: a categorial score (four and above DSM-5 GD symptoms - non-recovered; 1-3 symptoms – sub-threshold GD; zero symptoms – recovered); a continuous score representing past year GD severity, where higher scores denoted greater GD severity. The internal reliability of the DSM-5 GD (past year) was excellent (Omega = 0.91).

Patient Health Questionnaire-4 (PHQ-4). An ultra-brief scale containing four items measuring depression and generalized anxiety (Kroenke, Spitzer, Williams, & Löwe, 2009). Responses range from *not at all* (0) to *nearly every day* (3). Higher scores denote higher levels of depression and anxiety. The internal reliability for the PHQ-4 was excellent (Omega = 0.90). The inter-item correlation between the two anxiety items ($r = 0.55$, $P < 0.001$) and two depression items ($r = 0.78$, $P < 0.001$) ranged from moderate to high.

Subjective happiness. Four items assessing global subjective happiness (Lyubomirsky & Lepper, 1999). Responses are indicated on a 7-point Likert scale. Higher scores represent greater happiness (Omega = 0.83).

Analytical procedure

We used SPSS-28 to calculate the variables, means and standard deviations as well as the proportions for continuous and categorical variables, then conducted an exploratory factor analysis (EFA) followed by a principal components analysis (PCA) to calculate an index score. We calculated Pearson product-movement correlations to examine associations between HRC-GD scores and other scales. A one-way ANOVA was conducted to examine group differences in recovery status. Bonferroni post-hoc analyses were used for group comparisons. Alpha for two-tailed tests was 0.05.

Ethics

This study was conducted in compliance with the Declaration of Helsinki. This study was approved by the Institutional Review Board of Tel Aviv University.

RESULTS

As shown in Table 1, the frequency counts for each level of agreement on the 32 items was examined to identify unbalanced items (i.e., 80% either strongly disagreed or completely agreed). Using this decision rule, three items (10,

17, and 29) were identified, and after examining kurtosis (−2.0 to +2.0) and skewness (−7.0 to +7.0), these items were dropped (Byrne, 2010).

Next, we conducted a principal axis factoring (EFA, Oblimin rotation) to examine the factor structure of the measurement tool, but results yielded uninterpretable findings. We found 10 factors with eigenvalues greater than 1 (range 6.04 to 1.04) which yielded considerable cross loadings with several factors loading with only a single item above 0.30. Therefore, we conducted a single factor PCA to reduce the number of weakly loaded items by setting a 0.30 loading threshold, which reduced the tool to 19 items (see Table 2). Given these current constraints, we conducted an additional PCA with the 19 items to calculate a one factor

Table 2. Holistic Recovery Capital Index in Gambling Disorder: Item loadings from two principal components analysis

Domain	Items of Index - During the past year…	PCA loadings	
		29 items	19 items
Human Recovery Capital	1. I have been busy at work or engaged in other activities.	**0.53**	**0.53**
	8. I have been able to control my urge to gamble.	**0.77**	**0.77**
	14. I think that the gambling industry exploits and misleads gamblers and it is impossible to make money from gambling.	0.21	-
	28. I have felt responsible for the harm I have done to my family or people close to me.	0.22	-
	26. I have set goals in life for myself.	**0.57**	**0.57**
	32. I have been satisfied with my life, and have had positive feelings such as joy, calm, and peace.	**0.80**	**0.81**
	3. I have experienced negative feeling such as boredom, depression, anger, or anxiety. [R]	**0.63**	**0.64**
	4. I believe I could earn money from gambling. [R]	**0.60**	**0.60**
	5. I have had stressful events in my life (e.g., divorce, arrest, illness, death of my relatives). [R]	0.16	-
	6. I have felt a great need to seek out thrills. [R]	**0.54**	**0.54**
	9. I have not had the willpower nor believed that I could recover from gambling. [R]	**0.66**	**0.65**
	15. I have hidden my gambling problem from people who are close to me. [R]	**0.64**	**0.65**
Financial Recovery Capital	2. I have had no gambling debts.	**0.51**	**0.53**
	21. I have not kept a lot of cash in my wallet.	0.26	-
	31. I have had enough money for my basic needs.	**0.55**	**0.56**
	25. I have had great financial difficulties. [R]	**0.48**	**0.50**
Community Recovery Capital	7. My country has attempted to regulate gambling industry and reduce the harms caused by gambling.	0.12	-
	23. Treatment resources (e.g., counseling/therapy) for problem gambling have been available to me and close to where I live.	**0.38**	**0.35**
	27. There have been self-help groups (e.g., GA) close to where I live.	**0.38**	**0.37**
	16. Gambling venues have been easy to find and accessible in my community. [R]	**0.41**	**0.39**
	22. I have been exposed to a lot of gambling advertisements in my community. [R]	0.06	-
	24. There have been places and people that can lend me money for gambling purposes. [R]	0.25	-
	30. People in my country have not become aware that gambling can be addictive. [R]	−0.10	-
Social Recovery Capital	11. I have been in contact with friends who gambled in the past and recovered.	0.03	-
	18. My family has supported my recovery and believed in me.	**0.52**	**0.52**
	19. My family has been involved in my financial management.	**0.34**	**0.33**
	12. I have been in contact with friends who gamble regularly or who have gambling problems. [R]	**0.33**	**0.34**
	13. I have not been in contact with friends who support me. [R]	0.24	-
	20. There have been tensions and quarrels between me and my family. [R]	**0.49**	**0.51**

Note. Item loading for principal components analysis (PCA) <0.30 were retained (Bolded). Reverse scored = R; Model 1 (29 items): Kaiser-Meyer-Olkin measure of sampling adequacy = 0.77, Barlett's Test of Sphericity = 1378.97, df = 406, $P < 0.001$, Eigen value = 6.04, total variance = 20.83; Model 2 (19 items): Kaiser-Meyer-Olkin measure of sampling adequacy = 0.83, Barlett's Test of Sphericity = 993.37, df = 171, $P < 0.001$ Eigen value = 5.75, total variance = 30.28. GA = gamblers anonymous

(index) score (Median = 0.24, Mode = −2.78, Range = 4.19, −2.78 to 1.41; Cronbach's alpha = 0.85) (see Table 2).

Four Pearson product moment correlations revealed that the index score was negatively correlated with anxiety ($r = -0.66$, $P < 0.001$), depression ($r = -0.65$, $P < 0.001$), and GD symptom severity ($r = -0.77$, $P < 0.001$), but positively related with subjective happiness ($r = 0.53$, $P < 0.001$). We found that the HRC-GD index scores were significantly associated with recovery status, F [2, 163] = 100.35, $P < 0.0001$, partial $\eta^2 = 0.56$. Three statistically significant differences between groups were noted: first, fully recovered participants reported higher HRC-GD index scores ($M = 0.56$, $SD = 0.57$) than participants reporting subthreshold GD ($M = 0.03$, $SD = 0.77$) (Cohen's $d = 0.62$); second, fully recovered participants reported higher HRC-GD index scores ($M = 0.56$, $SD = 0.57$) compared to individuals with GD ($M = -1.17$, $SD = 0.79$) (Cohen's $d = 0.65$); and third, individuals with GD ($M = -1.17$, $SD = 0.79$) reported lower HRC-GD index scores compared to individuals reporting subthreshold GD ($M = 0.03$, $SD = 0.77$) (Cohen's $d = 0.78$).

DISCUSSION

This pilot study describes the development of a new comprehensive index which measures resources that enhance and obstacles that hinder recovery from GD, and its associations with recovery status, depression, anxiety, and subjective happiness. Our results support Cloud and Granfield's (2008) theoretical notion that this conceptual framework includes both positive and negative RC and support the holistic notion of the RC conceptual framework in GD (Gavriel-Fried & Lev-el, 2020, 2022). Present findings underscore the importance of taking both positive and negative human, social, community and financial elements throughout recovery from GD into account, similar to drug users in recovery (Best et al., 2020).

As hypothesized, the HRC-GD index was strongly correlated with measures of happiness, anxiety, depression, and DSM-5 GD symptom severity, and could be used to robustly predict recovery status among those with a lifetime GD history. These results support previous studies on individuals with substance use and GDs, which have reported a negative association between PRC, depression and anxiety, but a positive association between state of recovery and higher levels of PRC (Best et al., 2015; Gavriel-Fried, 2018). The results related to the positive association between PRC and happiness corresponded with previous findings in substance use problems (Eddie, Bergman, Hoffman, & Kelly, 2022). Hence, the HRC-GD index can thus be used as a measurement tool which we believe has significant implications for GD treatment, particularly as it relates to assessing both obstacles and facilitators of RC for clients. Further research is needed to re-evaluate the factor structure of the HRC-GD given the difficulty with producing distinct RC domains. It is likely that given our small sample size and item endorsement (i.e., ceiling or floor effects), limited current findings. Thus, recruitment of a larger, more ethnic and gender diverse group of individuals with lifetime GD is needed for scale development and further refinement (i.e., invariance testing for gender, ethnicity/race, criterion, discriminant validity).

Several limitations should be acknowledged. First, this was a pilot study, with a small sample size mostly of men who had applied for treatment in Israel. Second, our study was also cross-sectional, which precludes the possibility of testing causality. The study was also conducted during the COVID-19 pandemic, which could have affected the results, thus replication is needed.

Conclusions and implications

The current findings strengthen the holistic perspective of recovery. The newly created index can potentially be used for both research and clinical purposes and may enable practitioners and therapists to assess RC resources for people in treatment by providing a way to diagnose the current state and distinguish between resources and challenges to tailor personalized interventions. This study paves the way for future studies to replicate our work in order to evaluate the importance of HRC for individuals in recovery from GD and other addictive disorders.

Funding sources: This study was partially supported by the Sara Peleg Foundation of Tel Aviv University.

Authors' contribution: Dr Belle Gavriel-Fried is the initiating author. She conceptualized the study aims, index development, and methodology, was responsible for data collection, and writing. Niva Lev-el was involved in index development. Shane W Kraus was involved in index development and conducted the data analyses. All authors have approved the final version.

Conflict of interest: None.

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Best, D., McKitterick, T., Beswick, T., & Savic, M. (2015). Recovery capital and social networks among people in treatment and among those in recovery in York, England. *Alcoholism Treatment Quarterly*, *33*(3), 270–282. https://doi.org/10.1080/07347324.2015.1050931.

Best, D., Vanderplasschen, W., & Nisic, M. (2020). Measuring capital in active addiction and recovery: The development of the strengths and barriers recovery scale (SABRS). *Substance abuse treatment, prevention, and policy*, *15*(1), 1–8. https://doi.org/10.1186/s13011-020-00281-7.

Burns, J., & Marks, D. (2013). Can recovery capital predict addiction problem severity? *Alcoholism Treatment Quarterly*, *31*(3), 303–320. https://www.tandfonline.com/action/showCitFormats?doi=10.1080/07347324.2013.800430.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming (multivariate applications series)*. New York: Taylor & Francis Group, *Vol. 396*.

Cloud, W., & Granfield, R. (2008). Conceptualizing recovery capital: Expansion of a theoretical construct. *Substance Use & Misuse*, *43*(12–13), 1971–1986. https://doi.org/10.1080/10826080802289762.

Davidson, L., Lawless, M. S., & Leary, F. (2005). Concepts of recovery: Competing or complementary? *Current Opinion in Psychiatry*, *18*(6), 664–667. https://doi.org/10.1097/01.yco.0000184418.29082.0e.

Eddie, D., Bergman, B. G., Hoffman, L. A., & Kelly, J. F. (2022). Abstinence versus moderation recovery pathways following resolution of a substance use problem: Prevalence, predictors, and relationship to psychosocial well-being in a national United States sample. *Alcoholism: Clinical and Experimental Research*, *46*(2), 312–325. https://doi.org/10.1111/acer.14765.

Gavriel-Fried, B. (2018). The crucial role of recovery capital in individuals with a gambling disorder. *Journal of Behavioral Addictions*, *7*(3), 792–799. https://doi.org/10.1556/2006.7.2018.82.

Gavriel-Fried, B., & Lev-el, N. (2020). Mapping and conceptualizing recovery capital of recovered gamblers. *American Journal of Orthopsychiatry*, *90*(1), 22. http://dx.doi.org/10.1037/ort0000382.

Gavriel-Fried, B., & Lev-el, N. (2022). Negative recovery capital in gambling disorder: A conceptual model of barriers to recovery. *Journal of Gambling Studies*, *38*(1), 279–296. https://doi.org/10.1007/s10899-021-10016-3.

Gavriel-Fried, B., Moretta, T., & Potenza, M. N. (2019). Similar roles for recovery capital but not stress in women and men recovering from gambling disorder. *Journal of Behavioral Addictions*, *8*(4), 770–779.

Gavriel-Fried, B., Moretta, T., & Potenza, M. N. (2020a). Associations between recovery capital, spirituality, and DSM–5 symptom improvement in gambling disorder. *Psychology of Addictive Behaviors*, *34*(1), 209, https://doi.org/10.1037/adb0000492.

Gavriel-Fried, B., Moretta, T., & Potenza, M. N. (2020b). Recovery capital and symptom improvement in gambling disorder: Correlations with spirituality and stressful life events in younger but not older adults. *Journal of Gambling Studies*, *36*(4), 1379–1390. https://doi.org/10.1007/s10899-019-09905-5.

Groshkova, T., Best, D., & White, W. (2013). The Assessment of Recovery Capital: Properties and psychometrics of a measure of addiction recovery strengths. *Drug and Alcohol Review*, *32*(2), 187–194. https://doi.org/10.1111/j.1465-3362.2012.00489.x.

Hennessy, E. A. (2017). Recovery capital: A systematic review of the literature. *Addiction Research & Theory*, *25*(5), 349–360. https://doi.org/10.1080/16066359.2017.1297990.

Inanlou, M., Bahmani, B., Farhoudian, A., & Rafiee, F. (2020). Addiction recovery: A systematized review. *Iranian Journal of Psychiatry*, *15*(2), 172.

Kroenke, K., Spitzer, R. L., Williams, J. B., & Löwe, B. (2009). An ultra-brief screening scale for anxiety and depression: The PHQ–4. *Psychosomatics*, *50*(6), 613–621. https://doi.org/10.1016/S0033-3182(09)70864-3.

Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, *46*(2), 137–155. https://doi.org/10.1023/A:1006824100041.

Pickering, D., Spoelma, M. J., Dawczyk, A., Gainsbury, S. M., & Blaszczynski, A. (2020). What does it mean to recover from a gambling disorder? Perspectives of gambling help service users. *Addiction Research & Theory*, *28*(2), 132–143. https://www.tandfonline.com/action/showCitFormats?doi=10.1080/16066359.2019.1601178.

Slutske, W. S., Piasecki, T. M., Blaszczynski, A., & Martin, N. G. (2010). Pathological gambling recovery in the absence of abstinence. *Addiction*, *105*(12), 2169–2175. https://doi.org/10.1111/j.1360-0443.2010.03080.x.

Sterling, R., Slusher, C., & Weinstein, S. (2008). Measuring recovery capital and determining its relationship to outcome in an alcohol dependent sample. *The American Journal of Drug and Alcohol Abuse*, *34*(5), 603–610. https://doi.org/10.1080/00952990802308114.

Vilsaint, C. L., Kelly, J. F., Bergman, B. G., Groshkova, T., Best, D., & White, W. (2017). Development and validation of a Brief Assessment of Recovery Capital (BARC-10) for alcohol and drug use disorder. *Drug and Alcohol Dependence*, *177*, 71–76. https://doi.org/10.1016/j.drugalcdep.2017.03.022.