AI-ASSISTED CAUSAL PATHWAY DIAGRAM FOR HUMAN-CENTERED DESIGN

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METHODOLOGY

1.PLUGIN DESIGN

2.USER STUDY

3.DATA COLLECTION

RESULTS

1.USE OF CPD IN HUMAN-CENTERED DESIGN (RQ1)

- ESTABLISHING AN EFFECTIVE DESIGN PROCESS
- IDEATION
- STRATEGIC PRIORITIZATION
- CONCERNS OF MISUSE

Ease of Use	Without Plugin	With Plugin	P-VALUE
Ease of Creating Components	Lower	Higher	$p < .05$
Ease of Designing	Lower	Higher	$p < .01$
Ease of Brainstorming Component Content	Lower	Higher	$p < .05$

2.USE OF PLUGIN IN GENERATING CPDS (RQ2)

- QUANTITATIVE RESULTS
- ALLEVIATED COGNITIVE WORKLOAD
- INCREASED CREATIVITY WITH AI SUPPORT
- CHALLENGES WITH AI RECOMMENDATIONS

DISCUSSION

CONTRIBUTION TO HCI:

- DEMONSTRATES HOW CPDS FROM IMPLEMENTATION SCIENCE CAN INTEGRATE INTO HCD PROCESSES.
- SUPPORTS BOTH DIVERGENT (IDEATION) AND CONVERGENT (DECISION-MAKING) THINKING IN DESIGN.
- ENHANCES EFFICIENCY AND CREATIVITY IN THE EARLY DESIGN PHASES.

LIMITATION

THE USE OF STYLIZED DESIGN SPRINTS, WHILE EFFECTIVE FOR CONTROLLED TESTING, LIMITED THE SCOPE OF THE STUDY. THESE SPRINTS FOCUSED ON EARLY-STAGE DESIGN PROCESSES AND DID NOT CAPTURE THE FULL SPECTRUM OF DESIGN ACTIVITIES, SUCH AS PROTOTYPING, TESTING, AND ITERATION. THIS RESTRICTS THE ABILITY TO GENERALIZE FINDINGS TO OTHER PHASES OF DESIGN WORK, WHERE CPD MIGHT PLAY DIFFERENT ROLES.

CONCLUSION

THE STUDY SHOWS THAT CPD IS BENEFICIAL IN EARLY HCD PHASES, HELPING DESIGNERS FOCUS ON ROOT CAUSES FOR BRAINSTORMING AND STRATEGIC PRIORITIZATION.

THE RESEARCH HIGHLIGHTS THE POTENTIAL AND RESPONSIBILITIES OF INCORPORATING AI IN DESIGN PRACTICES, OFFERING INSIGHTS VALUABLE TO BOTH HCD AND IMPLEMENTATION SCIENCE COMMUNITIES.

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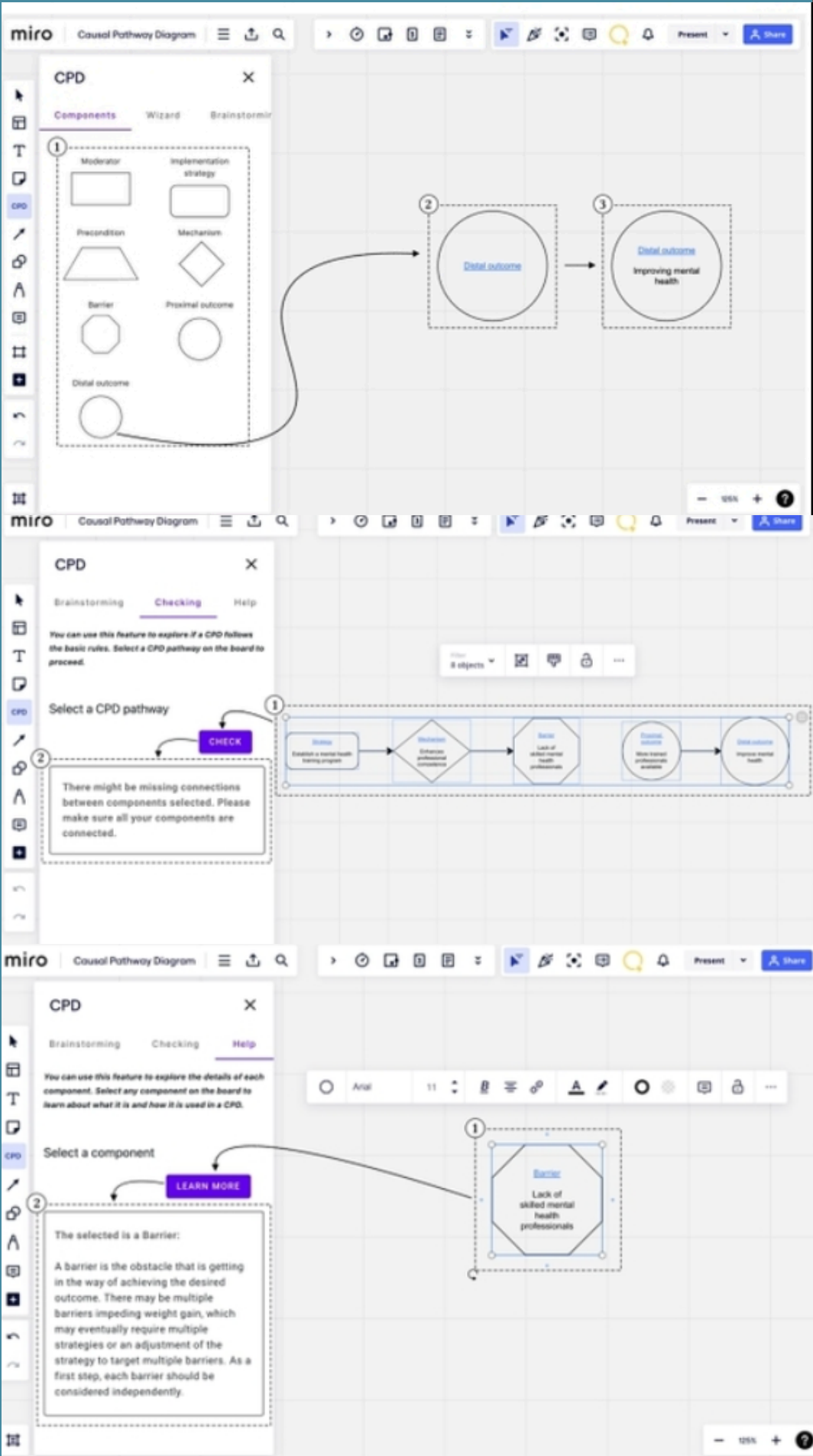
Dealing with Uncertainty: Understanding the Impact of Prognostic Versus Diagnostic Tasks on Trust and Reliance in Human-AI Decision Making

Introduction

Authors: Sara Salimzadeh, Gaole He, Ujwal Gadiraju

Conference: CHI '24: Proceedings of the CHI Conference on Human Factors in Computing Systems

Main Goal: Explore how task complexity and uncertainty influence human reliance on AI systems.

Objectives

To analyze how complexity and uncertainty affect human decision-making with AI support.

To evaluate trust and appropriate reliance on AI in these scenarios.

Methodology

Participants: 258 users across six conditions.

Task: Trip-planning scenario with varying complexity (low, medium, high) and uncertainty (diagnostic, prognostic).

Data Collection: User interactions, trust levels, and decision outcomes were measured.

Results

Condition	Task Complexity	Task Uncertainty	Description
Condition 1 (LowDiag)	Low	Diagnostic	Tasks involve simple decision-making with few variables and no future uncertainty.
Condition 2 (LowProg)	Low	Prognostic	Simple tasks with future uncertainties that need prediction (such as traffic).
Condition 3 (MedDiag)	Medium	Diagnostic	Moderately complex tasks with currently known conditions.
Condition 4 (MedProg)	Medium	Prognostic	Moderately complex tasks where future uncertainties play a significant role in decisions.
Condition 5 (HighDiag)	High	Diagnostic	Highly complex tasks with multiple variables, but conditions are known and fixed.
Condition (HighProg)	High	Prognostic	Complex tasks with many variables and future uncertainties that must be predicted.

Key Findings

Reliance on AI increases as tasks become more complex or uncertain.

Users are more likely to trust AI in high-uncertainty, high-complexity tasks.

Over-reliance on AI can happen in complex scenarios, potentially undermining human judgment.

Discussion

High task complexity leads to more AI reliance but not always improved decision accuracy.

AI needs to offer better interpretability and support to help users make informed decisions.

Limitation: Task types may not reflect real-world decision complexity and uncertainty.

Conclusion

Task complexity and uncertainty significantly shape human-AI interaction.

Future AI systems need to be designed to foster better human-AI collaboration and reduce over-reliance.

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"I DON'T EVEN REMEMBER WHAT I READ": HOW DESIGN INFLUENCES DISSOCIATION ON SOCIAL MEDIA

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METHODOLOGY

- *Chirp Twitter Client*
- *Participants: 43*
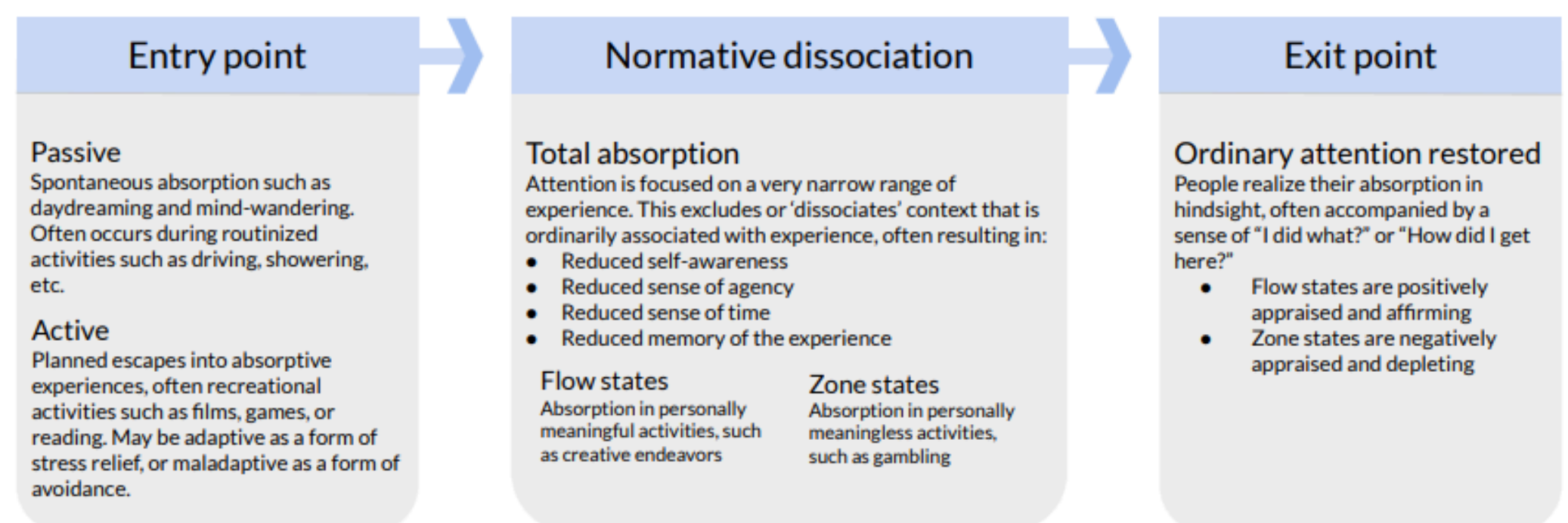- *Design Interventions*
- *Data Collection*

DISCUSSION

- *Users frequently lose track of time and sense of agency due to automatic scrolling.*
- *Some users find dissociative experiences valuable for escape or relaxation.*
- *Social media design creates both positive engagement and feelings of time waste.*

LIMITATIONS

- *Small sample size of 43 participants limits reliability.*
- *Bias due to reliance on self-reported experiences.*
- *Focus on Twitter (Chirp app) may not apply to other social media platforms.*

RESULTS

- *7 out of 11 interviewees and 18 of 43 deployment participants experienced dissociative use.*
- *Experiences included losing track of time, becoming absorbed in scrolling, and tuning out surroundings.*
- *Design interventions like reading history labels and usage statistics helped reduce dissociation.*

Entry point

Passive
Spontaneous absorption such as daydreaming and mind-wandering. Often occurs during routinized activities such as driving, showering, etc.

Active
Planned escapes into absorptive experiences, often recreational activities such as films, games, or reading. May be adaptive as a form of stress relief, or maladaptive as a form of avoidance.

Normative dissociation

Total absorption
Attention is focused on a very narrow range of experience. This excludes or 'dissociates' context that is ordinarily associated with experience, often resulting in:
- Reduced self-awareness
- Reduced sense of agency
- Reduced sense of time
- Reduced memory of the experience

Flow states
Absorption in personally meaningful activities, such as creative endeavors

Zone states
Absorption in personally meaningless activities, such as gambling

Exit point

Ordinary attention restored
People realize their absorption in hindsight, often accompanied by a sense of "I did what?" or "How did I get here?"
- Flow states are positively appraised and affirming
- Zone states are negatively appraised and depleting

CONCLUSION

- *Highlights dual nature: beneficial and problematic experiences.*
- *Suggests design interventions (reading history labels, usage statistics) to reduce mindless scrolling.*
- *Emphasizes relevance in today's digital landscape and implications for social media designers and HCI researchers.*
- *Calls for creating empowering environments to enhance user self-awareness and agency, inspiring new design strategies for user well-being.*

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