Classifying what psychotherapists do: A third step.

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Abstract

CLP project aim: The Common Language for Psychotherapy (CLP) project aims to achieve an International "A to Z" dictionary of psychotherapy procedures, from any orientation. Each entry is defined operationally, free of theoretical terms as much as possible, in order to further the development of psychotherapy into a science. The CLP project, by clearly defining psychotherapy procedures, has led to a provisional classification of psychotherapy procedures – still ongoing – showing that each procedure comprises one or more presumably active elements ("ingredients"), which are also often found in other procedures. *Classification methods:* On a database of the first 81 definitions of psychotherapy procedures listed in the CLP project, 2 project teams each used 2 different methods to identify these active elements: Team A (Marks et al.) used a "*bottom up*" method (by empirical inspection), and Team B (Borgo & Sibilia) used a "*top down*" method (theory-driven). The present study compared the 2 classifications, by studying the allocation of each procedure using both classification criteria. *Results:* The 2 classifications overlap remarkably, even though they were developed independently and with different methods. In both classifications the overall numbers of "ingredients" identified independently by the 2 teams were fairly small and remarkably similar: 16 (Domains) in Classification A, and 15 (Components) in Classification B. Moreover, 8 of these ingredients were also very similar in label and/or content and most of these were highly cross-correlated. As expected, almost all these shared ingredients were highly cross-correlated. *Conclusions:* The study confirms the reliability of the clear definitions of psychotherapy procedures used in the CLP project, and gives useful suggestions to identify their presumed elements.

Key words: Classification, psychotherapy, procedures, active elements, ingredients.

Background

In science, taxonomy is central as an aid for communication, information retrieval, and description of the objects of study, and for theory building and prediction (Blashfield & Dragun, 1976). The same is true in mental health. Psychiatry relies on diagnostic systems (ICD-10 and DSM), which classify psychiatric disorders, though the DSM is much debated. Psychotropic drugs, too, are classified, by their main pharmaceutical effects and molecular structure.

Psychotherapy procedures, however, still lack a universally-agreed empirical classification. As procedures stem from different theories about change processes and the source and maintenance of symptoms, and from models of the human mind and interpersonal relationships, it is unsurprising that no general consensus has emerged so far. As noted by Marks et al. (2010), despite many efforts since 1980, in this research area authors have often given varying names to similar procedures and categories, and grouped them in a range of categories containing varying numbers of procedures. This topic is discussed in the paper *Classifying what psychotherapists do: A first step* (Marks et al., 2010).

Goal of the Project

Classifying therapy procedures empirically (regardless of theoretical approach) is difficult, partly

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due to lack of an easily-accessed set of pithy descriptions of such procedures across all orientations. This is why the Common Language for Psychotherapy (CLP) project aims to achieve an International "A to Z" dictionary of psychotherapy procedures, from any orientation, where each entry is operationally defined, shorn of theoretical terms as much as possible. Accordingly, each entry has been compiled using a common template comprising definition of the procedure, its elements, related procedures, application, first use, references, and a clinical example.

In this way, procedure entries have become more easily comparable. Once 81 entries were collected, a study of the commonalities and differences among the procedures was begun. Two different teams of the Task Force of the CLP Project, independently of each other, inspected the database, each using its own method and criteria. The entries were thus examined comparatively, giving rise to 2 classification attempts. Two papers have illustrated the 2 attempts, which led to 2 distinct classifications. The 2 attempts are Classification A (Step1), by Team 1 (Marks et al., 2010)[6], and Classification B (Step 2), by Team 2 (Borgo & Sibilia, 2017)[7].

Goal of the present paper

The present paper examines the differences and similarities between Classifications A and B. This comparison might ease the way to a universally agreed classification of psychotherapy procedures, and so improve our understanding of psychotherapy change processes.

Method of Comparisons between Classifications A and B

The database

All the 81 procedures gathered and approved by the Task Force up to 2010 were entered into a double-entry table where procedures' labels appeared in the 1st column (once each), and information about the presence/absence of any particular feature in the procedure was entered in a separate column, and numerically coded as 1/0 (present/absent). Thus, Table had 81 rows, each containing the data of a procedure, distributed into as many columns as there were specific features found by the 2 teams in the whole database.

The different features found in psychotherapy procedures were called "Domains" in Classification A and "Components" in Classification B. Despite some differences due to the different classification methods, Domains and Components were the only classification criteria used. As 16 Domains were found in Classification A and 15 Components in Classification B, the database was built with 31 columns for storing all the information about the presence of the different features (or classification criteria). Then, each procedure was represented by a line, and each Domain or Component, was indentified in the procedure by Teams A or B, represented by a dichotomous variable in its own column.

A new column was added containing the overall number of features found in each procedure, which we called "complexity". A further column was added to designate procedures which describe not the "actions" of therapists towards their patients but rather their actions towards themselves (as in the procedure "*Empathy dots*"), or just the communication medium used in the procedure (as in

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6   Downloadable from: http://dev.commonlanguagepsychotherapy.org/classification.pdf
7   Downloadable from: http://dev.commonlanguagepsychotherapy.org/classification-step-2.html

"*Internet-based therapy*"), independently of the therapists' "actions". We therefore concluded that "procedures" can't help to classify therapists "actions". So, excluding the 2 above-mentioned procedures, the database for the present study was limited to 79 procedures.

It is important to know how the 2 classifications' criteria may differ, though both classifications were implemented on the basis of expert knowledge. Team A (Marks et al) inspected all the fields comprising the procedure under scrutiny - from the 1st (Definition) to the last (the clinical Case Illustration) - to spot any therapists' action which could be found, and then selected one or more "Domains" to which each of these actions could be attributed. Domains were defined not in advance but only after inspection of all procedures.

Team B (Borgo & Sibilia) focussed primarily on the main goal of each procedure, as stated in the field "Definition" (the 1st field of the entry), and only secondarily on its "Elements" (the 2nd field), to find only "Components" logically related to the explicit goal. Goals were preliminarily attributed to several Areas overlapping the 3 traditional areas of psychology of *Cognition*, *Behaviour* and *Affect* (emotions); 2 intermediate Areas (*Cognitive-Behavioural*, *Behavioural-Emotional*) and an additional Area called *Somatic Sensations*, yielding 6 Areas overall (Borgo, Sibilia, Marks, 2017).

Other colums were subsequently added to the database for testing specific hypotheses. Statistical calculations were performed with the software NCSS (Number Cruncher Statistical System) (Hinze, 2001).

Comparing Domains and Components

Domains, as described in Marks & al. (2010), and Components, as in Sibilia & Borgo (2017), were first compared based on their labels. At first inspection, some Domains and Components had the same or very similar labels in both classifications. However, their contents differed, as seen in their definitions. So, it was decided to compare the classification criteria by label and content, as those were described in both Classifications A and B.

Table 1 – Domains of psychotherapy procedures: Labels and Definitions by Areas.		
AREA	Label:	Definition:
COGNITIVE	Attention Focusing (AF)	Attend to and accept external stimuli or one's own thoughts, sensations, and feelings.
	Reframing (Ref)	Help patients see things differently by discussion/written methods.
	Distraction (Dis)	Divert attention from feelings and thoughts
	Education (Edu)	Formally explain what maintains a problem and how to overcome it.
COGNITIVE-BEHAVIORAL	Externalize Feelings & Thoughts (EFT)	Help patients uncover hidden feelings & thoughts
	Goal Planning and Attainment (GPA)	Help patients define problems and goals to reduce them, and steps to attain goals.
	Modeling (Mod)	Show clients what to do by watching it being done by the therapist or others or in a film, or by imagining themselves doing it.
BEHAVIORAL	Homework (HW)	Help patients plan to carry out and record tasks between sessions, in the natural environment.
	Environmental Change (EC)	Planned non-contingent change of the environment.
	Interpersonal Skills Training (IST)	Train appropriate social behaviours.
	Contingency Management (CM)	Appropriately reward desired behavior and ignore or penalize undesired behavior
BEHAVIORAL-EMOTIONAL	Exposure (Exp)	Guide patients into facing frightening/ avoided situations/feelings/imagery/thoughts.
	Rehearsal & Role Playing (RRP)	Rehearse imagined/actual behavior to improve skill in performing it or to understand it from one's own or another perspective.
EMOTIONAL	Empathy Expression (Emp)	Express understanding and acceptance of another's feelings beyond usual rapport.
SOMATIC	Body Skills Training (BST)	Train to monitor and change habits and sensations.
UNCLASSIFIED	Therapist's Self-Instruction (TSI)	Therapist uses own feeling, memo or action to help the patient.

Secondly, the 6 different Areas which were useful for grouping the goals of Components identified in Classification B (Table 2) were also used to try to group the Domains of Classification A (Table 1). We found that the 6 Areas used by the Authors of Classification B to group Components could be also applied to group Domains.

In Tables 1 and 2 the same colours are used to identify each Area. As shown in Table 3, both Domains and Components were distributed into the 6 different Areas initially devised for Components alone.

Table 2 – Components of psychotherapy procedures: Labels and Definitions by Areas.	
AREA Label:	**Definition:**
COGNITIVE	
Attention Focusing (AF)	Focusing attention on external or internal stimuli (incl. Memories and thoughts)
Imagery Techniques (IT)	Use of mental images
Cognitive Restructuring (CR)	Awareness raising, belief identification, rational debate, reality testing, belief reformulation, re-attribution, re-labeling, re-phrasing
COGNITIVE-BEHAVIORAL	
Problem Solving (PS)	Goal setting, brain-storming (divergent thinking), decision making, self-appraisal, generalisation
Motivational Techniques (MO)	Motivational matrix, imagery, decision making
BEHAVIORAL	
Exposure (EX)	BP to face an avoided stimulus or stimulus complex, and cope with the resultant feelings and sensations
Self Control (SC)	Goal setting, discriminant training, self-observation, self-appraisal, self-talk, self-reinforcement, homework
Social Skills Training (SS)	Modeling, rehearsal, homework
Contingency Management (CM)	Prompting, differential reinforcement and punishment
Behavioural Prescription (BP)	Suggestions/requests to perform specific behaviours (incl. Verbal behav.)
BEHAVIORAL-EMOTIONAL	
Role Playing (RP)	Modeling, rehearsal
EMOTIONAL	
Empathy (EM)	Providing empathic behaviour
Emotional Support (ES)	Providing emotional support
Emotion Regulation (ER)	Awareness raising, self-observation (AF on emotional stimuli and/or responses), BP, modeling, rehearsal
SOMATIC	
Relaxation (RX)	BP of specific exercises to induce relaxation, homework

The only exception was Therapist's Self-Instruction (TSI), as TSI is the only Domain which is "reflexive", being directed to the therapist rather than the patient. Therefore it could not be grouped into any of the 6 goal Areas, together with other classification criteria, which target some psychological change in patients. Based on this matching, we hypothesised that some classification criteria are strongly related, while others are more weakly so, when only partial similarities were noted at face value.

AREA	DOMAINS		COMPONENTS
Table 3 – Domains and Components of psychotherapy procedures matched by target area allocation and label. Hypotetic correspondences are marked with *.			
COGNITIVE	Label:		Label:
	Attention focusing (AF)	C*	Attention focusing (AF)
	Reframing (Ref)	C*	Cognitive restructuring (CR)
			Imagery techniques (IT)
	Distraction (Dis)		
	Education (Edu)		
COGNITIVE-BEHAVIORAL			
	Goal Planning and Attainment (GPA)		Problem solving (PS)
			Motivational techniques (MO)
	Externalize Feelings & Thoughts (EFT)		
	Modeling (Mod)		
BEHAVIORAL			
	Exposure (Exp)	C*	Exposure (EX)
	Contingency Management (CM)	C*	Contingency management (CM)
	Homework (HW)		Self control (SC)
	Environmental Change (EC)		
	Interpersonal Skills Training (IST)	C*	Social skill training (SS)
			Behavioural prescription (BP)
BEHAVIORAL-EMOTIONAL			
	Rehearsal & Role Playing (RRP)	C*	Role playing (RP)
EMOTIONAL			
	Empathy Expression (Emp)	C*	Empathy (EM)
			Emotional support (ES)
			Emotion regulation (ER)
SOMATIC			
	Body Skills Training (BST)	C*	Relaxation (RX)

In Table 3, the 8 correspondences between Domains and Components found on inspection are marked with an asterisk (*).

Hypotheses

We assumed that the more similar the definitions of Domains are to those of Components, the higher the affinity (or correspondence) is between a Domain and a Component as classification criteria, the higher the chances are that they are both found in the same psychotherapy procedure of the database. Thus, based on the similarity of Domains and Components judged by inspection of their labels and contents[8], couplings of Domains and Components were reckoned according to their degree of reciprocal similarity. They were hypothetically divided into 2 groups as follows:

Group 1: Domains highly similar to Components (by contents and labels) are coupled to them as

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8 Presented at the Round Table "*Should CBT procedures target transdiagnostic dysfunctions?*" in the 47th EABCT Conference in Ljubljana (Sept. 2017), chaired by the first Author.

follows: Ref-CR, AF(A)-AF, Exp-EX, CM(A)-CM, RRP-RP, IST-SS, Emp-EM, BST-RX.

Group 2: Couplings of Domains and Components with partial similarities (weak affinity) between them, based on contents of definitions, are: HW-SC, GPA-SC, GPA-PS, Exp-IT, Mod-SS, Mod-RP, Dis-AF.

Testing of the hypotheses

The above hypotheses were tested by examining in all psychotherapy procedures the co-frequencies of Domains and Components. *Chi* Square (X^2) tests were used to assess significance of the observed co-frequencies of each Domain (classifying the procedures for Team A), with each Component (found in the procedures by Team B). The Zero hypothesis was that any Domain identified was by chance co-present or absent with all Components.

Predictions based on hypotheses on highly similar couples (Group 1) were considered confirmed only if p < 0,0002, whereas predictions based on Group 2 required a lower probability (p<0,05).

Results

Results are plotted in Table 4, where probability levels of each X^2 are shown only if their p was <0,05. As can be seen, all assumptions on Group 1 were confirmed; only for RRP-RP, their co-frequency, albeit significant (p=0,015), was less strong than predicted. Overall, 7 couples out of 8 supposedly corresponding Domains and Components were associated significantly.

Table 4 – Co-presence of Domains and Components in the same psychotherapy procedures: probability levels of frequencies *X*sq. of co-presence of domains and components in all procedures assessed (shown only correlations with p < 0,05).

Domains:	AF(x)	BST	Cmx	Dis	Edu	Emp	EC	Exp	EFT	GPA	HW	IST	Mod	Ref	RRP	TSI
Components:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AF	0.0001		0.0391	-								0.0310			0.0427	
BP																
CM			0.0001				0.0003		0.0021							
CR							0.0473		0.0144					0.0001		
EM					0.0000											0.0298
ER																
ES												0.0063	0.0335			
EX								0.0000			0.0032					
IT							0.0326	-				0.0149				
MO																
PS	0.0403									-						
RP												0.0306	0.0198		0.0149	
RX		0.0000				0.0044		0.0027		0.0056	0.0281		0.0168		0.0336	
SC		0.0115	0.0117			0.0383	0.0391			-	-	0.0172	0.0002	0.0477	0.0021	
SS			0.0019				0.0004			0.0048		0.0001	-		0.0013	

Prediction confirmed (p < 0.0002)	Partial prediction confirmed (p < 0.05)
Prediction not confirmed (p < 0.0002)	Partial prediction not confirmed (p < 0.05)

In contrast, all other assumed associations between ingredients of Group 2 (with partial or weak similarities) were not confirmed, as their X^2 were non-significant, except for one (RP-Mod),

significant at p<0,02. A summary of all co-frequencies of Domains with Components is in <u>Table 5</u>.

Table 5. Predicted correspondences of Components with Domains

Prediction:	CONFIRMED	NOT CONFIRMED
Predicted strong correlation	AF-Afx*** RX-BFT*** CM-Cmx*** CM-EC*** Em-Emp*** EX-Exp*** SS-IST*** CR-Ref***	RP-RRP*
Predicted weak correlation	RP-Mod*	AF-Dis IT-Exp SC-GPA PS-GPA SC-HW SS-Mod
*** p<0.0002 * p<0.05		

<u>Frequencies</u>

<u>In Classification A, not all Domains were equally general (Table 6)</u>. In fact, 89,9% of all procedures contain at least 1 of 4 Domains (*Expressing Feelings and Thoughts*, *Homework*, *Education*, *Goal Planning and Attainment*), so they can be identified in most procedures. These 4 Domains were also seen in Step 1 (Marks et al 2010) as identified by previous authors.

Table 6 - Frequencies of occurrence of Domains and of Components allocations in Class. A and B.

			Domains			Components
§	45	EFT	Externalize Feelings & Thoughts	28	CR	Cognitive restructuring
§	42	HW	Homework (SC)	16	AF	Attention focusing
§	40	Ref	Reframing	15	EX	Exposure
§	33	GPA	Goal Planning (SC & PS)	12	IT	Imagery techniques
§	32	Edu	Education	12	SC	Self control
	29	Exp	Exposure (IT)	10	CM	Contingency management
§	28	RRP	Reharsal & Role Playing	9	RP	Role playing
	26	AF	Attention focussing	8	PS	Problem solving
	24	IST	Interpersonal Skills Training	8	SS	Social skills training
§	22	CM	Contingency management	7	EM	Empathy
	20	Emp	Empathy Expression	6	ER	Emotion regulation
	19	EC	Environmental change	5	RX	Relaxation
	15	Mod	Modeling (SS & RP)	4	MO	Motivational techniques
	14	BST	Body skills training	3	BP	Behavioural prescription
	7	TSI	Therapist's Self-Instruction	3	ES	Emotional support
	5	Dis	Distraction (AF)			
Tot.:	401			Tot.:	146	

General Domains

§ Domains found by previous Authors (Marks & al., 2010)

In Classification B, which aimed to identify specific Components, very few (6) Components were present in about 80% of all psychotherapy procedures, which were (in frequency order): CR – *Cognitive Restructuring*, AF – *Attention Focussing*, EX – *Exposure*, SC – *Self Control*, IT – *Imagery Techniques*, CM – *Contingency Management* (Table 6).

A few specific elements are highly represented in both classifications (Table 7):

a) 96,2% of all procedures contain at least 1 of the 7 Domains corresponding to Components (signed with °).
b) 78,5% of all procedures contain at least one of the 7 Components corresponding to Domains (signed with *).

Complexity

At first scrutiny it was clear that procedures vary a lot in complexity, ranging from those defined by a limited number of therapist's actions (e.g. "*Validation of Feelings*") to very complex procedures comprising several different actions (e.g. "*Dialectical Behaviour Therapy*"). We operationalised the complexity of a procedure in the present study as the total number of its ingredients (classification criteria), whether identified as Components or as Domains. Thus, for each procedure, Domain Complexity (DC) was computed as well as Component Complexity (CC).

Tab. 7 - Frequencies of occurence of Domains and of Components allocations in Class. A and B, with the exclusion of general Domains (Edu, EFT, GPA, HW).

		Domains				Components	
1	40	Ref °	Reframing	28	CR *	Cognitive Restructuring
2	29	Exp °	Exposure (IT)	16	AF *	Attention Focusing
3	28	RRP	Reharsal & Role Playing	15	EX *	Exposure
4	26	AF °	Attention Focusing	12	IT	Imagery Techniques
5	24	IST °	Interpersonal Skills Training	12	SC	Self Control
6	22	CM °	Contingency Management	10	CM *	Contingency Management
7	20	Emp °	Empathy Expression	9	RP	Role Playing
8	19	EC	Environmental Change	8	PS	Problem Solving
9	15	Mod	Modeling (SS & RP)	8	SS *	Social Skill Training
10	14	BST °	Body Skills Training	7	EM *	Empathy
11	7	TSI	Therapist's Self-Instruction	6	ER	Emotion Regulation
12	5	Dis	Distraction (AF)	5	RX *	Relaxation
13				4	MO	Motivational Techniques
14				3	BP	Behavioural Prescription
15				3	ES	Emotional Support
Tot.:	249			Tot.: 146		

° Domains corresponding to Components   * Components corresponding to Domains

[orange] Domains without correspondence to Components   [yellow] Components without correspondence to Domains

[light blue] Domain partially corresponding to Component   [light blue] Component and Domain partially corresponding
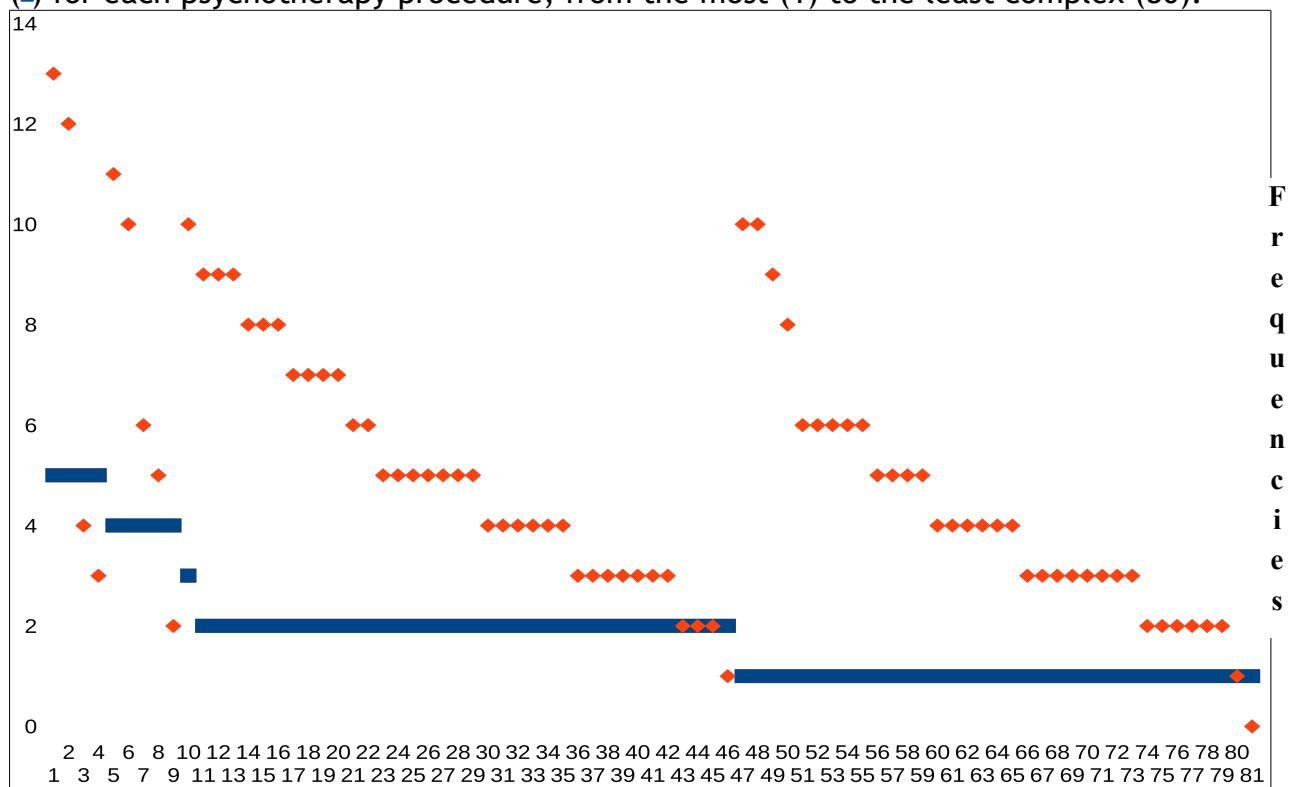
<u>First, Table 6</u> shows that the overall number of Domain allocations (401), due to the difference in classification methods, is larger than that of Component allocations (146). In fact, therapists do far more than the operations seen in the Definition. Especially in "Clinical Cases", but also in the "Elements" sections, features of therapists' actions often fit well fit with the definition of other procedures.

Thus, differences of complexity among psychotherapy procedures vary from 1 to 13 for Domains, and from 1 to 5 for Components. The average complexity of procedures was – due to the method– much larger for Domains (4.96, St.Dev.=2.73) than for Components (1.85, St.Dev.=1,06).

Components-Domains correlation in complexity

If the two classifications capture the essential structure of psychotherapy procedures, then the DC of procedures should correlate with the CC. This hypothesis was tested by computing a Canonical correlation coefficient between Components and Domains; this coeffect was positive and significant (0,368; R-Squared = 0,136; F = 12,02; p < 0,001; Wilk's lambda=0,865). Thus, there is a high correlation, as expected, between the complexity of Domains and Components across procedures. This correlation is also visible on inspection of <u>Figure 1</u>, where DC and CC are plotted for every procedure, along with decreasing complexity of Components.

Fig. 1 - Complexity of Domains (◆) along with decreasing complexity of Components (■) for each psychotherapy procedure, from the most (1) to the least complex (80).

Procedures ordered by decreasing complexity

The varying complexity of procedures:

Two Components are present in 36 procedures (45,6%), while only one Component features in 33 procedures (41,8%). The same 69 procedures (87,4%) appear in 1 to 10 Domains.

Few procedures (n=10; 12,7%) have more than 2 (3 to 5) Components. These can be defined as "packages": *Dialectical Behaviour Therapy, Well-Being Therapy, Promoting Resilience, Mindfulness Training, Coping Cat Treatment, Interpersonal Psychotherapy, Schema Focused Emotive Therapy, Behavioural Activation,* with the notable exception of *Free Associations*. The same procedures also feature in 2 to 13 Domains.

Some Components never appear alone in any procedure, e.g.: *Behavioural Prescription, Emotional Support, Relaxation*. These Components appear in 11 of the 79 procedures (13,9%).

In contrast, some Components are present alone in a few procedures (n=14; 17,7%), where they define the procedure itself; the best examples are: *Cognitive Restructuring, Contingency Management, Self-Control.*

Domains and Components: Internal correlations

As in Step 1 (Marks et al., 2010) the degree of independence of Domains from each other was not analysed (exceeding the scope of that study), correlations between Domains are computed here.

Given the high mean number of Domains in procedures, high co-presence was expected of different Domains in the same procedure. Co-presence of all Domains was calculated with *X* Sq.

Table 8 summarizes these results, which confirm the expectation. All 16 Domains were significantly co-present with other Domains at p<0,05, and 9/16 were significantly co-present at p< 0,001.

Table 8 P of crosscorrelation coefficients (X Sq.) of presence of Domains in the procedures

Domains:	AF(x)	BST	Cmx	Dis	Edu	Emp	EC	Exp	EFT	GPA	HW	IST	Mod	Ref	RRP	TSI
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 AF(x)	-															
2 BST	0,001651	-														
3 Cmx	0,977941	0,368005	-													
4 Dis	0,166277	0,301286	0,673427	-												
5 Edu	0,043908	0,000293	0,028632	0,351064	-											
6 Emp	0,657784	1,000000	0,520130	0,205515	0,526310	-										
7 EC	0,237523	0,555302	0,000000	0,189634	0,016486	0,386011	-									
8 Exp	0,018169	0,001162	0,669238	0,040564	0,032183	0,134361	0,561376	-								
9 EFT	0,279264	0,610714	0,009476	0,482026	0,966699	0,027602	0,065378	0,349231	-							
10 GPA	0,019292	0,023525	0,010940	0,961560	0,000098	0,449353	0,005249	0,050690	0,221579	-						
11 HW	0,000860	0,011239	0,469343	0,204097	0,008205	0,431523	0,287651	0,000040	0,235409	0,000003	-					
12 IST	0,843178	0,436954	0,002350	0,630586	0,146864	0,440880	0,049371	0,456658	0,019476	0,071978	0,147835	-				
13 Mod	0,462938	0,006973	0,002328	0,964017	0,003097	0,318955	0,000346	0,149742	0,013660	0,280899	0,073062	0,024217	-			
14 Ref	0,930572	0,156103	0,518676	0,601870	0,330412	0,679178	0,694748	0,596928	0,072099	0,464084	0,370423	0,372565	0,033814	-		
15 RRP	0,603929	0,034756	0,007440	0,843298	0,018782	0,762910	0,004398	0,205927	0,495588	0,091854	0,042957	0,000061	0,000005	0,521034	-	
16 TSI	0,400636	0,254213	0,110045	0,504621	0,038400	0,103279	0,147954	0,049837	0,021440	0,033467	0,066828	0,473484	0,213487	0,947861	0,056407	-

A cluster was also found among Domains GPA (*Goal Planning and Attainment*) – Edu (*Education*) – HW (*Homework*), which comprise 3 of the 4 Domains already labelled as "General". In contrast, EFT tends not to be associated with them. Another cluster appeared among the Domains Mod (*Modeling*) – IST (*Interpersonal Skills Training*) and RRP (*Rehearsal and Role Playing*). Also, a very high co-presence of EC (*Environmental Change*) and CM (*Contingency Management*) was noted.

Regarding the 15 Components, which were conceived as the characteristic features of each procedure and which should have produced highly independent categories, only a minority were co-present: the calculation for the 15 Components, already performed in Step 2 (Borgo, Marks, Sibilia, 2017) and reported again in Table 9, shows significant co-frequencies for only 7 couples of Components, and for only 2 of them at p<0,01: BP (*Behavioural Prescription)* – AF (*Attention Focussing*) and ES (*Emotional Support*) – RP (*Role Playing*).

Table 9 – Statistical significance of co-occurrence of Components in procedures (values of p of X Sq.). Significant values in bold italics.

		AF	IT	CR	PS	MO	SC	SS	CM	BP	RP	EX	EM	ES	ER	RX
1	AF	-														
2	IT	0,77	-													
3	CR	0,15	0,92	-												
4	PS	0,59	0,21	0,33	-											
5	MO	0,31	0,56	0,14	0,50	-										
6	SC	0,06	0,12	0,45	0,21	0,39	-									
7	SS	0,59	0,21	0,55	0,79	0,50	0,39	-								
8	CM	0,09	0,16	0,08	0,99	0,44	0,65	0,99	-							
9	BP	***0,00***	***0,01***	1,00	0,17	0,69	0,46	0,56	0,51	-						
10	RP	0,49	0,18	0,41	0,19	0,47	0,74	0,29	0,90	0,53	-					
11	EX	0,46	***0,03***	0,19	0,16	0,33	0,86	0,64	0,90	***0,03***	0,13	-				
12	EM	0,54	0,25	0,24	0,36	0,56	0,25	0,36	0,30	0,59	0,78	0,19	-			
13	ES	0,38	0,46	0,20	0,17	0,69	0,36	0,56	0,26	0,73	***0,00***	0,40	0,59	-		
14	ER	0,39	0,29	0,41	0,56	0,53	0,89	***0,05***	0,34	0,08	0,65	0,33	0,47	0,08	-	
15	RX	0,25	0,34	0,79	0,43	0,60	0,10	0,43	0,59	0,65	0,51	0,20	0,48	***0,05***	0,27	-
		AF	IT	CR	PS	MO	SC	SS	CM	BP	RP	EX	EM	ES	ER	RX
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Finally, in agreement with Step 2, where Components were grouped in Areas, we computed the significance of co-occurrence of the 6 Areas in psychotherapy procedures. As shown in Table 10, only 2 co-occurrences were significant: BEH (Behavioural Area) – COG (Cognitive Area) and BEH (Behavioural Area) – SOM (Somatic Area). Moreover, the associations were not very high,

suggesting that each Area has a fair degree of independence.

	Area 1 (COG)	Area 2 (C-B)	Area 3 (BEH)	Area 4 (B-E)	Area 5 (EMOT)	Area 6 (SOM)
Table 10 - Significance of co-occurrence of Areas of Components in procedures (values of p of Chi Sq.). Significant values in bold italics.						
Area 1 (COG)	-					
Area 2 (C-B)	0.618	-				
Area 3 (BEH)	*0.038*	0.574	-			
Area 4 (B-E)	0.759	0.287	0.949	-		
Area 5 (EMOT)	0.687	0.827	0.879	0.768	-	
Area 6 (SOM)	0.571	0.736	*0.048*	0.125	0.253	-

Discussion

Taking drugs as a metaphor of therapies, we have used the term "ingredients" for both Domains and Components. First, we noted that the presence of several ingredients in the same procedure is common. So, it's no surprise that most therapy procedures include more than one Component, and almost all pertain to more than one Domain. In most procedures, the goal (the targeted psychological dimension to be changed) can't be attained with a single ingredient, or just one psychological dimension is targeted. So, only a minority of procedures have just one ingredient.

Second, ingredients in procedures may be combined in different ways. It's the combination of ingredients which gives a procedure its own individuality, just as a particular combination of atoms gives a substance its pharmacological properties, and the combination of substances in a drug its therapeutic features.

A first look at the number of ingredients in a single procedure gives a rough idea of its complexity; the number of ingredients is used as a measure of its complexity. This is not to say that ingredients are "elementary", as they, too, can be complex. Nor does it mean that procedures with the same ingredients can be considered equal, as they can be used in a different order or in different ways. An example of two procedures where the same four ingredients were found is *Free association* and *Mindfulness Training* (Components: *Attention Focussing*, *Imagery Techiques*, *Behavioural Prescription* and *Exposure*).

As already noted, the two classifications have different features: Classification A aimed to identify *most of the classes* to which therapists' "actions" of each procedure pertain, which were called "Domains", while Classification B aimed to identify the *primary goal* – the psychological dimension or dimensions targeted according to the Definition (the "Area") – and only then to identify the steps taken to this end by the therapist, called "Components". This difference can account for the observation that Domains identified in each procedure were many more than Components: as we said before, all features of a procedure were of interest in Classification A, whereas only the characteristic features were of interest in Classification B.

As ultimately both Domains and Components pertain to the therapist's actions, we predicted that there would be a degree of connection between 2 kinds of ingredients when their definitions are similar. This was confirmed in the results for 7 out of 8 ingredients, as shown in Tables 4 and 5.

It is noteworthy that these 7 Domains were present in most (96,2%) procedures, and the corresponding 7 Components were found in 78,5% of procedures. Thus, some ingredients, such as *Cognitive Restructuring/Refreaming, Attention Focussing, Exposure*, are used far more often than others in psychotherapy.

In Classification A we observed that not all Domains have the same generality (Table 6): 1 of 4 Domains (*Expressing Feelings and Thoughts, Homework, Education, Goal Planning and Attainment*) appears in 89,9% of all procedures jointly with other Domains. These 4 Domains can be considered as basic or general. This may be why they don't appear in the list of Components.

Psychotherapy procedures show varying degrees of complexity, as evidenced by their numbers of both Domains and Components. Some are highly complex e.g. *Dialectical Behaviour Therapy* or *Well-Being Therapy*, which can be regarded as "packages", and – as the name implies – they are more "Therapies" than simple "Procedures". Other procedures have quite a narrow focus, sometimes identifiable in a single Component: Examples are *Linking Current and past Transference Relationships, Decisional Balance.* Most procedures, however, are in the middle range, combining a limited number of Domains or Components.

Particularly frequent is the association of `behavioural' with `cognitive' or `somatic' Components. This suggests that Components targeting goals in different psychological areas can complement each other. The same assumption can be put forward for Domains. However, Domains which are highly associated with Components may promote therapeutic change, being linked to a "specific" action/goal. Conversely, the 4 Domains GPA (*Goal Planning and Attainment*) – Edu (*Education*) – HW (*Homework*) and EFT (*Expressing Feelings and Thoughts*), which appear in almost 90% of procedures and therefore defined as "general", may have a different role: that of facilitating or stabilizing the therapeutic change.

Conclusions

This study is preliminary, based on a limited number of procedures, though they comprise the most frequently applied ones. As the CLP project grows, we hope to extend it. Despite this limitation, we can draw a few temporary conclusions.

Such results, in accord with the basic assumptions of the CLP project, support the value of clear and operational definitions not only to study and compare psychotherapy procedures, but also to identify and study their ingredients. In fact, even though the 2 classifications were developed independently and with different methods, they overlap remarkably. Their numbers of ingredients were fairly small and very close in both classifications (16 in Classification A, 15 in Classification B).

Moreover, even fewer ingredients are very common in almost all procedures, albeit in 2 different ways. Some ingredients seem to describe non-specific features of procedures (e.g. *Education* or *Expressing Feeling and Thoughts*), related to a general routine, while others seem to be specific ingredients used very often in most procedures, such as *Reframing/Cognitive Restructuring* (which ap-

pears as a Domain in 50% of procedures, and in 35% as a Component).

We hope this study can help future research aiming to understand how psychotherapy procedures work and to identify their active ingredients.

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APPENDIX – Related papers by topic

Importance of definitions

Michie, S., Johnston, M., Francis, J., Hardeman, W., & Eccles, M. (2008). From theory to intervention: Mapping theoretically derived behavioural determinants to behaviour change techniques. *Applied Psychology: An International Review*, 57, 660-680.

Leeman, J., Baernholdt, M., & Sandelowski, M. (2007). Developing a theory-based taxonomy of methods of implementing change in practice. *Journal of Advanced Nursing*, 58, 191–200.

Other recent classification attempts:

Abraham C. & Michie S. (2008). A Taxonomy of Behavior Change Techniques Used in Interventions. *Health Psychology*, Vol. 27, No. 3, 379 –387.

Abraham C.; Kelly M.P.; West R.; Michie S. The UK national institute for health and clinical excellence public health guidance on behaviour change: A brief introduction. *Psychology, Health & Medicine*,14:1,1 — 8.

Similar ingredients:

Albarracín, D., Gillette, J. C., Earl, A. N., Glasman, L. R., Durantini, M. R., & Ho, M.-H. (2005). A test of major assumptions about behavior change: A comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic. *Psychological Bulletin*, 131, 856 – 897.

Conn, V. S., Valentine, J. C., & Cooper, H. M. (2002). Interventions to increase physical activity among aging adults: A meta analysis. *Annals of Behavioral Medicine*, 24, 190 –200.

Hardeman, W., Griffin, S., Johnston, M., Kinmonth, A. L., & Warehman, N. J. (2000). Interventions to prevent weight gain: A systematic review of psychological models and behavior change methods. *International Journal of Obesity*, 24, 131–143.

Hillsdon, M., Foster, C., Cavill, N., Crombie, H., & Naidoo, B. (2005). *The effectiveness of public health interventions for increasing physical activity among adults: A review of reviews. Evidence Briefing* (2nd Edition). London: Health Development Agency. Retrieved October 19, 2007, from http://www.nice.org.uk/p.aspx?o□505281.

Inoue, S., Odagiri, Y., Wakui, S., Katoh, R., Moriguchi, T., Ohya, Y., & Shimomitsu, T. (2003). Randomized controlled trial to evaluate the effect of a physical activity intervention program based on behavioral medicine. *Journal of Tokyo Medical University*, 61, 154 –165.

Goals taxonomy:

Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Review*, 120, 338 –375.

Bartholomew, L. K., Parcel, G. S., Kok, G., & Gottlieb, N. H. (2006). *Planning health promotion programs: An intervention mapping approach*. San Francisco: Jossey-Bass. (v. libro!)

Empirically supported treatments:

Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology*, 52, 685–716.

Other classification attempts, but only of Behavioural change techniques:

Abraham C., Michie S. (2008) A Taxonomy of Behavior Change Techniques Used in Interventions. *Health Psychology*, Vol. 27, No. 3, 379 –387.

Davidson, K. W., Goldstein, M., Kaplan, R. M., Kaufmann, P. G., Knatterund, G. L., Orleans, C. T., et al. (2003). Evidence-based behavioral medicine: What is it and how do we achieve it? *Annals of Behavioral Medicine*, 26, 161–171.

Classification by assumed processes:

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change. *American Psychologist*, 47, 1102–1114.