



# ***Monitoring the quality of experience in daily life: Experience Sampling Method on mobile phones***

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Cybertherapy Conference 2006 - Gatineau, Canada 12-15 June

## **Summary**

- ▶ What's Experience Sampling Method (ESM)?
- ▶ ESM and Technology
- ▶ The study
- ▶ Results
- ▶ Conclusions

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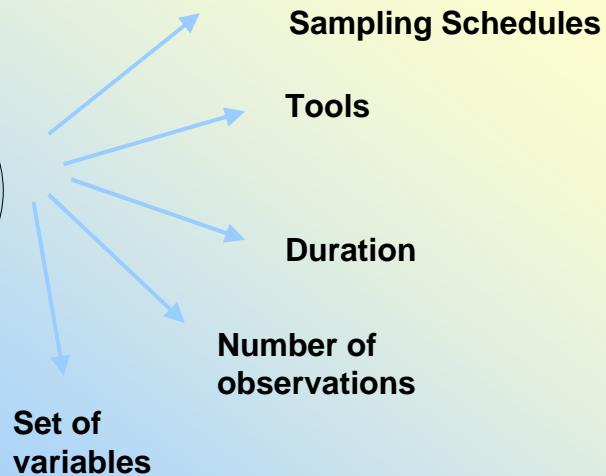
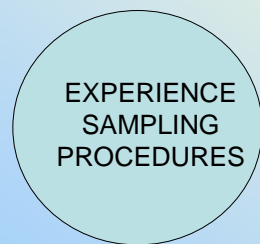
# What is ESM?

It's one of the first and most widely-used  
on line procedures

Provides on-line repeated  
sampling of participants'  
subjective experience  
during real life

- ▶ Its psychometric properties have been tested
- ▶ It has been extensively validated
- ▶ Its intrusiveness has been reported to be low
- ▶ It has been applied in various studies

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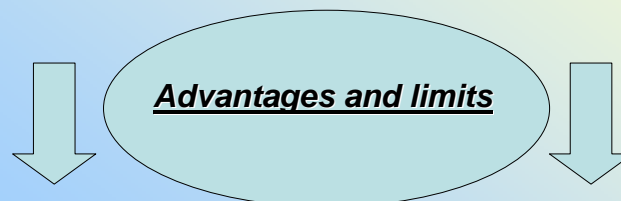


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# TOOLS

## ESM and Technology

- ▶ Paper & Pencil
- ▶ Computerized (Palmtop computer, PDA)
- ▶ Web Assessment
- ▶ Voice Recorder



## MOBILE PHONE

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# PROTOCOL

- ▶ **Sampling Schedule:** signal-contingent sampling
- ▶ **Duration:** 1 week
- ▶ **Number of observations:** eight times each day (from 8 a.m to 10 p.m)
- ▶ **Tools:** paper & pencil and mobile phone
- ▶ **Set of variables:**

⇒ **Enviromental variables:**  
open-ended questions

*Activities; Places;  
Companions*

⇒ **Experiential variables:**  
12 point scales

*Challenge/Skill; Affect;  
Motivation; Cognition*

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## STUDY

The study assesses the usability of the ESM implementation on mobile phones as compared to the original ESM protocol

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## Development and Technical Requirement

- ▶ Benchmarking on the technologies available in mobile-development field
- ▶ The software that allows to reproduce files on mobile phones is Flash Lite 2.0



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## Sample

Twelve adult participants aged between 25 and 45 ( $M=36.6$ ;  $sd=4,8$ ), 6 males and 6 females

**720 observations**

## Procedures

All respondents are tested in two sessions

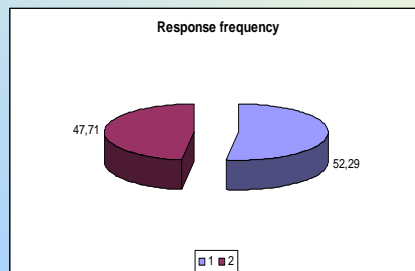
- ▶ with a version of the ESM based on Paper & Pencil
- ▶ with a version of the ESM implemented on 6680 Nokia mobile phones (display resolution:176x220)

## Measures:

- ▶ ESM
- ▶ Questionnaire for User Interface Satisfaction (Italian version)
- ▶ Structured interview

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## Results

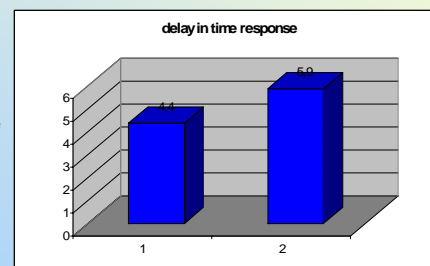


- ▶ No significant difference in **response frequency** between session 1 (p&p) and session 2 (mobile phone)

(Chi square=9.7224;  $p<.56$ )

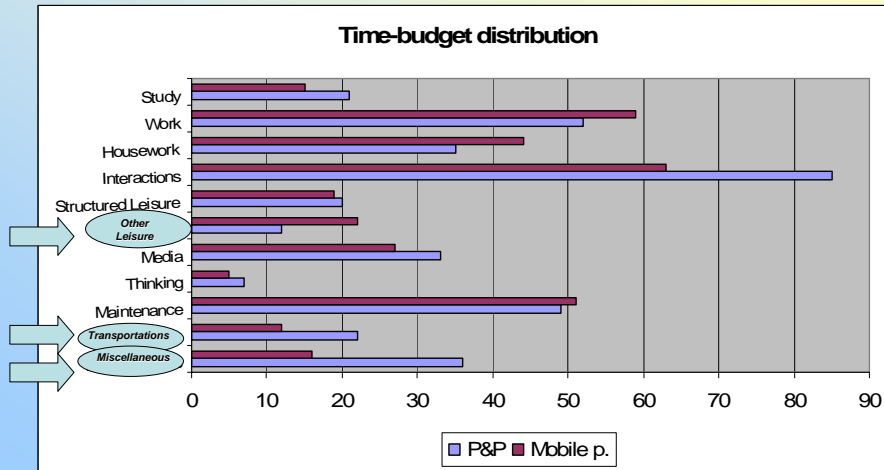
- ▶ Significant difference in **response delay**: higher mean value in mobile phone session

(T-test=-2.73;  $p<.05$ )



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▶ No significant differences in time-budget distribution between the two sessions



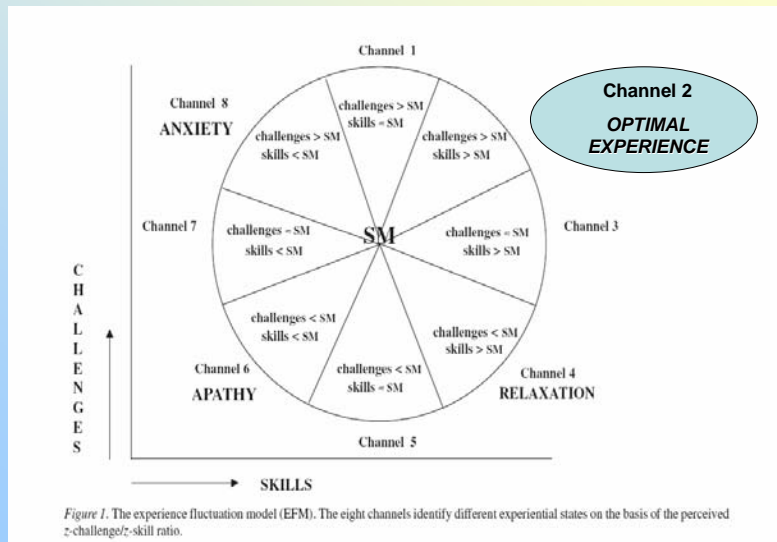
(Chi square=18.2089; p<.06)

▶ No significant differences in quality of experience between the two sessions

Variables / Tools	P&P	Mobile Phone	t Value
Concentration	0.086	-0.091	2.39 *
Control	0.063	-0.072	1.83
Happy	0.042	-0.042	1.13
Involvement	0.004	-0.005	0.12
Free	-0.009	0.012	-0.28
Satisfaction	-0.04	0.036	-0.95

\* p < .05

## Experience Fluctuation Model (EFM)



Delle Fave, A., Massimini, F. (2005), Investigation of Optimal Experience and Apathy, *European Psychologist* 2005, Vol. 10(4);264-274

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- ▶ No significant differences between session 1 and session 2 for quality of experience in channels

### **OPTIMAL EXPERIENCE**

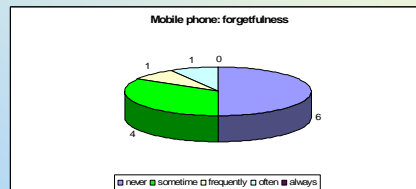
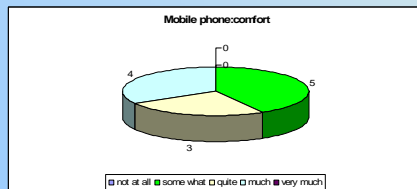
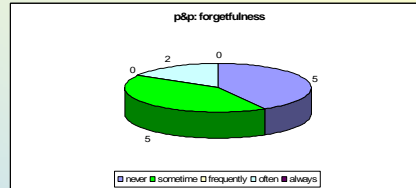
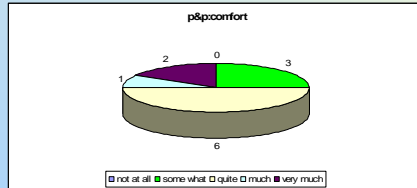
Variables Tools	<i>P&amp;P</i>	<i>Mobile Phone</i>	<i>t Value</i>
Concentration	0.529	0.231	2.04 *
Control	0.544	0.338	1.25
Happy	0.239	0.321	-0.49
Involvement	0.489	0.476	0.10
Free	0.413	0.206	1.36
Satisfaction	0.250	0.541	-1.69

\* p < .05

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# “Comfort & Forgetfulness”

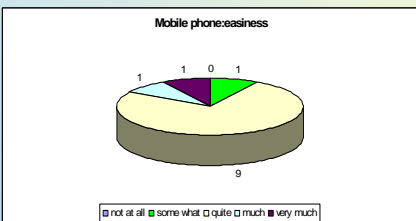
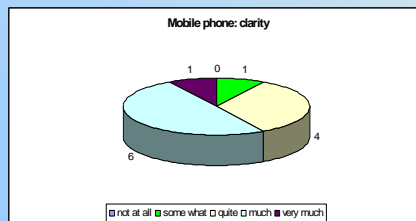
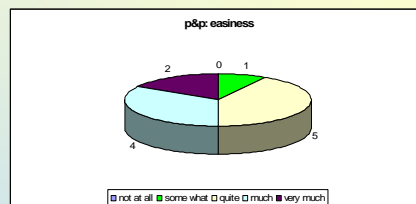
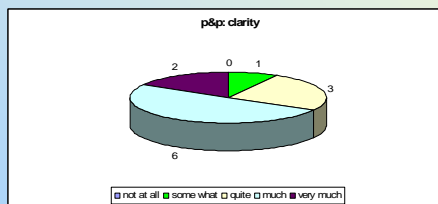
Structured interview



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# 12 Point Scales: clarity & easiness

Structured interview

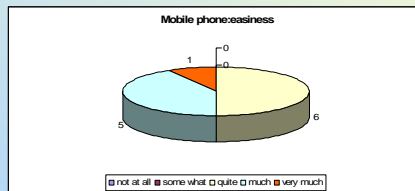
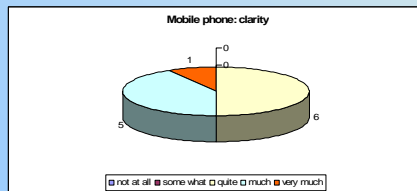
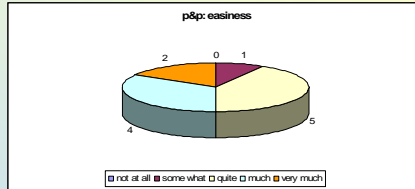
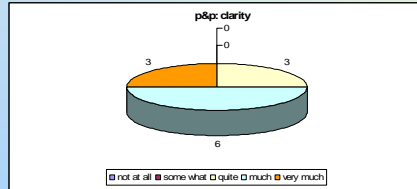


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# Open-ended questions: clarity & easiness

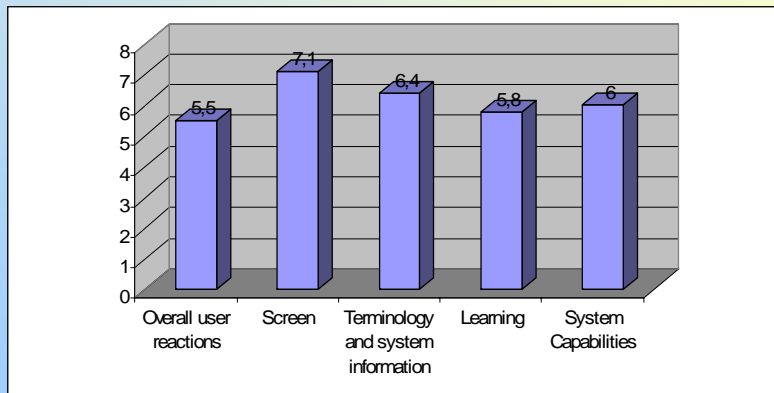
Structured interview



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# Users satisfaction

Questionnaire for User Interface Satisfaction



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## Conclusions

- ▶ No significant differences were found in time-budget distribution between p&p session and mobile phone session
- ▶ No significant differences were found in fluctuation of daily experience between the assessment done by p&p tool and mobile phone tool
- ▶ The study confirms the usability of ESM implemented on mobile phones

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## Opportunities ...

- ▶ Use of both open-ended and Likert scale questions
- ▶ Control in subjects compliance and immediate feedback
- ▶ Wireless Network
- ▶ Data transferred directly into a statistic package

## ...and Limits

- ▶ Mobile phones must support Flash Lite software
- ▶ Training for using the software
- ▶ Connection problems
- ▶ Data security and integrity

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*Thanks for the attention*

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