Emotions as Drivers for Conversational AI use in the Workplace

Amany Elbanna

Professor of Information Systems and Digital Transformation

Co-author: Lorentsa Gkinko

- **Gkinko, L. & Elbanna, A. (2022) Hope, tolerance and empathy: employees' emotions when using an AI-enabled chatbot in digitalised workplace. Information Technology and People, Open Access**
- Gkinko, L. & Elbanna, A. (2023). Designing trust: The formation of employees' trust in conversational AI in the digital workplace. Journal of Business Research, 158. Open Access
- Gkinko, L., & Elbanna, A. (2022). The appropriation of conversational AI in the workplace: A taxonomy of AI chatbot users.International Journal of Information Management, Open Access

AI in the workplace

- Increasing adoption of AI in the workplace
- AI market reached $ 428 billion and projected to grow from over 515 billion in 2023 to reach over 2000 billion in 2030 with annual growth of over 21% (Fortune Business Insight).
- surge AI-based applications
- Market partnerships, collaborations and rise in small AI providers
- International competition, Government initiatives and investments in AI
- Demand for hyper-personalized service

Conversational AI: new class of systems in the workplace

- Provides real-time, everywhere, 24/7 responses to queries.
- Compiles information from different sources to answer queries.

Interesting characteristics!

- User-centric AI application
- Uses Natural Language Processing (NLP) for two-ways communication with users
- Employs Machine Learning (ML); evolves and learns from use.

Importance of use in Conversational AI

- Use is a top priority
- Generates the data required to improve the model and allows it to evolve in its organisational setting
- Performance is associated to use!

Actual use of Conversational AI in the workplace

- However critical, research is in its infancy (Gkinko & Elbanna 2022, 2021a).
- Calls for researchers to examine actual use in organisations, where individuals are influenced by the task, technological and organisational context (De Guinea & Markus, 2009).
- Qualitative approach to understanding the experience of users (Denzin, 2017; Fineman, 2010).
- People's experiences of particular objects or events are interpreted in a socially and culturally laden manner (Stets, 2006)
- Pay attention to the context (Fineman, 2005).

Research question

- How employees experience the use of AI chatbot in their workplace?

IS Design- Two key dimensions (Rietz et al., 2019; Botzenhardt et al., 2016; Townsend et al., 2011

- Form

Users interface, hedonic features and aesthetics, symbolic meaning

- Function

Utility, specifications, operational characteristics

Characteristics of AI chatbot (Gkinko and Elbanna 2022a)

Design Dimension	Conversational AI	Definition	References
Function	Natural Language Processing	The ability of an AI chatbot to communicate in human-like manner	Lebeuf et al. (2019), Meyer von Wolff et al. (2019)
	Learning	Ability to learn from users' input	Benbya et al. (2020), McTear (2017)
Form	Conversational interaction	Interactive two-way communication	Chaves and Gerosa (2021), Gnewuch et al. (2017)
	Social presence	The feeling of togetherness	Biocca et al. (2003), Qiu and Benbasat (2009), Toader et al. (2020)
	Embodiment	Have virtual or physical representation	Araujo (2018), Diederich et al. (2019)

Research Approach and site

- Case study
- Large international organization in the financial sector
- Internal AI chatbot for its employees to provide services such as IT helpdesk, policies, forms, training
- Extended to translation, reporting, holidays bookings etc.
- Microsoft Bot Framework and Microsoft Azure Cognitive Services
- Process design: Bot refers users to a help desk when conversation fails.

Research Methods

- Interpretive approach
- in-depth understanding and in situ accounts of emotions “embedded in ‘natural’, or everyday, occurrences and events, expressed through participants’ interactions, words, recollections . . . or other symbols of feeling or emotion” (Denzin, 2017; Fineman, 2005, p. 8; Kagan, 2007)
- lived experience is the unit of analysis” (Denzin, 1985, p. 224).

- Data Collection
  - 46 walk-along semi-structured interviews and observations (Carpiano, 2009; Kusenbach, 2003).
  - document reviews.

Data analysis

- Inductive approach
- Followed Grodal et al.’s (2020) framework for linking data collection with analysis
- Inductive analysis followed Gioia et al.’s (2013)

Research findings

- Users emotions influenced the pattern of use
- Developed a taxonomy of use
- Framework of trusting as an experiential process

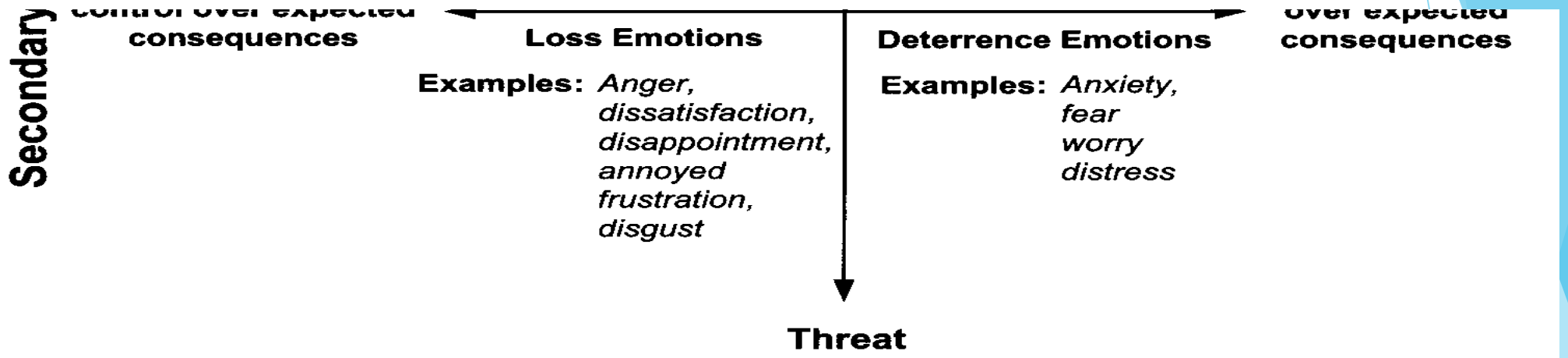
Emotion Research in IS

- State
- Positivist
- Negative
- Absence of IS features

Emotions in IS (Beaudry and Pinsonneault, 2005, 2010; Stein et al., 2015)

- A cognitive state directed towards an object (inner, external)
- social, political and cultural environments play a role in the constitution of emotions (Steinert and Roeser, 2020)
- Context: “neither technology nor emotions exist in a vacuum” Malin (2014).
- Appraisals:
  - primary: opportunity / threat
  - Secondary: perceived control over expected consequences

Dimensions of emotions (Beaudry and Pinsonneault, 2005, 2010)



Framework for Classifying Emotions

rtainty about the event's outcome of emotions
zzi 1992; Smith and Ellsworth 1985).

nsions are combined to create four classes of
we label *loss, deterrence, challenge*, and
Because they are triggered by different
F and other emotion theories suggest that

isfaction, frustration, and disgust are likely
(e.g., Bagozzi 1992; Bagozzi et al. 1999;

Direct effect of anger on IT use. Ange
ciated with an overriding desire to punish
sible for the frustration (Han et al. 2007;
2001). Anger leads to confrontational beh

- Ambivalent (Stein et al., 2015)

Focus on negative emotions

- Positive emotions (e.g. contentment or happiness) (Laros and Steenkamp, 2005).
- Negative emotions: stress, anxiety or depression (Perlusz, 2004).
- IS research disproportionately focuses on examining negative emotions (Agogo and Hess, 2018).
- For example, **anxiety** (D'Arcy et al., 2014; Srivastava et al., 2015; Venkatesh, 2000; Wang et al., 2017), **fear** (Boss et al., 2015; Johnston and Warkentin, 2010), **stress** (Agogo and Hess, 2018; Galluch et al., 2015; Pirkkalainen et al., 2019; Stich et al., 2019; Tarafdar et al., 2020), **worry** (Turel, 2016) and **regret** (Keil et al., 2018).

Emotion in music, film, art, advertisements

- Positive and negative
- Mixed
  - Goal conflict and multiple values (Berrios et al., 2015
  - Ambiguity (Folkman and Lazarus, 1985)
- Dynamic
- Simultaneous (Andrade and Cohen, 2007; Hunter et al., 2008)

Findings on emotions in using conversational AI

- Repertoire of appraisals and mixed emotions
- Identified four types of emotions: **Connection, amusement**, contentment and frustration.
- AI chatbot form and function and organizational context impact users emotions in using AI chatbot

Wide repertoire of appraisals (1/2)

- Traditional organisational IS, users appraise based on **task completion and control** over results (Beaudry and Pinsonneault, 2005, 2010; Stein et al., 2015).

- Our findings show that users appraised in relation to its design features, including its underlying **machine-learning** technology, its **social presence** and its **anthropomorphic** features.

- The functional characteristic of ML was also translated through the interface design into an anthropomorphic feature, with users perceiving the chatbot as a learning creature and feeling **responsible for teaching it**.

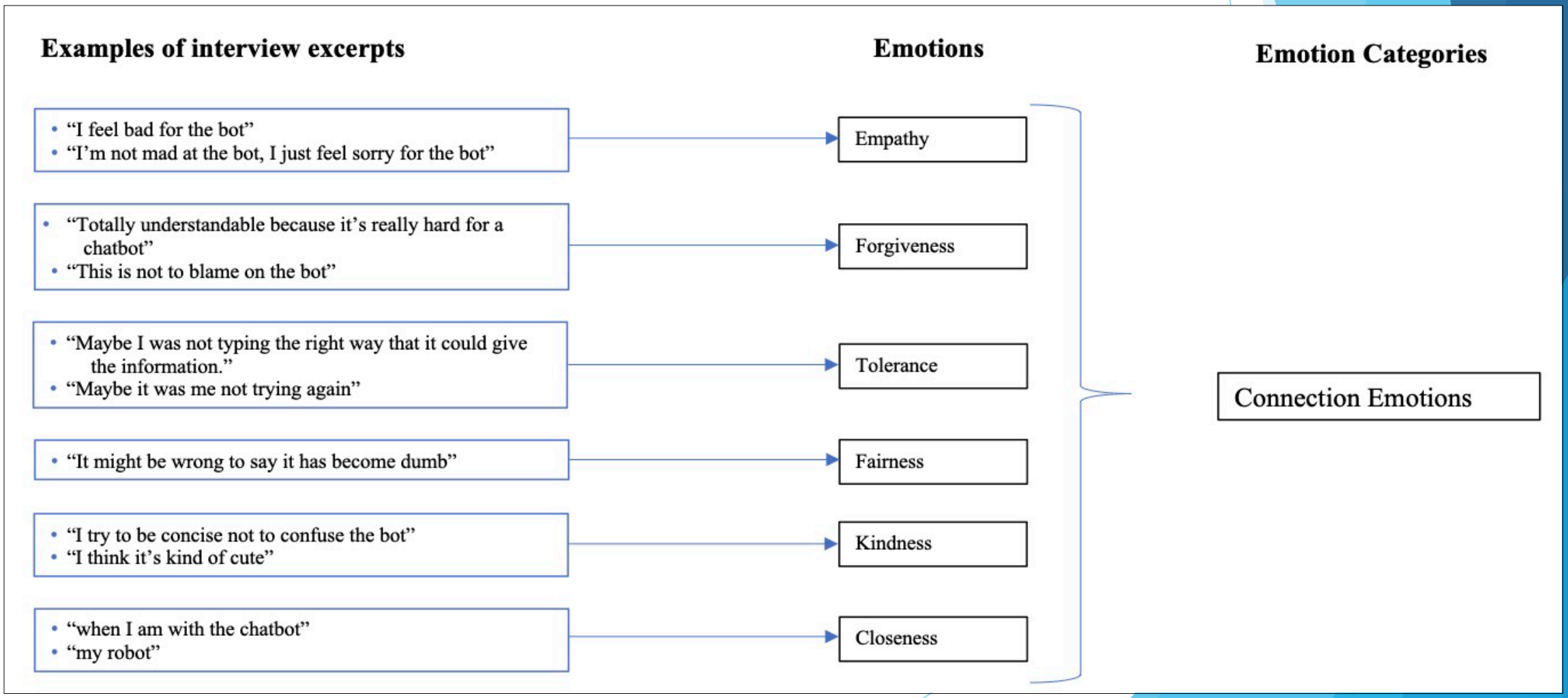
Wide repertoire of appraisals (2/2)

- The **social presence** of the chatbot, including its name, its icon and the interface notes that emphasised these features, also influenced users' appraisals.
- Progression of task not completion of it!
- **Company's Policy! (2 users).**
- Novelty, hype, similar commercial technology

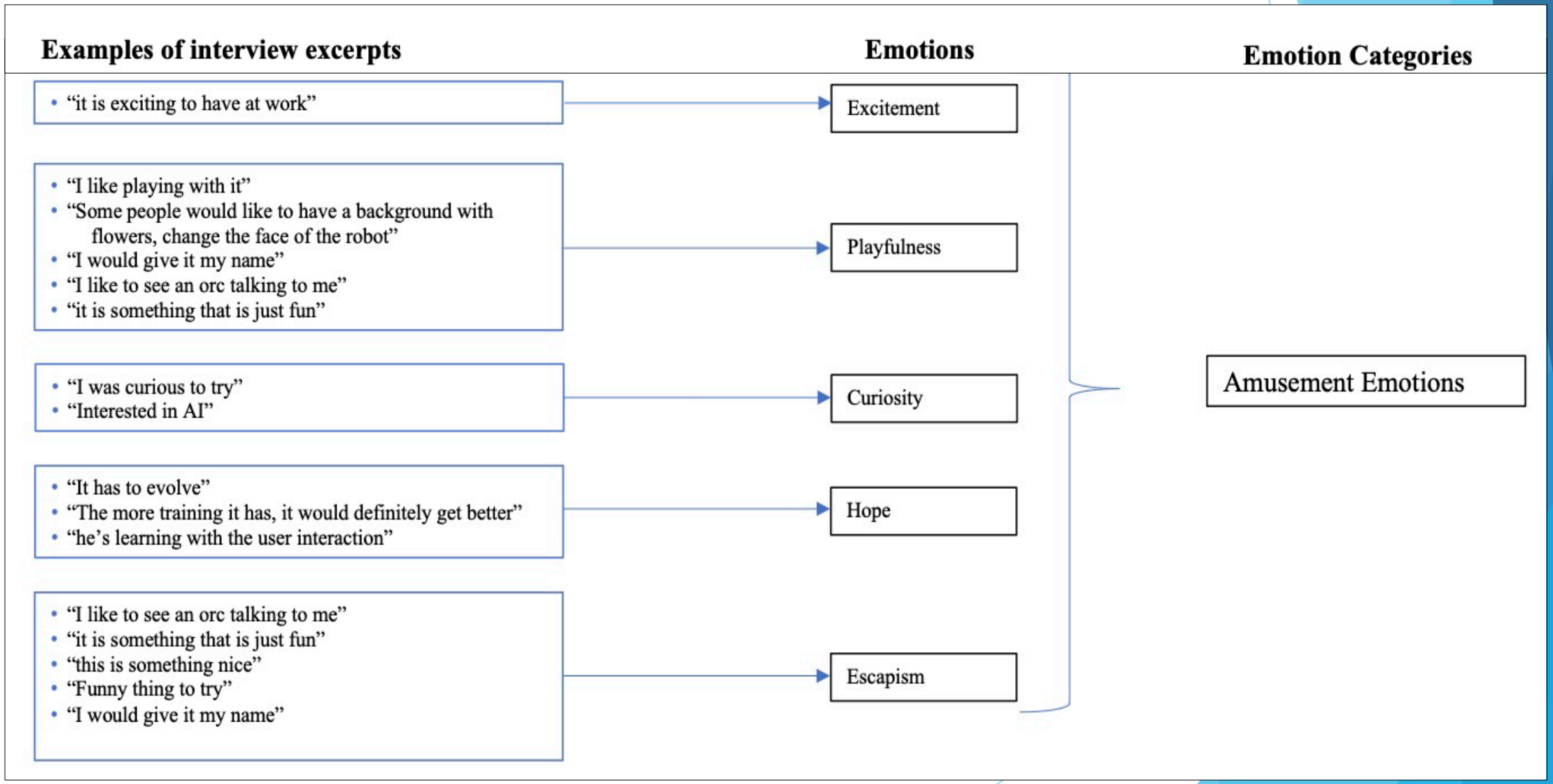
Various emotions

- **Connection**
- **Amusement**
- Contentment
- Frustration

Connection!


Examples of interview excerpts
Emotions
Emotion Categories
"I feel bad for the bot"
"I'm not mad at the bot, I just feel sorry for the bot"
Empathy
"Totally understandable because it's really hard for a chatbot"
"This is not to blame on the bot"
Forgiveness
"Maybe I was not typing the right way that it could give the information."
"Maybe it was me not trying again"
Tolerance
"It might be wrong to say it has become dumb"
Fairness
"I try to be concise not to confuse the bot"
"I think it's kind of cute"
Kindness
"when I am with the chatbot"
"my robot"
Closeness
Connection Emotions

Amusement


Examples of interview excerpts
Emotions
Emotion Categories
"it is exciting to have at work"
Excitement
"I like playing with it"
"Some people would like to have a background with flowers, change the face of the robot"
"I would give it my name"
"I like to see an orc talking to me"
"it is something that is just fun"
Playfulness
"I was curious to try"
"Interested in AI"
Curiosity
"It has to evolve"
"The more training it has, it would definitely get better"
"he's learning with the user interaction"
Hope
"I like to see an orc talking to me"
"it is something that is just fun"
"this is something nice"
"Funny thing to try"
"I would give it my name"
Escapism
Amusement Emotions

Mixed emotions

- This wide repertoire of appraisals gave rise to a range of mixed emotions,
- Emotions were felt simultaneously offsetting and/or enforcing each other.
- Encouraged users to continue using the chatbot tolerating its mistakes and in the hope that it will improve.
- Asserts the importance of considering multiple emotional experiences in the use of technology.

Mixing forms and function brought obligation and hope!

- ML: a functional characteristic of the AI chatbot, employees perceived it as a human-like form of learning.
- They felt an **obligation** to teach the chatbot.
- They also felt **hopeful** that the more they used it, the more the AI chatbot would learn and improve.
- Some users felt **playful** when using the AI chatbot and liked to test it and outperform it on occasions. Therefore, interestingly, the users' playfulness provided not only continuous use but multiple cases for the AI chatbot to learn from.

Continuous use and continuous improvement

- These mixed emotions propelled users to continue their use, despite their frustration.

- AI chatbot as a learning agent mixed and blurred what to designers are straightforward, separate features of form and function.

Conclusion

- Bridges the chasm between emotions and use (Leonardi, 2009; De Guinea & Markus, 2009; Stein et al., 2015)
- Identify a wide repertoire of appraisals and emotions.
- Important to consider multiple emotional experiences in the use of technology (Steinert and Roeser, 2020).
- Fruitful to identify emotions inductively, rather than to rely on pre-identified emotions.
- Value in considering the technology under study and not to treat it as a blackbox (Sarker et al., 2019)

Thank you!

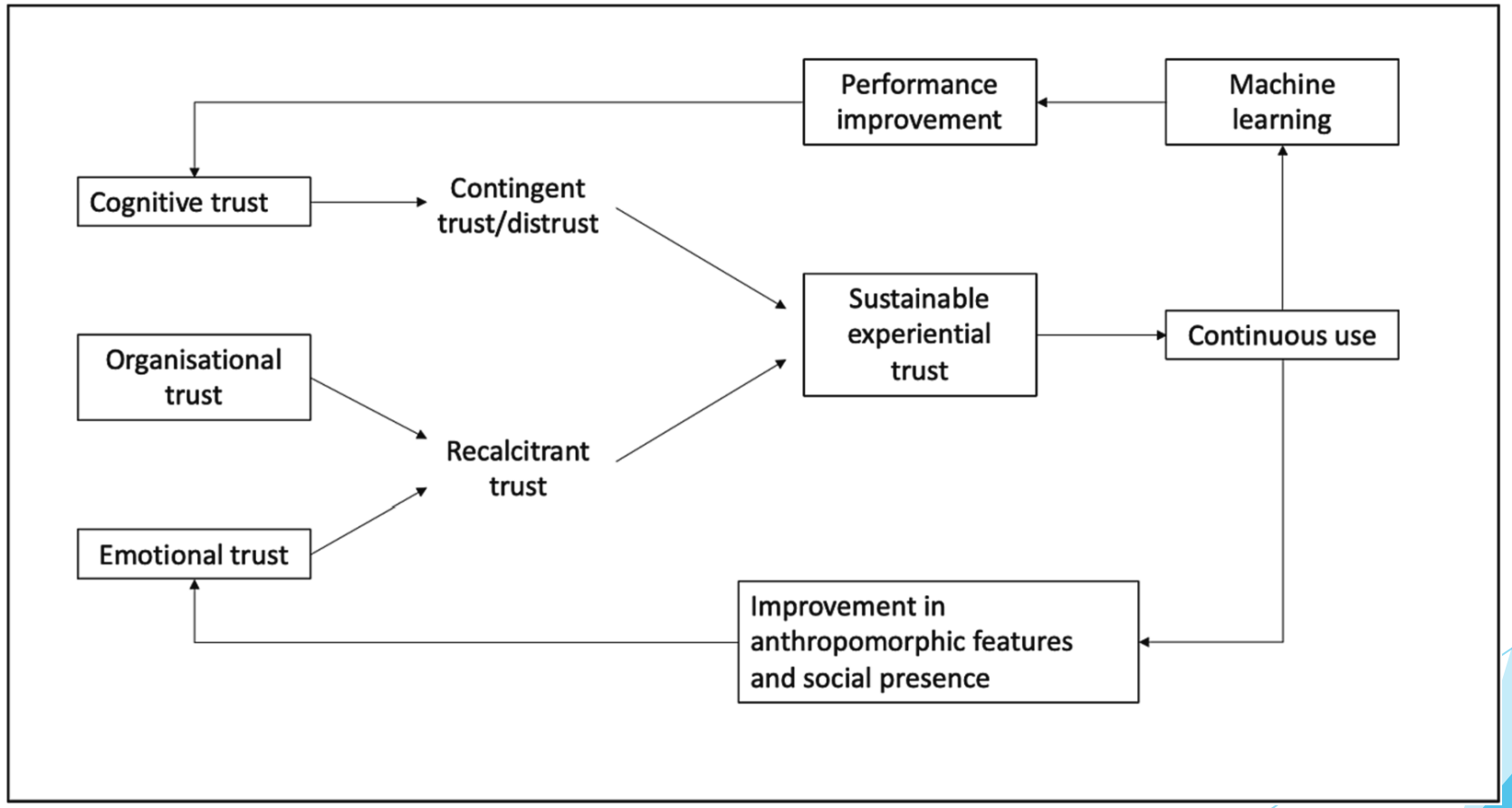
Selected publications

- Gkinko, L. & Elbanna, A. (2023). Designing trust: The formation of employees' trust in conversational AI in the digital workplace. Journal of Business Research, 158. Open Access https://www.sciencedirect.com/science/article/pii/S0148296323000656
- **Gkinko, L. & Elbanna, A. (2022) Hope, tolerance and empathy: employees' emotions when using an AI-enabled chatbot in digitalised workplace. Information Technology and People,Open Access**

https://www.emerald.com/insight/content/doi/10.1108/ITP-04-2021-0328/full/html

- Gkinko, L., & Elbanna, A. (2022). The appropriation of conversational AI in the workplace: A taxonomy of AI chatbot users.International Journal of Information Management, OpenAccesshttps://www.sciencedirect.com/science/article/pii/S0268401222001025

Framework of users' experiential and sustained trusting (Gkinko & Elbanna 2023)



Connective Emotions

- Emotions of empathy, forgiveness, compassion, fairness and kindness towards the chatbot
- Appraisal: Social presence and anthropomorphic features
  - “I’m not mad at the bot, I just feel sorry for the bot. It keeps trying.” Interviewee 5
  - “I mean, I have no frustration, but I thought maybe I was not typing the right way that it could give the information.” Interviewee 8
  - “I think because I go somewhere else to look for the information, I didn’t want to let’s say ‘no it wasn’t helpful’ because maybe it was me not trying again and trying to rephrase it rather than ‘OK, I’m gonna check this somewhere else or ask someone else’. [. . .] I think it could be a combination of both, it could be me that I didn’t raise it correctly or the chatbot that wasn’t useful.” Interviewee 24
  - “Would like to have a background with flowers, change the face of the robot to whatever. [. . .] When you go to the online version from Outlook, you can personalise, you can have flowers in the background or you can have some Star Wars in the background . . . it is kind of also say ‘OK, this is now My robot’.” Interviewee 37

Amusement Emotions

- Users experienced excitement, curiosity, hope, anticipation, escapism and playfulness
- Appraisal: novelty of the technology, the organisational and societal rhetoric of its progressiveness and revolutionary nature,
- Appraisal: ability to learn (ML), entertainment and escapism value stemmed (social presence and conversational interaction).
  - “I was more like curious from my side and the fact that I’m a little bit interested in AI [. . .] Its more exciting to try discussing it with the chatbot.” Interviewee 39

Amusement Emotions

- “I just think at least that one is getting better. It looks like he’s learning with the user interaction.”
- “I was trying to minimise it and I switch to another page to see what will happen and such stuff, because I was a test engineer before for applications. So, I always try to crash it somehow.” Interviewee 18
- “I gave it a try as soon as it was launched because I thought it was interesting. But yeah, it was just a funny thing to try, actually it gave me the answer!” Interviewee 36
- “I would prefer to make it personal. For example, I would give it my name not the name for everyone else. So, mine would be for example Eva or someones will be Matthew or something like that. [. . .] Exactly, as much customisation is there then it’s better. For example, one day I would like to see an orc talking to me, next one the cyberwoman from the star Galactica or something like that [. . .] It would help me more for sure. It is something that is just fun and everyone from time to time has the time that he wants to spend on something not directly connected to the world. And for example, this is something nice.” Interviewee 39

Contentment Emotions

- Satisfaction, happiness, pleasure and convenience when using the chatbot.
- Appraisal: the outcomes of the task.
- Can turn into frustration if outcomes are not achieved.
- Yet: design features and process design prevented the direct move to frustration.

Contentment Emotions

- “It’s pleasant to work with but as I said you notice it’s a machine [. . .]. The way how it is presented now, it’s always suggesting what do you think about this and that. It feels comfortable in that sense, I’m also confident I’ll find from this list of suggestions, the proper solution. It’s a good feeling that you don’t have to wait, you don’t get unusual answers, more or less is always something useful or something where I can pick or go a step ahead. It’s a good feeling.” Interviewee 29

- “I think it’s just convenient to talk to a bot where you can just Skype [connect online], whereas when talking to a person you have to find time and then call the person and explain. I would still feel that explaining to a person is easier than to a chatbot, but ... convenience is better with the bot.” Interviewee 9

- It didn’t give me the information I wanted, but what I did like when it got to the end and it couldn’t help me, it said ‘do you want to open a ticket?’ That aspect was very useful. Interviewee 12

Frustration with a twist!

- “But when I go back and ask that same question again in a kind of generic way, it still doesn’t know what I’m after and I think by now if it was learning from what people were asking it would be able to answer the question because I’m asking something which to me is quite clear, How do I change my Skype profile and it does give me a general article or topic about entitlements for Skype which is in the right way, but I’ve said something specific. I want to change my entitlements, you know, and I think it could, I shouldn’t have to drill in so much. Maybe it’ll get me there in the end, I haven’t tried while we’re talking, but I think it should be able to do some of the work for me.” Interviewee 35
- “When I’m with a chatbot, I know this is a machine and the more I write, the more used it gets [the better it learns]”. Interviewee 17
- My expectations were not very high, honestly speaking. So, but yeah, somehow, I also wanted to use it to also help the people who implemented it, because without usage it cannot learn more. Interviewee 36