The Calamity Prayer:

Computational Spiritual Support as a Whole-Human Centered Approach to Healing

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Outline:

1. My personal story of grief & trauma
2. Research story of spirituality & tech
3. Back to my personal story of healing...
   ...and hope for the future

Content Warning:
Mental illness, grief, suicide, intimate personal disclosure
Incremental training increases the plasticity of the auditory space map in adult barn owls

Brie A. Linkenhoker & Eric I. Knudsen

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The Calamity Prayer
So, I found this online journal.

April 22, 2015

Welcome to the Caring Bridge site for our friend and sister in Christ, Chris.

I haven't done this before, so if you have any advise for me, let me know!

In March, Chris became sick with abdominal pain and it was discovered that she had a mass on her uterus. She was referred to a specialist in St Paul to remove the tumor at the end of March. The cancer was identified as an Endometrial Stromal Sarcoma. Within a week, she was back in the hospital with complications from the surgery and it was noted that there were some nodules on the base of her lungs. She had further imaging, and biopsy showed that the sarcoma had spread to lungs making this a stage 4 high grade type of cancer. Her doctor was quite concerned because she had 2 separate CT's of the abdomen and pelvis (which includes the base of the lungs) about 3 weeks apart. The second scan showing nodules which were not there previously.

Endometrial Stromal Sarcoma is very (and I mean VERY) rare. It is a cancer of the smooth muscle and can occur in different parts of the body. According to her physician, this type of cancer is not curable at this stage/grade. It is a very aggressive cancer and resistant to chemotherapy. She was offered 2 chemotherapy agents to try to slow growth and spreading of the cancer.
I read it & wept.
I’ve dealt with:

- Mental illness since 11yo
- (Religious Trauma Syndrome?)
- PTSD following assault in 2012
- Mom’s death in 2015
- And so much more!!

So, obviously, I turned to Reddit for support.
I was 29 when I started grad school.
[Part 2: The Research Story]

CaringBridge & University of Minnesota

Research Collaboration since 2015
Sustained User Engagement

Receiving support, expressive writing, providing support (Ma, Smith, et al. 2017)

34%

Cancer patient deaths (Ma, Smith, et al. 2017)

Support Exchange

Prayer > emotional > instrumental >>> informational (Smith, et al. 2020)
Expressions of Appreciation  
(Comp. + Content Analysis)

<table>
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<th>Support Type</th>
<th>P/CG (m = 576)</th>
<th>FFA (n = 415)</th>
<th>Mann-Whitney U</th>
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<td>$SD = 1.37$</td>
<td>$p &lt; 0.001^{***}$</td>
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Prayer?

...Really?
Spirituality: the aspect of humanity that refers to the way individuals seek and express meaning and purpose, and the way they experience their connectedness to the moment, to self, to others, to nature, and to the significant or sacred.

[Puchalski, 2009]
How can we reconcile human spirituality with modern technology design?

What is spiritual support, and how can we build systems that help people experience it?
PARTICIPATORY DESIGN WORKSHOPS

CARINGBRIDGE USERS
( n = 11 )

SPIRITUAL & RELIGIOUS LEADERS
( n = 6 )

HEALTHCARE WORKERS
( n = 11 )

CARINGBRIDGE EMPLOYEES
( n = 10 )
What is your group’s definition of spiritual support?

Someone, something, or an experience acting as a catalyst to connect a person in need to a higher source— their perception of a loving spiritual source.
2. Tech Brainstorms
3. Rapid Prototyping

Sketching & Making

This child doesn’t know what to think, seeing their parent lying in a hospital bed.

They open their phone and the AI therapist begins to ask them questions & talk with them.

They tell their parent how they are feeling, talking through some breakthroughs.
Spiritual support is an **underlying dimension** that can be expressed through any other form of social support.
Spiritual support forms a triadic relationship.

**Provider**
(e.g. community member, healthcare worker, spiritual leader)

**Recipient**
(e.g. patient, caregiver, family member)

**The Sacred or Significant**
IDEATION RESULTS

COMMUNITY & HUMAN DIGNITY: 62%
SOUND & TEXT: 22%
PRACTICAL RESOURCES: 17%
VR / AR: 12%
ARTIFICIAL INTELLIGENCE: 10%
PHYSIOLOGY: 7%
Care mApp
[UI/UX]
3 touches

[UI/UX]

"Those who look to him are radiant. Their faces are never covered in shame."

... "Do not fear..."

Y N C

Send preset text to helper?
54%

"don't know what to write"

[upcoming work]
AI-ASSISTED COMMUNICATION

Patients and caregivers love hearing from you; add a comment to show your support.

Estelle Smith

Post a Comment

Personalized training resources
Nudge, nudge...

Help with:

*what to say
*what NOT to say
*scriptures
*prayers
*meditations
*etc.
"Bursts" of Positivity

Decrease in anxiety (GAD-7)

Context impacts reframe quality

AI can help us to help each other

Create awareness

...that meaningfully disrupts negative thought patterns
Speaking of mental illness...

Back to the difficult personal stuff ❤️

[ Part 3 ]
two things
stopped me
I went to Eldorado Canyon and tried to jump this morning, but I couldn't do it.
We need to do better.
And we can do better.
Expand sociotechnical models of delivery for evidence-based, continually accessible, spiritual & mental healthcare.

(Especially via communities of peers, supported by ethically designed algorithms.)

More Broadly: Re-design social media to support the brighter parts of our nature.
Spiritual Plasticity
The Calamity Prayer
My Calamity Prayer

When all the world’s a bloody mess:

Deep breathes.

If possible, god(s) {or whatever} bless.

C.Estelle Smith, PhD
@EstelleSmithPhD
Thank you for listening to my story.

Q & A

C. Estelle Smith, PhD
@EstelleSmithPhD
C. Estelle Smith, PhD

Assistant Professor, Colorado School of Mines

Golden, Colorado

Offer Signed, 5/20/22

@EstelleSmithPhD
I want to go climb a cliff in Eldorado Canyon and jump off of it.

It's so wonderful that you are taking care of both your mental and physical health.

It's certainly no easy feat, so I hope you feel very proud of yourself.
Open Questions

How can we design interfaces, algorithms, and support mechanisms that honor spirituality within specific spiritual or religious communities, versus within broader contexts and communities where beliefs can differ extremely?

How can we ensure that technologically-mediated forms of spiritual support do not diminish the authenticity, meaningfulness, and quality of supportive interactions and relationships?

When is technology the right solution for spiritual support? And when is the better solution to turn all the technology off?

How can technology support spiritual flourishing and adaptation, rather than repressive or traumatizing adherence to beliefs that are no longer serving an individual?

How can we collaborate with medical communities to integrate clinically-validated evidence and best practices for the provision of spiritual care in sociotechnical systems that extend within and beyond clinical settings?

What are the roles of AI and automation in the provision of spiritual support? How can we design these effectively and ethically?
"I don't work out enough, I should be in better shape."

Direct Negation

"I work out a lot and that is why I am in fantastic shape!"

Agency

("I can start working out more and get in better shape!"

Acceptance

("I love my body, it is mine and does great things for me."

Generic Instructions: Rewrite this thought in a way that is more positive.
"I don’t work out enough, I should be in better shape."

"I love my body, it is mine and does great things for me."

**Personalized Instructions:**
Please reframe this thought by encouraging this person towards acceptance of the situation--but with a more positive spin.
“I don’t work out enough, I should be in better shape”

I might not be working out as much as I’d like, but .... [USER INPUT]
Oratio Imperata
For Deliverance from Calamities
Almighty Father, we raise our hearts to You in gratitude for the wonders of creation of which we are part,
for Your Providence in the course of events,
We acknowledge our failings and the rest of our ways.
We have not been good but have confused Your commands.
The environment is made for us and now we reap the harvest of our carelessness.
Global warming is destroying the balance,
and other natural disasters.
We beg forgiveness for our neglect,
our hard earned gains be spared from the storms of natural and human destruction.
We beseech You to grow into responsible stewards and generous neighbors.
Amen.

Prayer in a Time of Disaster

BE MERCIFUL TO ME, O GOD, BE MERCIFUL TO ME, FOR IN YOU MY SOUL TAKES REFUGE; IN THE SHADOW OF YOUR WINGS I WILL TAKE REFUGE, TILL THE STORMS OF DESTRUCTION PASS BY.

Psalm 57 1-2