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Computers and Procrastination: Why So Little Research?

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Computers and Procrastination: Why So Little Research?

Abstract

As computer and internet technology becomes an ever-greater part of the fabric of our everyday lives, we find that not all of the effects are as beneficial as we might like. One frequently noticed example of this is that working on a computer seems to make us more prone to procrastination. While there is significant anecdotal evidence for this phenomenon, and it is nearly taken for granted in the popular press and productivity blogs, there has been very little research that directly addresses the intersection of computer use and procrastination. For a tool widely perceived to enhance our productivity, this is remarkable. While there is significant research in numerous areas that are closely related, only a single study by Lavoie & Pychyl (2001) has investigated the precise association between computer use and procrastination. The question "Is procrastination a worse problem when using a computer than when performing a similar task manually?" is largely untested in the research literature.

Keywords

computers, procrastination, research, human-computer interaction

Disciplines

Behavior and Ethology | Science and Technology Studies

Comments

Poster presentation at the 9th Biennial Procrastination Research Conference held in Bielefeld, Germany, July 2015.

Computers and Procrastination: Why so little research?

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Introduction

As computer and internet technology becomes an ever-greater part of the fabric of our everyday lives, we find that not all of the effects are as beneficial as we might like. One frequently noticed example of this that working on a computer seems to make us more prone to procrastination. While this there is significant anecdotal evidence for this phenomenon, and it is nearly taken for granted in the popular press and productivity blogs, there has been very little research that directly addresses the intersection of computer use and procrastination. For a tool widely perceived to enhance our productivity, this is remarkable. While there is significant research in numerous areas that are closely related, only a single study by Lavoie & Pychyl (2001) has investigated the precise association between computer use and procrastination. The question "Is procrastination a worse problem when using a computer than when performing a similar task manually?" is largely untested in the research literature.

Computer Procrastination

For this work, I adopt Steel's (2007) definition of procrastination, "to voluntarily delay an intended course of action despite expecting to be worse off for the delay," with its emphasis on expected outcome, and a normative element in which there is a discrepancy between the procrastinator's behavior and what they judge they *ought* to be doing.

In addition, I specify that both the delayed activity and the procrastinatory activity take place using a computing device, such as a personal computer, a mobile phone, or a tablet. It is worth pointing out that in many modern societies, such use takes place at least as much in personal activities as in the professional workplace.

I thus suggest five characteristics to delineate the behavior being researched:

1. Activities using the computer.
2. Delay of an intended task
3. Irrational excuses or self-deception
4. A normative expectation to being worse off
5. Can take place anywhere, not just the workplace.

Summary

The problem seems to be under-researched because it falls between disciplinary cracks. Several fields have contributions to make, but none, by themselves, can fully address the myriad issues that come up when talking about why computer use in particular is so ripe for procrastination, or what can be done about it. The hope for design alternatives which can ameliorate the temptation relies on an in-depth understanding of both why the person chooses to procrastinate, and how computer software design can affect the way in which an application is used. Integrating interdisciplinary research is difficult, but can be assisted, in part, by use of the tools of philosophy, which can provide instruments and checklists to identify overlooked aspects.

Five areas of research

Psychology of Procrastination

Researchers from within psychology have studied generic procrastination extensively, building a large body of work for understanding why this particular form of self-sabotage is so common.

- Can provide a context in which we can ask *why* computer use, in particular, is so prone to procrastination.
- Common characteristics of both the original and the procrastinatory task can help us understand why the computer may be ripe for such tendencies.
- However, psychology is unsuited for asking questions about the nature of the technology itself.
 - ⇒ It is, appropriately, focused on the nature of the human being, not the computer.
 - ⇒ Design possibilities which could help ameliorate such procrastinatory tendencies must be informed by psychological insight, but require technological insight as well.
- Can address issues of delay and irrationality, but the computer use aspect is opaque to it.
- Issues of normativity, of what the computer user *ought* to be doing, are meaningless here.

Human-Computer Interaction

Research in HCI covers many areas of human functioning which are potentially relevant to procrastination.

- Fields of affective computing and attention-aware computing have particular relevance.
 - ⇒ Recent developments in affective computing attempt to detect, model, and appropriately respond to the user's affective state.
 - ⇒ Procrastination has significant affective correlations, software which can detect the user's affective condition provides hope for design techniques which can respond intelligently to latent or actual procrastination possibilities.
 - ⇒ Software which can track the user's attention and emotion, and respond intelligently, has the opportunity to prod the user towards productivity at a time when such prodding is most needed.
- HCI can deal with the nature of computer use, and may detect delay.
- But without interdisciplinary help, the field isn't able to address the irrationality of the user or the normativity of the user's behavior.

Problematic Internet Use

This subfield within clinical psychology looks at cases in which excessive computer use descends into dysfunction and pathology.

- Can address the irrationality and the non-workplace-specific nature of computer procrastination.
- Only looks at cases where behavior is so severe, it requires clinical intervention.
 - ⇒ May not meet the "voluntary" part of definition.
- Can't address what it is about the technology that tempts otherwise healthy adults.

Non-Work-Related Internet Use

This field explores wasting time online while at work.

- But, assumes a rational, voluntary choice to spurn work favor of "cyberloafing".
 - ⇒ Ignores possibility that employee genuinely wishes to be productive, which is a hallmark of procrastination.
- Does not provide a normative basis for determining which activities are appropriate and which are not.

Technology Acceptance Model

The Technology Acceptance Model (TAM) developed by Davis (1989) is the premiere model for predicting if a computer application will be adopted by users.

- Estimates intention to use by distinguishing perceived ease of use and usefulness
- Based on the Theory of Planned Behavior, makes it difficult to account for the irrational nature of procrastination
- Unable to address normativity, the distinction between what the user *is* doing and what they *ought* to be doing.
- Centered entirely around workplace information systems, unable to speak to everyday use in personal life.

Contributions of Research areas

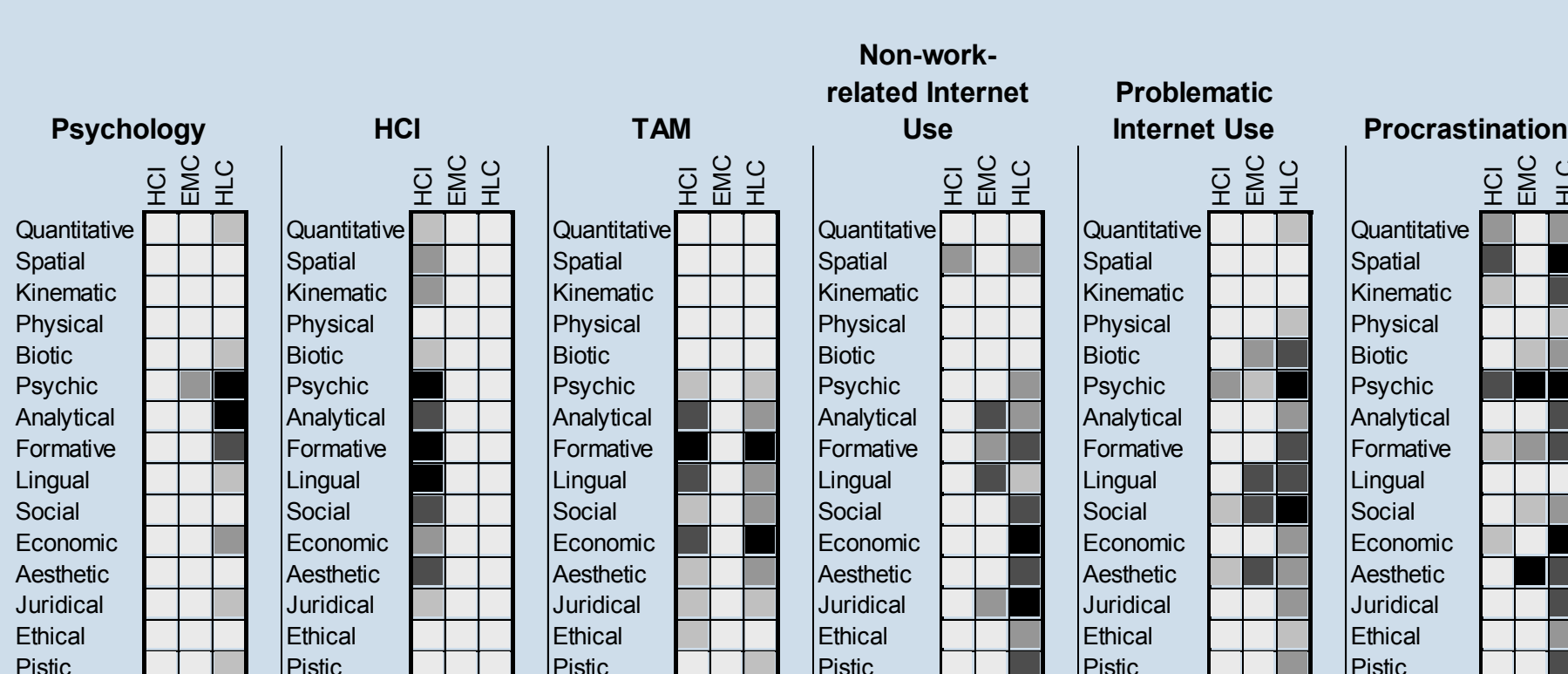
Summary of extant research's ability to address the main issues in computer procrastination. Each '+' indicates a better contribution, while a '-' indicates that the assumptions made in that area may actively mislead.

Research area	Uses Computer	Delay	Irrationality	Normativity	Anywhere
Psychology of Procrastination		++	+++		+
Human-computer Interaction	+++	+			++
Technology Acceptance Model	++		-	+ / --	--
Non-work-related Internet Use	+++	++	--	--	--
Problematic Internet Use	+++	+ / -	++	+ / -	++

The HUCF

The use of a philosophical framework for understanding can help guide research into interdisciplinary problems such as computer procrastination. One such framework, the Human Use of Computers Framework (HUCF) was developed by Basden (2008). It consists of a horizontal dimension, which analyzes computer use in each of the ways humans function with computers: Human-computer Interaction (HCI), Engaging with Meaningful Content (EMC), and Human Living with Computers (HLC). It analyzes each of these kinds of human functionings in a wide variety of aspects in which reality is meaningful. These aspects were identified by Dooyeweerd (1955) as: *Quantitative* (discrete amount), *Spatial* (continuous extension), *Kinematic* (flowing movement), *Physical* (energy and mass), *Biotic/organic* (life functions), *Psychic/sensitive* (sense, feeling, emotion), *Analytical* (distinction, conceptualizing), *Formative* (formative power and shaping), *Lingual* (symbolic signification), *Social* (respect, social interaction), *Economic* (frugality, skilled use of limited resources), *Aesthetic* (beauty, harmony, fun), *Juridical* (what is due), *Ethical* (self-giving love), and *Pistic* (commitment, trust). Using this framework, we can

produce a visual tool for understanding what each area can contribute to a full understanding of the problem. This also demonstrates how rich and complex the problem of computer procrastination (far right) really is.



Aspectual heatmaps of which parts of a computer use situation can be meaningfully addressed by the various research areas, and what is required to understand computer procrastination.

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