

Cognitive Behavioral Therapy among Ghana's Rural Poor is Effective Regardless of Baseline Mental Distress

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Motivation: Link Between Mental Distress and Economic Insecurity

- Evidence of bidirectional causal link between poverty and mental distress (Ridley et al 2020)
 - Negative economic shocks likely to cause distress (Chemin et al 2013)
 - Being in a state of depression: negatively distorts beliefs, raises costs of effort
- Additional literature (e.g. Mullainathan and Shafir 2013) that being in a state of scarcity might shape decision-making beyond mechanism of distress
- Strong evidence base for Cognitive Behavioral Therapy (CBT) for specific diagnosable disorders (Butler et al 2006)

Psychological Distress in Ghana: Prevalent, with High Churn

- In Ghana Socioeconomic Panel Survey, in rural, North/Middle Belt: high rates of distress, churn

	(1) Share 2009	2013 Mental Distress			
		(2) None	(3) Mild	(4) Moderate	(5) Severe
Level of 2009 Mental Distress					
(a) No 2009 mental distress	0.43	0.70	0.19	0.08	0.03
(b) Mild 2009 mental distress	0.30	0.66	0.21	0.10	0.03
(c) Moderate 2009 mental distress	0.17	0.59	0.25	0.12	0.04
(d) Severe 2009 mental distress	0.11	0.61	0.23	0.13	0.04
(e) Share in 2013		0.66	0.21	0.10	0.03

Research Question: Impact of CBT in General, Low-Income Population

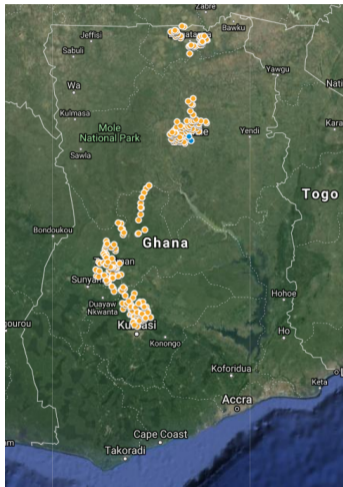
- This study: what are the short-run effects of CBT when delivered to a general, low-income population in Ghana?
- In particular:
 - What are the effects on mental health?
 - What are the effects on human capital: socio-emotional skills and cognition?
- Part of larger asset transfer (“graduation”) study

- 1 CBT is effective at reducing psychological distress
- 2 Effect holds Regardless of Baseline Distress
- 3 CBT strengthens a broader set of tools: socioemotional skills (Heckman et al 2006), bandwidth (Mullainathan and Shafir 2013)

What is Cognitive Behavioral Therapy?

- Cognitive behavioral therapy (CBT) is a psycho-therapy program focused on teaching skills to identify negative thought patterns (“thought distortions”) and modify beliefs (Beck 1979)
- Central idea: when we experience stimuli in the world, we often have an automatic response to them
- CBT: recognize there exists an intermediate stage where we assess the stimuli, can interpret these stimuli in more productive ways

Study Context: large sample, broad geographic coverage



- Delivered in 258 communities in five regions
- Core analysis: 7,200 individuals (1,300 receiving CBT)
- Aim: test program in diverse set of environments in Ghana



- 37 counselors (1 lead, 1 assistant), with Bachelor's degree (e.g. in psychology, development studies)
- Counselors given two weeks of background training, 1 week practice
- Gender-specific groups, target 10/group
- 12-weekly meetings, ≈ 1.5 hours each
- 90% offered ever attended; 74% mean attendance

Sampling and Randomization Design

- Selected communities classified as poor, with no similar (graduation) programs, access by road, at least 45 compounds
- Within each community: randomly selected household from 40 poorest compounds
- Baseline survey: (1) household, (2) adult for 1 male/1 female per HH
- Three levels of randomization: (1) community level (pure control/active), (2) gender of CBT in community, (3) individual-level
- Analysis: compare individuals receiving CBT to all control individuals
- Given complex design, we use Randomization Inference (RI) in our core analysis
- Endline survey: 2-3 months after program

Estimating Equations

- For average treatment effects:

$$y_{ivt} = \alpha + \beta_1 \cdot CBT_{ivt} + \beta_2 \cdot y_{iv0} + X_{ivt}\Pi + \epsilon_{ivt}$$

- For effects by baseline distress:

$$y_{ivt} = \alpha + \beta_1 \cdot CBT_{ivt} \cdot distressed_{iv0} + \beta_2 \cdot CBT_{ivt} \cdot not\ distressed_{iv0} + \beta_3 \cdot distressed_{iv0} + \beta_4 \cdot y_{iv0} + X_{ivt}\Pi + \epsilon_{ivt}$$

Health Outcomes: Average Treatment Effects

	Control Mean	CBT Average Treatment Effect, Full Sample
	(1)	(2)
Panel A: Mental Health Outcomes		
Mental Health Index	0.00	0.15
<i>RI p-value</i>		[0.000]
Kessler Score	21.41	-1.36
<i>RI p-value</i>		[0.000]
No distress (Kessler < 20)	0.45	0.06
<i>RI p-value</i>		[0.004]
No moderate or severe distress (Kessler < 25)	0.69	0.06
<i>RI p-value</i>		[0.001]
No severe distress (Kessler < 30)	0.85	0.04
<i>RI p-value</i>		[0.010]
Mental Health Self Rating (1/4)	2.84	0.07
<i>RI p-value</i>		[0.052]
30 minus days in month with poor mental health	25.32	0.53
<i>RI p-value</i>		[0.097]
Panel B: Perceived Physical Health and Effects on Labor		
Perceived Physical Health and Labor Index	0.00	0.13
<i>RI p-value</i>		[0.000]
Physical Health Self-Rating (1/4)	3.04	0.12
<i>RI p-value</i>		[0.000]
30 minus days in month with poor physical health	25.61	0.89
<i>RI p-value</i>		[0.001]
30 minus days in month in which poor mental or physical health limited labor or normal activities	26.90	0.344
<i>RI p-value</i>		[0.160]

Health Outcomes: By Baseline Distress

	Control Mean	CBT Average Treatment Effect, Full Sample	CBT Average Treatment Effect, Minor, Moderate or Severe Baseline Distress (Kessler 20+)	CBT Average Treatment Effect, No Baseline Distress (Kessler < 20)	p-value from Test: Homogenous Treatment Effect by Baseline Distress, 3=4
	(1)	(2)	(3)	(4)	(5)
Panel A: Mental Health Outcomes					
Mental Health Index	0.00	0.15	0.12	0.18	
<i>RI p-value</i>		[0.000]	[0.008]	[0.009]	[0.385]
Kessler Score	21.41	-1.36	-1.08	-1.61	
<i>RI p-value</i>		[0.000]	[0.002]	[0.006]	[0.422]
No distress (Kessler < 20)	0.45	0.06	0.05	0.05	
<i>RI p-value</i>		[0.004]	[0.034]	[0.146]	[0.974]
No moderate or severe distress (Kessler < 25)	0.69	0.06	0.05	0.07	
<i>RI p-value</i>		[0.001]	[0.010]	[0.041]	[0.603]
No severe distress (Kessler <30)	0.85	0.04	0.02	0.07	
<i>RI p-value</i>		[0.010]	[0.273]	[0.019]	[0.106]
Mental Health Self Rating (1/4)	2.84	0.07	0.07	0.05	
<i>RI p-value</i>		[0.052]	[0.070]	[0.442]	[0.702]
30 minus days in month with poor mental health	25.32	0.53	0.23	1.20	
<i>RI p-value</i>		[0.097]	[0.522]	[0.052]	[0.169]
Panel B: Perceived Physical Health and Effects on Labor					
Perceived Physical Health and Labor Index	0.00	0.13	0.11	0.13	
<i>RI p-value</i>		[0.000]	[0.004]	[0.065]	[0.873]
Physical Health Self-Rating (1/4)	3.04	0.12	0.10	0.14	
<i>RI p-value</i>		[0.000]	[0.004]	[0.010]	[0.500]
30 minus days in month with poor physical health	25.61	0.89	0.70	1.11	
<i>RI p-value</i>		[0.001]	[0.036]	[0.056]	[0.566]
30 minus days in month in which poor mental or physical health limited labor or normal activities	26.90	0.344	0.469	-0.003	
<i>RI p-value</i>		[0.160]	[0.101]	[0.995]	[0.407]

Human Capital Outcomes: Average Treatment Effects

	Control Mean	CBT Average Treatment Effect, Full Sample
	(1)	(2)
Panel A: Socioemotional Skills		
Socioemotional Skill Index	0.00	0.27
<i>RI p-value</i>		[0.000]
Generalized Self-Efficacy Score	0.00	0.29
<i>RI p-value</i>		[0.000]
Grit Score	0.00	0.19
<i>RI p-value</i>		[0.000]
Self-Control Score	0.00	0.12
<i>RI p-value</i>		[0.005]
Panel B: Cognition		
Cognition Index	0.00	0.08
<i>RI p-value</i>		[0.012]
Raven's Progressive Matrices, Indexed	0.00	0.03
<i>RI p-value</i>		[0.555]
Digit Span: Forwards, Indexed	0.00	0.08
<i>RI p-value</i>		[0.023]
Digit Span: Backwards, Indexed	-0.01	0.07
<i>RI p-value</i>		[0.033]
Executive Function Test, Indexed	0.00	0.05
<i>RI p-value</i>		[0.170]
Panel C: Economic Self-Perception		
Perceptions of Economic Status Index	0.00	0.20
<i>RI p-value</i>		[0.000]
Self-Reported Economic Status	3.08	0.44
<i>RI p-value</i>		[0.000]
Projected Economic Status in 5 years	5.79	0.36
<i>RI p-value</i>		[0.000]

Human Capital Outcomes: By Baseline Distress

	Control Mean	CBT Average Treatment Effect, Full Sample	CBT Average Treatment Effect, Minor, Moderate or Severe Baseline Distress (Kessler 20+)	CBT Average Treatment Effect, No Baseline Distress (Kessler < 20)	p-value from Test: Homogenous Treatment Effect by Baseline Distress, 3=4
	(1)	(2)	(3)	(4)	(5)
Panel A: Socioemotional Skills					
Socioemotional Skill Index	0.00	0.27	0.25	0.29	
<i>RI p-value</i>		[0.000]	[0.000]	[0.000]	[0.623]
Generalized Self-Efficacy Score	0.00	0.29	0.29	0.30	
<i>RI p-value</i>		[0.000]	[0.000]	[0.000]	[0.893]
Grit Score	0.00	0.19	0.18	0.20	
<i>RI p-value</i>		[0.000]	[0.001]	[0.004]	[0.836]
Self-Control Score	0.00	0.12	0.10	0.15	
<i>RI p-value</i>		[0.005]	[0.058]	[0.028]	[0.482]
Panel B: Cognition					
Cognition Index	0.00	0.08	0.08	0.08	
<i>RI p-value</i>		[0.012]	[0.043]	[0.170]	[0.969]
Raven's Progressive Matrices, Indexed	0.00	0.03	0.02	0.08	
<i>RI p-value</i>		[0.555]	[0.701]	[0.259]	[0.484]
Digit Span: Forwards, Indexed	0.00	0.08	0.08	0.05	
<i>RI p-value</i>		[0.023]	[0.058]	[0.470]	[0.632]
Digit Span: Backwards, Indexed	-0.01	0.07	0.05	0.08	
<i>RI p-value</i>		[0.033]	[0.194]	[0.162]	[0.702]
Executive Function Test, Indexed	0.00	0.05	0.06	0.03	
<i>RI p-value</i>		[0.170]	[0.193]	[0.654]	[0.715]
Panel C: Economic Self-Perception					
Perceptions of Economic Status Index	0.00	0.20	0.20	0.09	
<i>RI p-value</i>		[0.000]	[0.000]	[0.228]	[0.190]
Self-Reported Economic Status	3.08	0.44	0.45	0.22	
<i>RI p-value</i>		[0.000]	[0.000]	[0.187]	[0.184]
Projected Economic Status in 5 years	5.79	0.36	0.38	0.16	
<i>RI p-value</i>		[0.000]	[0.003]	[0.386]	[0.303]

- CBT effective at reducing mental health distress in general population, benefits not restricted to those with baseline distress
- Moreover, improved socio-emotional skills, performance on cognitive tests
- Our interpretation: CBT helps inoculate against the threat of distress AND provides a broader set of tools beyond the distressed/not margin
- Follow up: how persistent are these effects, how do they interact with subsequent economic opportunities?