



# Emotional Experiences and Quality Perceptions of Interactive Products

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## Evaluation of quality in use (Bevan, 1995; ISO 9241-11, 1998)

- Interaction-centred perspective
  - Effectiveness
  - Efficiency
- User-centred perspective
  - Satisfaction



- *„We are aware that user satisfaction is a part of the usability concept provided by ISO 9241-11. However, it seems as if **satisfaction is conceived as a consequence of user experienced effectiveness and efficiency** rather than a design goal in itself. This implies that assuring efficiency and effectiveness alone guarantees user satisfaction.“ (Hassenzahl et al., 2000)*
- *„Indeed, many measurements of user satisfaction are limited to, what users think of a given application. Not surprisingly, **instruments intend to measure user satisfaction also tend to be quite crude and vague** and focus mostly on the efficiency and effectiveness of the interaction.“ (Lindgaard & Dudek, 2003)*



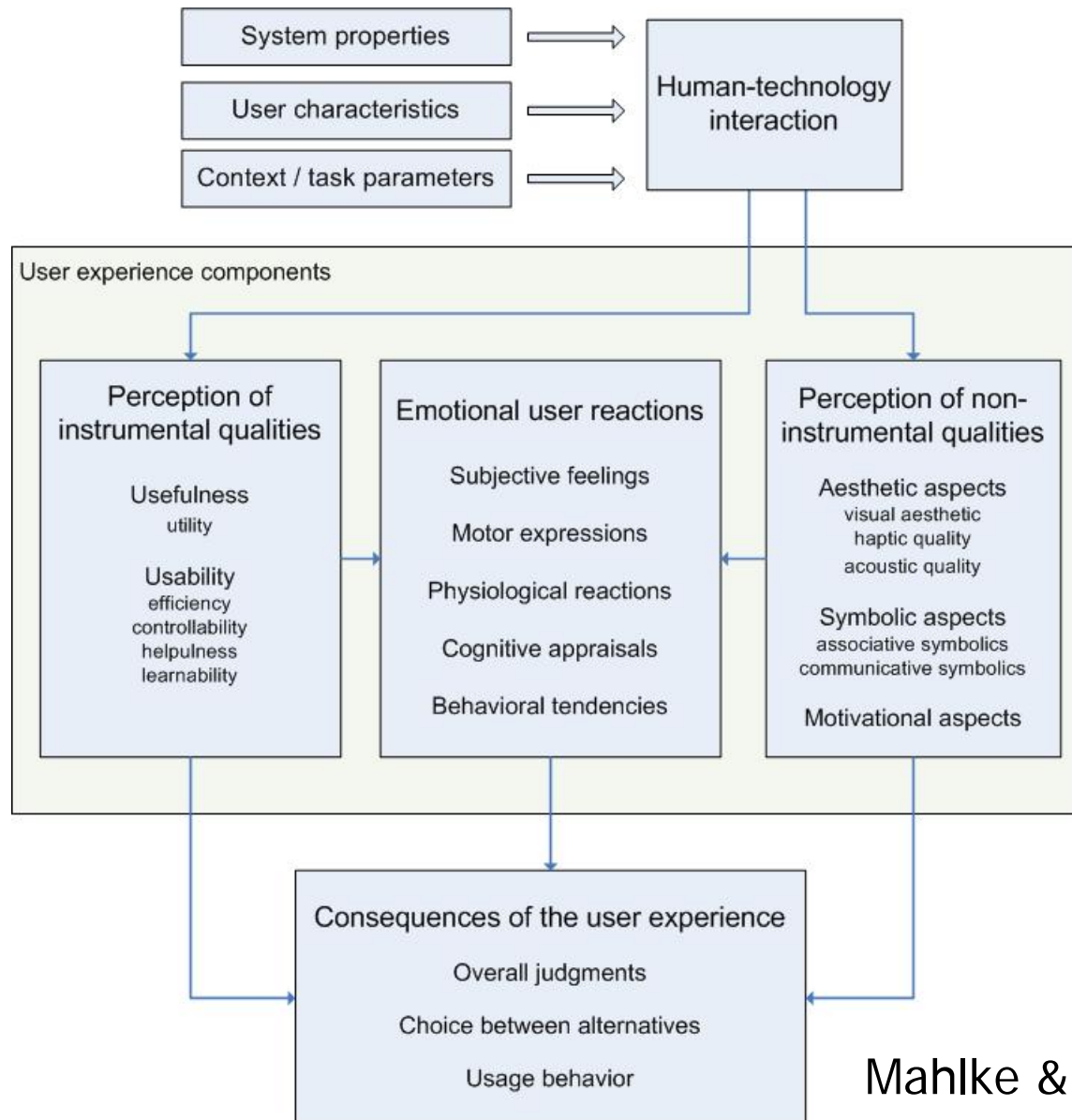
## New ideas regarding user-centred perspective

- fun of use (Carrol & Thomas, 1988)
- emotional usability (Logan, 1994; Kim & Moon, 1998)
- ludic products (Gaver & Martin, 2000)
- pleasurable products (Jordan, 2000)
- hedonic quality (Hassenzahl, 2001)
- product emotions (Desmet & Hekkert, 2002)
- visual aesthetics (Lavie & Tractinsky, 2004)
- affective quality (Zhang & Li, 2005)
- ...



- User-centred perspective on product quality gets more important.
- User experience research
  
- A lot of new concepts and ideas, but ...
  - ... which are important?
  - ... how do they interact?
  - ... how can they be studied experimentally?

# Background





How does such a framework support an **experimental** approach to UX research?

- Influencing factors that can be varied
- Differentiation of components that can be measured
- Hypotheses about interrelations of the defined variables



## Design and variables

- Experimental variation of influencing factors (2x2x2x2)
  - System properties: Related to usability and visual aesthetics
  - User characteristics: Cultural background (Canada vs. Germany)
  - Context parameters: Usage mode as independent variable
- Dependent variables
  - Quality perceptions: perceived usability and visual aesthetics
  - Emotional user reactions: subjective feelings and cognitive appraisals
  - Consequences of the user experience: overall judgments
- Covariates
  - Centrality of visual product aesthetics (user characteristic)



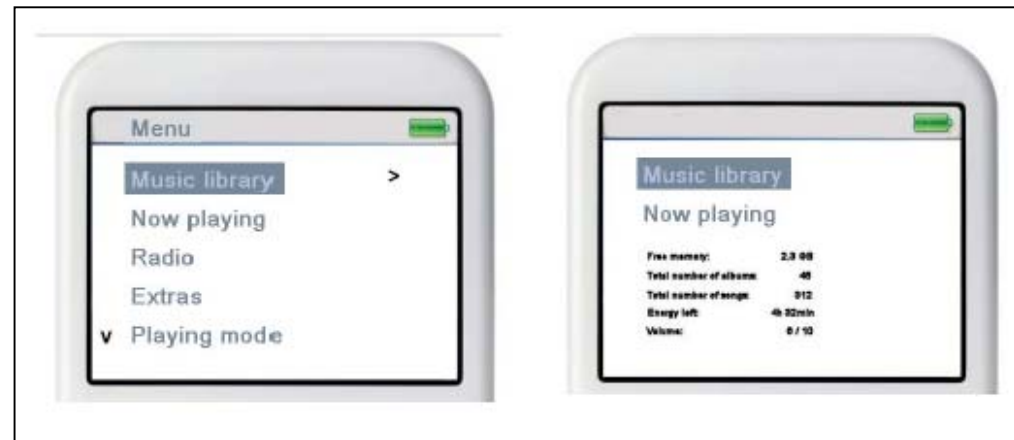


## Participants and material

- 160 participants
  - 80 Canadians, 80 Germans
- Material
  - Variation of usability: menu design, information visualization
  - Variation of aesthetics: body design

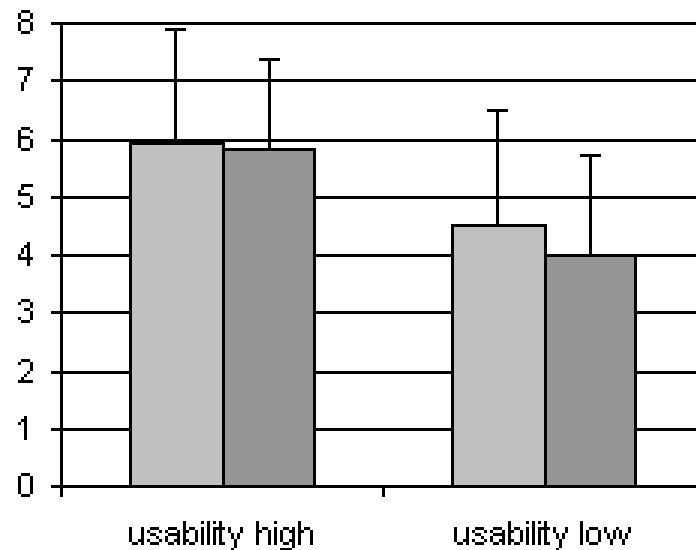
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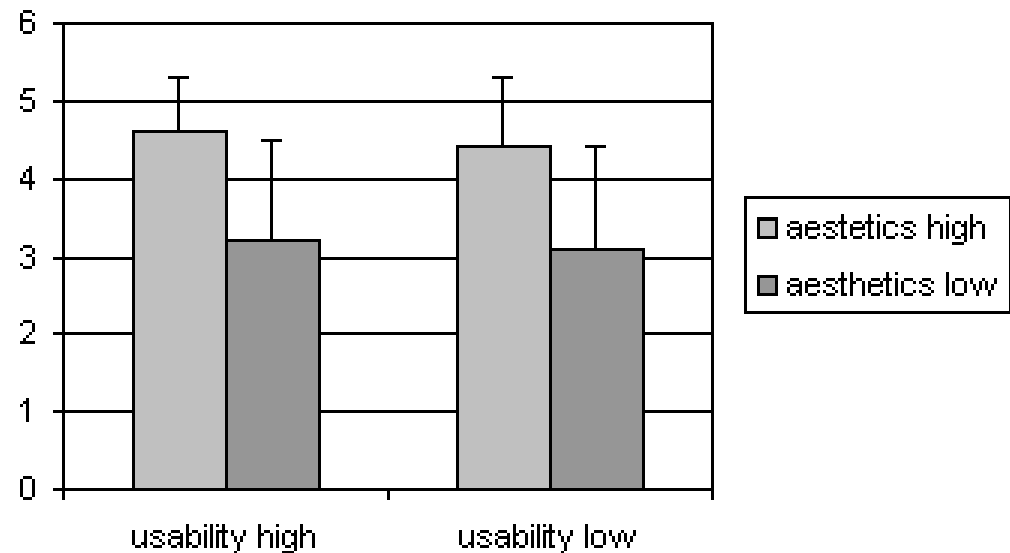


## Quality perceptions depending on system properties

**Perceived Usability**



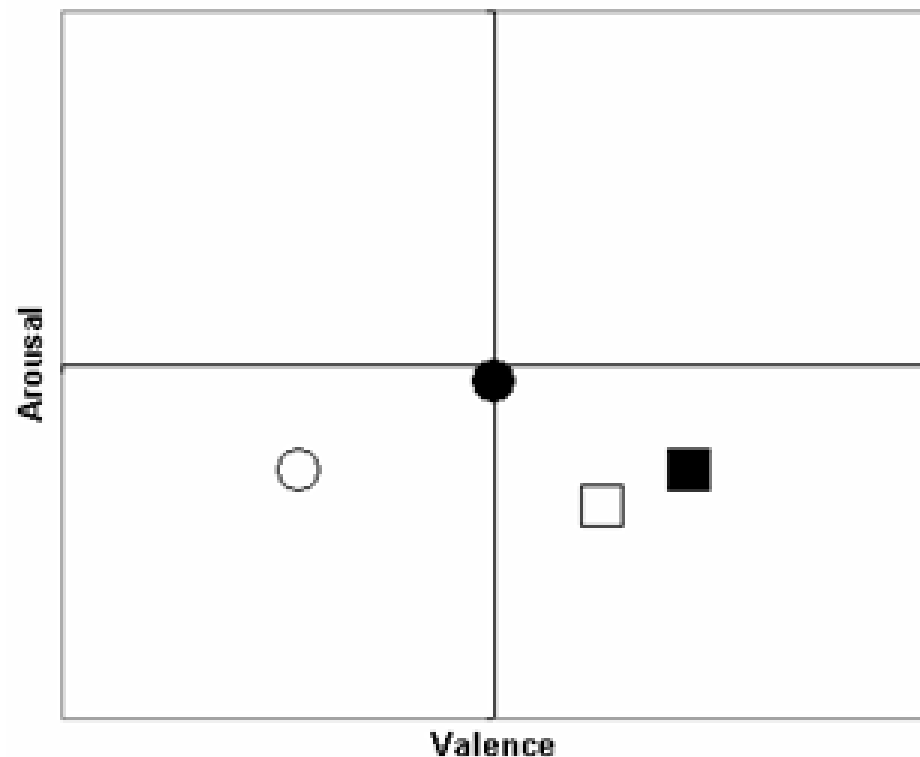
**Perceived Visual Aesthetics**



## Changes of subjective feelings depending on system properties

### Changes of subjective feelings

- high usability / high aesthetics
- high usability / low aesthetics
- low usability / high aesthetics
- low usability / low aesthetics





## Cognitive appraisals (based on Scherer's model of appraisal dimensions)

- High usability and visual aesthetics → more intrinsically pleasant
- Low usability → more novel
- German participants → more novel
- German participants → less self / norm compatible
- Action mode (exploration) → more goal conducive
- No effect for coping potential

## Regression analysis of subjective feelings overall and depending on usage mode

Predictors	Overall		Goal-mode		Action-mode	
	Valence	Arousal	Valence	Arousal	Valence	Arousal
perceived usability	.44 ***	-.19 *	.57 ***	-.10	.34 **	-.30 *
perceived aesthetics	.20 **	.12	.04	-.05	.33 **	.32 **
R <sup>2</sup>	27 %	3 %	33 %	1 %	28 %	11 %

\* p < .05; \*\* p < .01; \*\*\* p < .001



## Regression analysis of subjective feelings overall and depending on centrality of visual product aesthetics

Predictors	Overall		High CVPA		Low CVPA	
	Valence	Arousal	Valence	Arousal	Valence	Arousal
perceived usability	.44 ***	-.19 *	.32 **	-.15	.54 ***	-.23
perceived aesthetics	.20 **	.12	.32 **	.21	.08	.02
R <sup>2</sup>	27 %	3 %	25 %	2 %	30 %	3 %

\* p < .05; \*\* p < .01; \*\*\* p < .001



- System properties influence quality perceptions and subjective feelings
- User characteristics and contextual parameters have an impact on the influence of quality perceptions on subjective feelings
- System properties, user characteristics and contextual parameters impact the cognitive appraisal of an interactive situation

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