#### Supplementary Material 1 (SM1)

#### MOTEMO-OUTDOOR program: Teaching, context, and resources adaptation

The adaptations for the MOTEMO-OUTDOOR programme were based on the previous format for carrying out the seminars in classroom face-to-face synchronous format, which has been applied in a standardised way for the four seminars that were implemented in the context of the study plan of the degree in psychology of the UAB in force since the adaptation to the Bologna plan of the European Space of Higher Education from the 2010-11 academic year. Two of these seminars (SEM1 and SEM3) are dedicated to analysing real cases, and two of them (SEM2 and SEM4) are dedicated to reviewing concepts and resolving doubts about the theoretical contents of the subject. This previous format was always taught synchronously in classrooms adapted for seminar teaching in groups of 20 students led by a professor. The dynamics of each seminar session consisted of a discussion by teams of 4 to 5 students. The professor presented each case assisted by the projection of a multimedia material designed in PowerPoint, gave a time for internal discussion, the students provided an oral and justified response to the analysis, and finally the professor proposed an argued resolution of the case, with resolution of doubts. An adaptation of multimedia materials, dynamics and equipment was designed for the MOTEMO-OUTDOOR programme in order to be able to carry out the seminars both to the outdoor synchronous face-to-face format and to the asynchronous virtual context, trying to homogenise both learning contexts with the format as much as possible with the original format (indoor synchronous face-to-face) in order to minimise the possible differences in the learning processes between all of them due to the intrinsic differences between the different contexts.

In this way, an adaptation of the multimedia teaching materials was made (see supplementary material SM1), which were embedded into forms designed with Google Forms<sup>®</sup>:

Links to teaching materials:

- Seminar 1: <a href="https://forms.gle/3bUgaHZh8RZNedod7">https://forms.gle/3bUgaHZh8RZNedod7</a>
- Seminar 2: <a href="https://forms.gle/Pwsskx4AdgEAFFWL7">https://forms.gle/Pwsskx4AdgEAFFWL7</a>
- Seminar 3: <u>https://forms.gle/yMyTgnprrGbRcjFX8</u>
- Seminar 4: https://forms.gle/3zMaiAw3QxH9aF9b6

These forms presented the same cases that were previously contained in the multimedia teaching material projected by the professor, which includes videos, text, infographics, and photographs. The case raised orally by the professor was replaced by a statement accompanied by various response options (between 2 and 6). All forms provided feedback on results and the opportunity to modify answers. To guarantee homogeneity, access to the teaching material was always made from links available in the virtual classroom, regardless of the context (indoor, outdoor or virtual) in which the student carried out the activity.

Additionally, to be able to carry out the seminars in the outdoor synchronous face-to-face context in green spaces of the university campus, three actions were carried out.

- 1. A 60 x 80 cm plastic roll-up mat was designed with sufficient hardness to guarantee comfort during the 100-min duration of the seminars sitting on an uneven surface (the grass), and with a sufficient size to be able to sit down and place the electronic device used to follow the sessions.
- 2. A search and selection of optimal outdoor spaces was carried out. The eligibility criteria were: (1) maximum distance of 200m from the entrances to the faculty, (2) green area,

and (3) good wi-fi coverage, (4) low mobility in the surroundings, and (5) a sustained average level of environmental noise under 60dB. A total of 5 spaces that met the eligibility criteria were located, among which the members of the teaching team responsible for teaching seminars (AS, CM and NC) prioritised two, space A and space E (see Figure 1), who were finally employed throughout the implementation of the entire program.

3. A logistics procedure related to communication, material resources and displacements was designed and informed to the students (see supplementary material SM2).

An Extech 407736 Sound Level Meter was used to analyse the acoustic conditions of the outdoor spaces to be selected for the programme. This analysis was done according to the eligibility conditions that were used to select the possible spaces (see the next section).

To evaluate the adequacy of the weather conditions for holding the seminar sessions in the outdoor context, data by the Catalan Meteorological Service (2021) from the Sant Cugat del Vallès station were obtained in real time.

For each session, the professor recorded the following metadata, some of them in redundancy to those provided by the students for data verification and error correction: the seminar given, the delivery context (indoor vs outdoor), and the teacher who taught it.

#### Supplementary material 2 (SM2)

Logistic document shared with the students:



Protocol MOTEMO-OUTDOOR

# PROJECTE MOTEMO-OUTDOOR

Protocol per als seminaris realitzats a espais exteriors del Campus de la UAB

- Estudiants del subgrup i professor/a es troben a l'aula d'impartició prevista (es prega màxima puntualitat).
- En cas que la sessió es faci outdoor, el professor li ho comunica als estudiants presents presencialment i ho deixa escrit a la pissarra per si algú arribar més tard, indicant "Seminari SX MOTEMO, subgrup YYY, Espai OUTDOOR Z".
- Professor i estudiants van en grup fins a l'espai on s'emmagatzemen les catifes. Cada estudiant agafa una catifa.
- 4. El grup es trasllada a l'espai del campus indicat pel professor (de camí es recomana rentat de mans amb escuma dels dispensadors públics de la Facultat). Si un estudiant arriba tard, pot anar directament a l'espai exterior comunicat a la pissarra (no se li garanteix catifa).
- 5. Un cop a l'espai exterior, es farà una rotllana o dos semicercles al voltant del professor, mantenint la distància mínima de 1,5m i amb mascareta. Es prioritza l'espai A, si bé es pot optar per l'espai E en cas de dos subgrups simultanis o quan el temps sigui insegur, podent seguir la sessió al cobert annexe o tornant a l'aula.





1



 Un cop acabada la sessió de seminari, tothom acompanya el professor a tornar la catifa. Es recomana un rentat de mans posterior amb escuma dels dispensadors públics de la Facultat.



2

# Supplementary Material 3 (SM3)

Session assignments by professor as scheduled in the faculty programming:

		Teacher A	ssignment	
Students' Group	Seminar 1	Seminar 2	Seminar 3	Seminar 4
1	СМ	AS	AS	AS
2	NC	NC	NC	NC
3	СМ	СМ	СМ	NC
4	AS	AS	AS	AS
5	СМ	СМ	СМ	NC
6	AS	AS	AS	AS
7	NC	AS	AS	NC
8	AS	AS	AS	AS
9	СМ	СМ	СМ	СМ
10	NC	NC	NC	NC
11	СМ	СМ	СМ	СМ
12	NC	NC	NC	NC
13	СМ	СМ	СМ	СМ
14	NC	NC	NC	NC
15	СМ	СМ	СМ	СМ
16	NC	NC	NC	NC
17	NC	NC	NC	NC
18	СМ	СМ	СМ	СМ
19	СМ	NC	СМ	NC

	AS	СМ	NC	TOTAL
Sessions by professor	17	29	30	76

# Supplementary Material 4 (SM4)

Context assignment of all the seminar sessions, and their absolute and relative distribution by seminar, student, and professor:

			context as	signment		Outdoor by student		
Students Group	5	Seminar 1	Seminar 2	Seminar 3	Seminar 4	k	%	
1		indoor	indoor (r)*	outdoor	outdoor (r)*	2	50,0	
2		indoor	outdoor	indoor	outdoor	2	50,0	
3		outdoor	indoor	outdoor	indoor	2	50,0	
4		outdoor	outdoor	indoor	indoor	2	50,0	
5		outdoor	indoor	indoor	outdoor	2	50,0	
6		indoor	outdoor	indoor	outdoor	2	50,0	
7		outdoor	outdoor	indoor	indoor	2	50,0	
8		indoor	outdoor	outdoor	indoor	2	50,0	
9		outdoor	outdoor	indoor	indoor	2	50,0	
10		outdoor	outdoor	indoor	indoor	2	50,0	
11		indoor	outdoor	outdoor	indoor	2	50,0	
12		outdoor	indoor	outdoor	indoor	2	50,0	
13		outdoor	indoor	indoor	outdoor	2	50,0	
14		outdoor	outdoor	indoor	indoor	2	50,0	
15		outdoor	indoor	indoor	outdoor	2	50,0	
16		indoor	indoor	outdoor	outdoor	2	50,0	
17		indoor	indoor	outdoor	outdoor	2	50,0	
18		outdoor	indoor	outdoor	indoor	2	50,0	
19	19		indoor	outdoor	outdoor	2	50,0	
Outdoor	k	11	9	9	9	38		
by session	%	57,9	47,4	47,4	47,4		50,0	

(r) = Rescheduled by permutation of sessions format

		AS	СМ	NC	TOTAL
Outdoor	k	9	14	15	38
by professor	%	52,9	48,3	50,0	50,0

#### **Decision protocol**

In anticipation of adverse weather conditions that would require rescheduling the context of a significant number of sessions, and in order to keep the number of indoor and outdoor sessions scheduled for each group and globally constant, it was decided that (1) the k = 38sessions scheduled in outdoor context (50% of the total), would initially be scheduled unevenly following a decreasing number seminar by seminar (SEM1: outdoor = 11, SEM2: outdoor = 10, SEM3: outdoor = 9; SEM4: outdoor = 8) to, if necessary (2) reschedule such sessions interchanging the context with another of the same group of students. The rescheduling weather conditions were as follows: (1) temperature below 15°C (in any case), or (2) temperature below 20°C combined with cloudy skies, or wind speeds greater than 20 km/h. These conditions were chosen (1) considering the climatology of the area (Weatherspark. 2021), (2) avoiding a strong discrepancy with indoor environmental conditions to maintain high comparability with outdoor sessions, and (3) avoiding a high number of sessions to reschedule. According to real-time verification of data from the nearest official weather station (Servei Meteorològic de Catalunya, 2021), only one out of the 38 sessions (2.6% of the total) did not meet the expected weather conditions, so it was rescheduled. Instead, to keep the number of seminars held in both outdoor and indoor formats constant, another session of the affected group of students was rescheduled to an outdoor format.

- Servei Meteorològic de Catalunya (2021). Dades de l'estació automàtica de Sant Cugat del Vallès CAR [Data from the Sant Cugat del Vallès CAR automatic station]. Retrieved from April 01, 2021 to June 10, 2021 from https://www.meteo.cat/observacions/xema/dades?codi=XV&dia=2021-04-01T00:00Z
- Weatherspark (2021). Climate and Average Weather Year Round in Cerdanyola del Vallès (Spain). Retrieved April 01, 2021 from https://weatherspark.com/y/47247/Average-Weather-in-Cerdanyola-del-Vall%C3%A8s-Spain-Year-Round

Supplementary material SM5. Correlation matrix for outdoor environment

	-	Learning Experience				Learning Conditions		
	-	Total	Learning	Evaluation	Hedonic	Total	Technical	Environmental
Learning Experience	Total							
	Learning	.85**						
	Evaluation	.83**	.65**					
	Hedonic	.81**	.52**	.44**				
Learning Conditions	Total	.46**	.37**	.29**	.47**			
	Technical	.27**	.28**	.20**	.23**	.79**		
	Environmental	.39**	.27**	.21**	.47**	.79**	.34**	
	Safety	.38**	.36**	.26**	.33**	.59**	.31**	.27**

\* The correlation is significant at the .05 level (two-tailed).

\*\* The correlation is significant at the .01 level (two-tailed).

Supplementary material SM6. Correlation matrix for indoor environment

	—	Learning Experience				Learning Conditions		
		Total	Learning	Evaluation	Hedonic	Total	Technical	Environmental
Learning Experience	Total							
	Learning	.88**						
	Evaluation	.86**	.71**					
	Hedonic	.83**	.60**	.52**				
Learning Conditions	Total	.37**	.37**	.29**	.30**			
	Technical	.27**	.23**	.22**	.14*	.81**		
	Environmental	.28**	.28**	.18**	.27**	.80**	.40**	
	Safety	.40**	.39**	.30**	.36**	.71**	.36**	.46**

\* The correlation is significant at the .05 level (two-tailed).

\*\* The correlation is significant at the .01 level (two-tailed).

Supplementary material SM7. Correlation matrix for online environment

		Learning Experience				Learning Conditions		
		Total	Learning	Evaluation	Hedonic	Total	Technical	Environmental
Learning Experience	Total							
	Learning	.94**						
	Evaluation	.92**	.81**					
	Hedonic	.89**	.68**	.70**				
Learning Conditions	Total	.60**	.57**	.60**	.42**			
	Technical	.60**	.58**	.62**	.47*	.90**		
	Environmental	.55**	.56**	.52**	.22**	.89**	.68**	
	Safety	.29*	.24	.33**	.24	.73**	.50**	.50**

\* The correlation is significant at the .05 level (two-tailed).

\*\* The correlation is significant at the .01 level (two-tailed).