

Healthcare Worker Burnout and Perceived Capacity to Address Social Needs

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Specific Aims

Aim #1:
To characterize the perceived elements of capacity to address patients' social needs within a heterogeneous group of healthcare workers

Aim #2:
To examine the association of these behavioral dimensions with burnout

Background

- Unmet Social Needs:**
- Defined by unemployment, housing quality and availability, food insecurity, etc
 - Mounting evidence pointing to worse health outcomes for communities and individuals with higher levels of unmet social needs
 - Professional associations, payers, and governmental bodies all now recommend integrating 'Social Care' (i.e screening for and addressing unmet social needs) into medical care delivery models
 - Team-based integrated health systems social care interventions have been shown to improve health outcomes, however, among physicians, lower perceived capacity to address social needs is associated with higher burnout
 - Our understanding of this relationship among *healthcare teams* is limited
- Burnout:**
- Safety net healthcare settings often serve communities with high rates of unmet social needs
 - In these settings, demands placed on staff often exceed the available resources, creating psychological discomfort that can lead to symptoms of stress, moral injury and burnout
 - Burnout among workers in healthcare settings has resulted in poorer quality of care, significant financial costs, and decreased job satisfaction
 - In this context, it is critical that any new programs in healthcare settings include implementation strategies that will mitigate burnout

- Behavior Change:**
- Mitigating these unintended consequences requires utilizing evidence-based behavior change models in program implementation
 - Capability, Opportunity, and Motivation Behavioral system (COM-B)* is a model of behavior change that is adapted here to understand perceptions of social needs screening among healthcare workers

Methods

- Study Sample**
- At least 10% of staff from 46 provider organizations with the Montefiore Hudson Valley Collaborative, a performing provider system in the New York State Delivery System Reform Incentive Program (DSRIP)
 - Individuals with complete data on primary study variables were included in the analysis (N=1022)

- Measures**
- Demographics (age, sex, race/ethnicity)
 - Organizational role
 - Burnout (Single item burnout measure)
 - Perceived Capacity to Address Social Needs (15 survey items)

- Statistical Analysis**
- Descriptive statistics and correlation matrix** for 15 survey items from 'Perceived Capacity to Address Social Needs' domain
 - Internal consistency assessed with Cronbach's alpha coefficient
 - Sample adequacy assessed with Keyser-Myer-Olkin measure

- Exploratory Factor Analysis**
- Factors extracted using iterated principal factors method, and rotated orthogonally with varimax method to achieve simple structure
 - Least squares regression approach was used to estimate factor scores

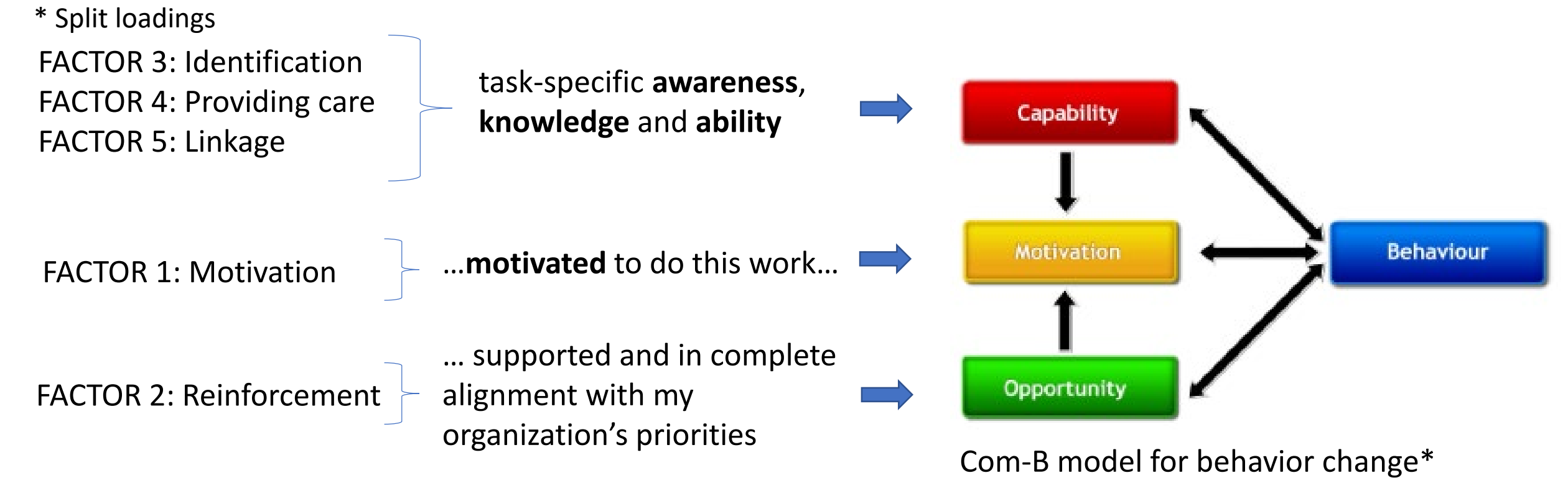
- Bivariate associations**
- T-tests/non-parametric MWU, or X²/Fisher Exact test were used to assess associations with burnout outcome
 - ANOVAs (with Bonferroni corrections) were used to assess association between factor scores and organizational role

- Logistic Regression**
- Hierarchical modeling approach
 - First order interaction effects were tested between task-specific capacities and both Motivation and Organizational Reinforcement

Respondent Characteristics	
Characteristic	N (%)
Age (yr), median [IQR] *	46 [35-56]
Race/ethnicity †	
Non-Hispanic Black	167 (14.0)
Non-Hispanic White	703 (58.9)
Hispanic	190 (15.9)
Asian	50 (4.2)
Other	28 (2.4)
Multiracial	55 (4.6)
Sex †	
Male	246 (20.8)
Female	939 (79.2)
Organizational role §	
Case manager/Social Worker	359 (30.8)
RN/LPN/PA/NP	170 (14.6)
Physician	71 (6.1)
CHW/peer navigator/educator	153 (13.1)
Clerical/food/environmental	136 (11.7)
Program managers	178 (15.3)
Senior Leadership	98 (8.4)
Organizational Type ¶	
Mental Health	352 (29.3)
Substance Use	100 (8.3)
Skilled Nursing Facility	52 (4.3)
Primary Care Practice	126 (10.5)
Care Management	110 (9.1)
Federally Qualified Health Center	13 (1.1)
Hospital	394 (32.8)
Other Community Based Organization	56 (4.7)

* N=1150, † N=1193, ‡ N=1185, § N=1165, ¶ N=1203

Exploratory Factor Analysis Loadings						
Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	
Identification of Social Needs						
Awareness		0.25	0.22	0.67	0.29	0.29
Motivation	0.67	0.27	* 0.43	0.13	0.22	
Knowledge	0.28	0.20	0.66	0.32	0.32	
Ability	0.23	0.29	0.57	0.38	0.35	
Organizational Reinforcement		0.20	0.80	0.33	0.14	0.26
Providing Care for Patients with Social Needs						
Awareness		0.32	0.24	0.40	0.59	0.31
Motivation	0.75	0.27	0.17	* 0.43	0.19	
Knowledge	0.26	0.25	0.21	0.68	0.35	
Ability	0.24	0.31	0.36	0.71	0.36	
Organizational Reinforcement		0.25	0.77	* 0.41	0.26	
Linkage to Resources to Address Social Needs						
Awareness		0.23	0.22	0.29	0.26	0.75
Motivation	0.63	0.24	0.17	0.15	* 0.53	
Knowledge	0.16	0.25	0.22	0.25	0.83	
Ability	0.20	0.27	0.20	0.26	0.81	
Organizational Reinforcement		0.23	0.65	0.10	0.12	* 0.60
Proportion of Variance						
	0.17	0.20	0.17	0.18	0.28	



Multivariate Regressions of Perceived Capacity Variables Predicting Burnout, Stratified by Organizational Role (OR, 95% CI)							
	Case Manager, Social Worker	Nurse (RN, LPN, NP), PA	Physician	CHW, Peer Navigator, Health Educator	Clerical, Food, Environmental	Program Managers	Senior Leadership
Stratified Models							
N	326	144	56	134	109	153	82
Pseudo R ²	0.14	0.10	0.59	0.27	0.11	0.23	0.35
P-value	<0.001	0.51	0.01	0.003	0.72	0.004	0.05
Age	0.99 [0.97, 1.01]	0.99 [0.95, 1.02]	1.22 [0.91, 1.63]	* 0.95 [0.91, 0.99]	0.97 [0.92, 1.02]	0.99 [0.95, 1.03]	0.92 [0.83, 1.01]
Race							
Non-Hispanic White	[REF]	[REF]	[REF]	[REF]	[REF]	[REF]	[REF]
Non-Hispanic Black	1.06 [0.50, 2.25]	1.06 [0.34, 3.29]	---	1.45 [0.38, 5.58]	0.60 [0.11, 3.30]	0.14 [0.02, 1.02]	2.26 [0.14, 36.42]
Hispanic	1.56 [0.79, 3.07]	0.39 [0.09, 1.68]	---	1.97 [0.52, 7.47]	0.45 [0.13, 1.56]	1.21 [0.30, 4.92]	2.32 [0.15, 36.20]
Asian	0.91 [0.14, 6.13]	0.46 [0.12, 1.84]	15.23 [0.01, 70841]	1.79 [0.05, 58.90]	---	1.60 [0.23, 11.26]	---
Other	1.01 [0.16, 6.46]	---	---	---	---	0.59 [0.04, 8.55]	---
Multiracial	0.24 [0.04, 1.35]	1.49 [0.30, 7.35]	334.59 [0.01, 2.03]	14.93 [0.97, 229.87]	0.58 [0.05, 6.42]	0.04 [0.01, 2.26]	0.07 [0.01, 92.78]
Sex	* 2.74 [1.20, 6.27]	0.55 [0.16, 1.82]	0.46 [0.01, 25.09]	0.32 [0.10, 1.04]	0.72 [0.17, 3.02]	1.15 [0.38, 2.87]	4.96 [0.37, 65.62]
Perceived Capacity Variables							
1. Motivation	** 0.57 [0.39, 0.82]	1.25 [0.63, 2.48]	3.98 [0.01, 4603]	0.51 [0.25, 1.02]	1.43 [0.74, 3.61]	0.67 [0.41, 1.08]	* 0.18 [0.04, 0.84]
2. Reinforcement	*** 0.44 [0.29, 0.66]	** 0.50 [0.30, 0.83]	* 0.04 [0.01, 0.72]	0.57 [0.25, 1.30]	0.47 [0.21, 1.33]	*** 0.25 [0.12, 0.54]	* 0.27 [0.08, 0.89]
3. Identification of Social Needs	1.19 [0.79, 1.80]	0.92 [0.53, 1.60]	0.96 [0.01, 151.8]	1.12 [0.53, 2.36]	1.87 [0.75, 3.50]	1.42 [0.72, 2.80]	0.59 [0.08, 4.17]
4. Providing Care	1.09 [0.75, 1.59]	1.10 [0.63, 1.94]	2.04 [0.01, 92.76]	2.04 [0.96, 4.34]	1.00 [0.39, 1.95]	1.51 [0.69, 3.12]	7.97 [0.43, 147.59]
5. Linkage to Resources	1.30 [0.89, 1.88]	0.83 [0.51, 1.34]	0.58 [0.02, 20.24]	0.95 [0.58, 1.60]	1.19 [0.58, 2.20]	1.45 [0.70, 2.98]	0.68 [0.16, 2.93]
Interaction Effects							
Motivation x Identification of Social Needs	0.93 [0.60, 1.44]	1.22 [0.60, 2.49]	0.09 [0.01, 5.65]	1.02 [0.40, 2.57]	1.62 [0.96, 2.72]	0.93 [0.52, 1.67]	9.99 [0.24, 417.80]
Motivation x Providing Care	** 0.56 [0.39, 0.82]	0.78 [0.44, 1.40]	1.00 [0.10, 10.34]	0.90 [0.42, 1.93]	0.73 [0.43, 1.23]	0.58 [0.31, 1.09]	0.06 [0.01, 2.65]
Motivation x Linkage to Resources	0.74 [0.49, 1.10]	1.03 [0.55, 1.96]	3.9 [0.10, 129.71]	0.73 [0.38, 1.41]	1.39 [0.79, 2.44]	1.00 [0.44, 2.24]	1.61 [0.18, 13.96]
Reinforcement x Identification of Social Needs	0.87 [0.60, 1.25]	0.71 [0.42, 1.19]	2.04 [0.04, 100.45]	** 0.20 [0.06, 0.66]	1.07 [0.36, 3.17]	* 0.35 [0.14, 0.86]	2.36 [0.13, 44.06]
Reinforcement x Providing Care	1.08 [0.76, 1.56]	1.21 [0.74, 1.96]	0.99 [0.01, 97.98]	2.89 [0.83, 10.04]	0.80 [0.29, 2.20]	1.95 [0.83, 4.59]	0.07 [0.01, 3.45]
Reinforcement x Linkage to Resources	1.24 [0.86, 1.81]	0.98 [0.60, 1.61]	4.20 [0.03, 540.25]	1.22 [0.57, 2.62]	0.77 [0.40, 1.50]	** 2.48 [1.01, 6.09]	2.86 [0.29, 28.70]
Motivation x Reinforcement	1.22 [0.85, 1.76]	1.32 [0.77, 2.28]	0.55 [0.01, 294.68]	0.74 [0.30, 1.85]	1.14 [0.42, 3.05]	1.55 [0.72, 3.34]	1.24 [0.32, 4.86]

* P<0.05, ** P<0.01, *** P<0.001, --- group dropped due to <5 responses

Discussion

- Motivation, organizational reinforcement, and three task-specific capacities (identifying, providing care, and linking to resources) provide a structure that define a 'perceived capacity to address social needs' domain, consistent with previous models of behavior change
- Lower sense of organizational reinforcement, and lower motivation for addressing patients' social needs were both associated with higher rates of burnout
- In models stratified by organizational role, inverse relationship between organizational reinforcement and burnout held true for most roles.
 - Inverse relationship between motivation and burnout was only seen among case managers, social workers, and senior leadership
- Physicians had some of the lowest scores on motivation, organizational reinforcement, and capabilities, consistent with other studies, and pointing towards the need for other healthcare team members to be included in these programs
- Behavioral factors affecting burnout and behavior change do not act in isolation, so thinking about these non-linear, higher-order associations can be useful to help create explanatory models

Results

Bivariate and Multivariate Relationships of Perceived Capacity Variables, Covariates, and Burnout								
Characteristic	Bivariate relationships, N (%)		p-value	Full Logistic Regression model*		Logistic regression model including interaction terms*		p-value
	High Burnout	Low Burnout		OR [95% CI]	p-value	OR [CI]	p-value	
Age (yr), median [IQR]	43 [32-53]	47 [36-57]	.0001	0.98 [0.96, 0.99]	<0.001	0.98 [0.97, 0.99]	0.001	
0.72								
Race/ethnicity				[REF]		[REF]	[REF]	
Non-Hispanic White	177 (25.3)	522 (74.7)		0.96 [0.62, 1.51]	0.87	0.94 [0.60, 1.50]	0.81	
Non-Hispanic Black	45 (27.3)	120 (72.7)		0.96 [0.63, 1.46]	0.85	0.98 [0.64, 1.50]	0.94	
Hispanic	48 (25.5)	140 (74.5)		0.73 [0.33, 1.63]	0.44	0.67 [0.30, 1.53]	0.35	
Asian	10 (20)	40 (80)		0.45 [0.14, 1.47]	0.19	0.50 [0.15, 1.65]	0.26	
Other	4 (14.3)	24 (85.7)		0.81 [0.40, 1.63]	0.56	0.80 [0.39, 1.65]	0.55	
Multiracial	15 (27.3)	40 (72.7)		1.03 [0.70, 1.52]	0.86	1.08 [0.73, 1.60]	0.70	
Sex			0.50					
Male	57 (23.2)	189 (76.8)						
Female	235 (25.3)	695 (74.7)						
Organizational role			0.13					
Case manager, Social Worker	101 (28.3)	256 (71.7)		1.31 [0.69, 2.49]	0.42	1.17 [0.61, 2.24]	0.64	
Nurse (RN, LPN, NP), PA	48 (28.6)	120 (71.4)		1.44 [0.72, 2.91]	0.31	1.32 [0.65, 2.67]	0.45	
Physician	11 (15.5)	60 (84.5)		0.66 [0.26, 1.70]	0.39	0.57 [0.21, 1.50]	0.25	
CHW, peer navigator, educator	37 (24.3)	115 (75.7)		1.18 [0.57, 2.41]	0.66	1.08 [0.52, 2.23]	0.84	
Clerical, food, environmental	30 (22.2)	105 (77.8)		0.91 [0.42, 1.97]	0.82	0.91 [0.42, 1.97]	0.81	
Program managers	45 (25.4)	132 (74.6)		1.30 [0.65, 2.61]	0.46	1.16 [0.57, 2.33]	0.69	
Senior Leadership	17 (17.7)	79 (82.3)		[REF]	[REF]	[REF]	[REF]	
Perceived Capacity Variables, mean (SD)								
1. Motivation	-14 (.97)	.05 (.88)	0.05	0.78 [0.66, 0.92]	0.004	0.71 [0.59, 0.86]	<0.001	
2. Reinforcement	-35 (.98)	.12 (.89)	0.07	0.55 [0.47, 0.65]	<0.001	0.51 [0.42, 0.62]	<0.001	
3. Identification of Social Needs	.06 (.84)	-.02 (.89)	0.25	1.13 [0.95, 1.35]	0.17	1.17 [0.95, 1.44]	0.14	
4. Providing Care	-.04 (.87)	-.01 (.90)	0.51	1.18 [0.99, 1.40]	0.06	1.20 [0.98, 1.48]	0.08	
5. Linkage to Resources	-.03 (1.0)	.01 (.93)	0.17	0.96 [0.81, 1.12]	0.58	1.00 [0.84, 1.20]	0.97	
Interaction Effects of Perceived Capacity Variables								
Motivation x Identification of Social Needs						1.03 [0.84, 1.20]	0.77	
Motivation x Providing Care						0.72 [0.60, 0.87]	0.001	
Motivation x Linkage to Resources						0.93 [0.78, 1.11]	0.43	
Reinforcement x Identification of Social Needs						0.78 [0.63, 0.97]	0.03	
Reinforcement x Providing Care						1.19 [0.97, 1.47]	0.10	
Reinforcement x Linkage to Resources						1.25 [1.02, 1.51]	0.03	
Motivation x Reinforcement						1.07 [0.88, 1.29]	0.49	

N=1022
*model p-value <