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Measuring Pragmatic Language in Children with Developmental Dysphasia: Comparing Results of Arabic Versions of TOPL-2 and CELF-4 (PP and ORS Subtests)

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Abstract

The purpose of this research was to compare the results of the Arabic TOPL-2 as a psycholinguistic-marker that measures the ability of individuals with developmental dysphasia DD and the results of both the Pragmatics Profile PP and Observational Rating Scale ORS subtests from CELF-4.

The method was that twenty-seven children and adolescents (F: 13, M: 14) diagnosed with delay language disorder DLD (n: 14), SLI (n: 7), language delay LD (n: 3), hearing impairment HI (n: 2) and mental retardation MR (n: 1) and who were (6-14) years old completed the two tests mentioned above.

The results indicated that while the Arabic TOPL-2 identified 24 of the 27 children and adolescents with developmental dysphasia as pragmatically impaired, the Arabic CELF-4 identified only 22 in the PP and 13 in the ORS.

It was concluded that a significant strength of the TOPL-2 was its measurability compared to the inclusiveness characteristic of CELF-4 subtests. Moreover, the formal battery emphasizes linguistic pragmatics more strongly than the informal battery, which includes linguistic and nonlinguistic pragmatics.

Keywords: Pragmatic language impairment, Developmental dysphasia, Arabic TOPL-2, CELF-4, Arabic pragmatics profile, Arabic observational rating scale

1. Introduction

Of all child development milestones, language development is the most amazing. A child begins to cry, coo, gurgle, and babble in two stages—marginal and canonical—then begins to use words in the form of idiomorphs and forms utterances and sentences beginning in the holophrastic stage (i.e., skeletal sentences). Psycholinguistically, a child begins to acquire language from people around him/her (until the age of 6 prospectively) and then to learn the language (school-age, from either 5 or 6 to 18). According to the CPH (Critical Period Hypothesis), the first 12 years are the most important for acquiring and learning a native language. Sociolinguistically, a human begins uttering, speaking, talking, conversing, communicating, arguing, discussing and debating. Neurolinguistically, a child's brain must function properly, without any damage or congenital disorder that may delay or prevent linguistic or accompanying cognitive abilities.

The mother, father and other family members wait impatiently for a child to begin producing sounds or words, and they consciously react and respond to certain actions and behaviors. Therefore, if child (A) is unlike child (B) in terms of linguistic abilities, it is a sign that such a child is abnormal, and the sad story begins. This child will struggle not only to interact with his/her family members for failing to communicate successfully due to his/her partial acquisition of language or delay in language development but also in all of his/her life activities: school, social interactions, relationships, cognitive abilities, etc.

A person may be linguistically competent, that is, able to speak but not psycholinguistically and neurolinguistically competent, that is, pragmatically competent. In other words, a child or an adult can speak but be unable to discuss certain topics, converse with others, communicate with people around him/her, argue, debate or interact in complex situations. A child suffering from these symptoms may have either acquired aphasia in the case of a brain injury or developmental dysphasia for congenital reasons. The terms aphasia or dysphasia are generally applicable to any disorder with a language component; however, this study focuses on pragmatic language impairments PLIs when describing problems with conversation, communication, etc.

Developmental dysphasia DD, according to Sarno, refers to the 'developmental language disorders or specific language impairment is manifest when a child fails to learn to talk normally, but a frank neurological basis is not apparent'(1998, p. 453). Unlike Sarno, Busari and Weggelaar define developmental language disorders DLDs as 'delay in speech and/or language development compared with controls matched for age, sex, cultural background and intelligence' (2004, p. 272). Moreover, Busari et al. stated that DLD 'is the most common developmental disorder in children aged 3-16 years' (ibid).

PLI can be diagnosed as a disorder in its own right, but it is more commonly a sign of other syndromes and language disorders. In fact, the term semantic-pragmatic disorder SPD was initially used for PLI and was first applied by Rapin and Allen (in Perkins, 2007, p. 13). However, the terms pragmatic language disorder PLD and PLI have been used to distinguish

between two issues: the former refers to linguistic pragmatics and the latter refers to nonlinguistic pragmatics (Bishop and Martin & McDonald in Perkins, 2007, p. 9). Body language, eye contact, gestures, and audio-visual elements are clearly classified as either nonlinguistic pragmatic elements or produced utterances, including persuasion, negotiations, politeness, greetings, apologies, complements, etc. as linguistic pragmatic elements.

In general, persons with PLI live with their family members rather than among the rest of society. A major component of human language is the successful communication between speaker and hearer; when this communication is disturbed, the primary aim of language is lost. Moreover, when a person at any age feels that people do not understand him/her or feel bored or impatient when communicating with him/her, s/he feels upset and begins to consider living alone, isolated from society (Cummings, 2009 and Kecskes, 2007).

The nature of and nomenclature for pragmatic impairment are contested. While some would refer to it as “pragmatic language disorder” others would use the term “pragmatic language impairment.”Likewise, some would refer to it as pragmatic language disability/dysfunction, and others would call it semantic-pragmatic disorder. Still others will refer to it as a type of aphasia, namely, pragmatic aphasia/dysphasia, (Alduais, 2012).

PLI often accompanies such disorders as DLD, specific language impairment SLI, learning disability LD, hearing impairment HI, and mental retardation MR. Hoff and Shatz (2007) introduced SLI as any language impairment that, after diagnosis and research, has been proven to have no neurolinguistic or biolinguistic (genetic) basis. Tomblin and Zhang in Hoff and Shatz have also indicated that ‘the non-verbal IQ range between 70-85 is sometimes invoked as acceptable for the label of SLI, although it is preferable to label this range as ‘nonspecific language impairment’(p. 413). They also defined mental retardation as a mental status that is ‘usually ruled out via exclusion of children whose nonverbal IQ performance level is 85 or below’ (ibid). LD refers to an atypical manner of learning in general. Phelps-Terasaki and Phelps-Gunn indicated that ‘a considerable data has indicated that a large number of students with learning disabilities also experience difficulty with pragmatic language abilities’ (2007, p. 8). For that matter, ‘pragmatic language is an area of identification and remediation that is essential in planning a comprehensive program for students with learning disabilities’ (ibid). Finally, HI refers to either genetic hearing loss or hearing loss due to ‘noise exposure, vascular disease, ototoxic agents, and other otological diseases’ (Kent, 2004, p. 207). A child or adolescent who sustains this impairment suffers from affected language skills, primarily communicative skills (pragmatics).

Evaluating pragmatics can be quite difficult. Evaluation requires inferring covert elements and indications. A large percentage of pragmatic elements occur covertly in the course of our daily communication. However, many assessment tools can be used to measure this skill in the context of PLIs, which may be either formal or informal. Formal assessment tools are characterized by a greater objectivity than the informal tests, which are more subjective in nature. Adams proposed the idea of ‘proliferation’ (Adams, 2002, p. 973), that is, using more than one assessment tool and merging or comparing the results of children who have taken

both tests.

An example of a formal pragmatic assessment tool is the Test of Pragmatic Language TOPL-2, which was first published in 1992 (republished and modified in 2007) and designed by Diana Phelps-Terasaki and Trisha Phelps-Gunn. The original test consisted of 44 items (the revised version contains 43 items, including 17 items for pragmatic evaluation) for children and adolescents between the ages of 6 and 12 (the revised edition is now used for individuals between the ages of 6 and 18). It was constructed as a battery to measure the ability to use language in social interactions (pragmatics). It measures six sub-components of pragmatics: physical setting, audience, topic, purpose, visual-gestural cues and abstraction (a pragmatic evaluation component has been added to the TOPL-2). According to the authors of this test, 'it was standardized on a sample of 1,016 children residing in 21 states using gender, residence, race, geographic region and ethnicity as variables' (Phelps-Terasaki & Phelps-Gunn, 2007, p. v). As an evaluation instrument, it consists of the TOPL Booklet, Picture Book (originally in black and white; now in color) and Examiner's Manual. Eligible children and adolescents for this test are those who can 'utilize expressive language' (Phelps-Terasaki & Phelps-Gunn, 2007, p. 11), are between the ages of 6 and 18, and who exhibit any of the following disorders: 1) learning disabilities, 2) language delays and/or disorders, 3) reading and comprehension difficulties and 4) behavioral, attention, emotional and anxiety disorders (summarized from Phelps-Terasaki & Phelps-Gunn, 2007).

An example of an informal assessment tool for pragmatics is Clinical Evaluation of Language Fundamentals CELF-4, which is a criterion-referenced test whose use includes both the general and specific clinical evaluation of language disorders for individuals between the ages of 5 and 21. This battery consists of test items that can clinically evaluate the following linguistic elements: syntax and meta-linguistics, morphology, semantics, semantic classes, working memory, semantic sentences, phonology, pre-literacy, pragmatics, classroom performance, and social interaction. It also includes subtests that assess the following topics: concepts and following directions, word structure, recalling sentences, formulated sentences, word-classes receptive, word-classes expressive, word-classes total, sentence structure, expressive vocabulary, word definitions, understanding spoken paragraphs, sentence assembly, semantic relationships, number repetition, familiar sequences, rapid automatic naming, word association, phonological awareness, a pragmatics profile, and an observational rating scale. The test has four main uses: 1) to determine the presence or absence of a language disorder, 2) to determine the nature of the language disorder and its strengths and weaknesses, 3) to determine the clinical deficits underlying such a disorder, and 4) to explore the student's classroom language performance and social interactions using the pragmatics profile and observational rating scale. The researcher used the Pragmatics Profile PP and the Observational Rating Scale ORS subtests (after having them translated into Arabic and tested for reliability and validity in the second language), (Alduais, 2012).The main purpose behind using two pragmatic tests is to achieve *proliferation* in evaluating batteries to arrive at more reliable and valid results regarding the subjects under investigation.

Consider here, for example, Volden & Phillips' 2010 study, which utilizes two tests to identify pragmatic language impairments in normal children and children with autism spectrum disorders (ASDs). The first test is formal and administered by the researcher or clinician (TOPL: Test of Pragmatic Language).The second test is informal and completed by the parents (CCC-2: Children's Communication Checklist). The results have suggested that the informal test is more effective than the formal test for identifying children with PLIs.

Most of the batteries designed to measure PLIs focus on the age range of 6 and above, indicating that pragmatics can only be evaluated at this stage. However, O'Neill sees this point differently (2007). He developed a tool to measure the pragmatic ability of children under the age of four—the Language Use Inventory LUI—and tested both the internal validity and reliability of the proposed items. His study was based entirely on parents' brief reports regarding their children. Comparing and contrasting the LUI to the TOPL, which will be used in this study (TOPL-2), is necessary, although the TOPL-2 tool is used for children aged 6 and above and the LUI for children ages 4 and below.

Predictably, one measure appears to be in competition with the other. Informal tests that depend on parents' reports and observations regarding their children seem to be more effective in measuring pragmatic ability. Philofsky, Fidler, & Hepburn (2007) have used the second version of the Children's Communication Checklist (CCC-2) to simultaneously measure and compare PLIs in children with two types of syndromes: autism spectrum disorder ASD and William's syndrome WS. The CCC-2 was found to be an effective tool for identifying, measuring and comparing groups of children with PLIs.

The formal and informal batteries used for PLI assessment have their own strengths and drawbacks. Young, E. C.; Diehl, J.; Morris, D.; Hyman, S.; & Bennetto, L. (2005) compare and contrast the TOPL test with the SNAP (Strong Narrative Assessment Procedure). The former provides quantitative data and the latter qualitative data. Additionally, researchers have used the CELF-3 (Clinical Evaluation of Language Fundamentals-3) to measure qualitative data. The TOPL has been recommended in this respect, but it should not be used in isolation. The researchers suggest a proliferation of the above-mentioned tests to arrive at more valid and reliable results and conclusions.

Two additional common and effective tools for evaluating PLIs are CELF and SCQ. In a longitudinal-study, Michelotti, Charman, Slonims, & Baird (2002) assess children's language delays and autism spectrum disorder features. Different assessment tools were used, including the CCC (Children's Communication Checklist), Wechsler Intelligence Scale for children, CELF (Clinical Evaluation of Language Fundamentals), and SCQ (Social Communication Questionnaire). The study found that a relationship may exist between features of autism and language delay in children and that further research is needed.

Using other tools in conjunction with a psycholinguistic battery, or more accurately, proliferating the evaluation tools, appears to return more valid and reliable results. Kim & Kaiser (2000) evaluate the syntactic, semantic and pragmatic skills of 11 children diagnosed

with attention deficit hyperactivity disorder ADHD and compared those results with 11 normally developing children. Different language assessment tests were used for this purpose, including TOPL, PPVT-R Peabody Picture Vocabulary Test—Revised, and TOLD-2 Test of Language Development—2 Primary. It is important to review how the TOPL test was applied to the cases, its effectiveness, and other findings included in this study:

Based on the above information, the following two hypotheses were tested in this study:

1) Applying the idea of *proliferation* proposed by Adams (2002) to attain more reliable and valid diagnoses regarding children and adolescents with developmental dysphasia can help to accurately identify individuals with PLIs.

2) Some formal assessment tools (e.g., TOPL-2) of pragmatic competence may prove superior to informal assessment tools (e.g., PP and ORS subtests from CELF-4) for identifying individuals with various linguistic and/or nonlinguistic impairments who share PLI as a symptom of a primary impairment.

2. Method

2.1 Participants

All participants in this study had different types of developmental dysphasia. Despite having different disorders, all participants had PLI as an accompanying symptom of their primary disorder. All participants were Saudi nationals and were brought to the Communication and Swallowing Disorders Unit CSDU to be treated by a communication disorders specialist in the CSDU.

The researcher followed the *convenience sampling* method to select cases for this study (i.e., those with language disorders, not speech disorders). Thus, 27 abnormal children and adolescents completed the Arabic TOPL-2 as a formal assessment tool for pragmatic competence PC and the PP and ORS subtests from CELF-4 as informal assessment tools.

This study's setting was the CSDU, Research Chair of Voice, Swallowing, and Communication Disorders, King Abdulaziz University Hospital KAUH, College of Medicine, King Saud University KSU, Riyadh, Kingdom of Saudi Arabia, 2010-2011.This study was submitted to the Research Centre, King Khalid University Hospital, College of Medicine, KSU, Riyadh, to be reviewed by the IRB (Institutional Reviewing Board). It was approved by the committee and was then conducted. Table 1 summarizes the characteristics of the study participants.

Table 1. Characteristics of participants in the study

Variable	Characteristics
No. of participants	27
Gender	F: 13, M: 14
Age range	6-14
IQ range (verbal)	52-110
Diagnosis	DLD: 14, SLI: 7, LD: 3, HI: 2, and MR: 1
Mother tongue	Arabic
Dialect	Saudi
Nationality	Saudi

Finally, a major objective of this study was to test the claim that using the idea of *proliferation* proposed by (Adams, 2002) would achieve more valid and reliable results regarding individuals with DD. More importantly, a formal test would prove more effective than an informal assessment tool. The results of this study have supported such claims. This study's results may also be generalized to a similar population using the Arabic TOPL-2 and CELF-4 subtests (PP and ORS), but perhaps not the English versions.

2.2 Measures

Two measures of pragmatic language impairment (PLI) were used in this study. One of these measures is a norm-referenced test, the TOPL-2, and another is a criterion-referenced test, the CELF-4. The two measures may also be distinguished in terms of formal and informal PLI diagnostic tools (Adams, 2002). The Clinical Evaluation of Language Fundamentals CELF-4 by Elener Semel, Elisabeth H. Wiig & Wayne A., scores provide general and specific clinical evaluations of language disorders for individuals between the ages of 5 and 21.

The researchers used only the aforementioned subtests (PP & ORS), which are typically used to measure the overall pragmatic development and expected skills vis-à-vis social and school interactions. Whether a formal or informal test is more effective for measuring pragmatic language was considered. The version used in this study was translated into Arabic by the researcher to test its usability and feasibility in the Arabic language.

The TOPL-2 is a 43-item test that tests PC in children and adolescents with language disorders and other emotional or mental disorders. It is suitable for individuals between the ages of 6 and 18. The researchers made use of the Arabic version of the TOPL-2, Alduais (2012).

Other data used in this study are the medical reports and archival records of the participating children and adolescents. The researchers used these records to obtain the following data: 1) IQ test results to determine the presence of any mental illness, 2) a diagnosis to identify the primary disorder or cause of PLI for each participant, 3) social status to reasonably explore the causes of PLIs, 4) baseline information to develop a plan for how to treat the case, and 5) any other relevant and useful information that may serve the purposes of this study.

Both nominal and ordinal measurement levels were used to statistically analyze the variables. Nominal measurement levels were used for non-overlapping variables; ranking values and obtained data are not required for this study's purposes. However, the ordinal measurement level was used for variables in case that needed to be ranked according to their pragmatic performance PP and/or PC after utilizing the two mentioned measures (TOPL-2 and CELF-4: PP & ORS). Finally, all variables used in this study are discrete.

The three types of reliability were calculated using the following procedures and yielded the following results. For inter-rater reliability, three raters were tutored by the researchers as to how to rate the booklets. They were provided with possible correct and incorrect answers, and all tutors were instructed how to rate answers following the English TOPL-2. The inter-rater reliability for scoring the Arabic TOPL-2 items was then calculated; Pearson's Coefficient was .98. The significance is .00, significant at the 0.01 level. The test-retest reliability was reported as .73, and the significance was .007, significant at the 0.01 level, (Alduais, 2012). The internal consistency reliability was also reported by Alduais (2012) at .90.

The reliability was also calculated for the Arabic pragmatics profile & observational rating scale (PP & ORS) from the CELF-4. Inter-rater reliability was not calculated because in the PP subtest, the 52 items took the values never, sometimes, often, always, not observed, and not appropriate, which were quantified as(1, 2, 3, 4, 0, 0), respectively. The higher the score is, the better the subject's pragmatic competency. When calculated manually, the highest score is 208 after being multiplied by the highest value 4, and the lowest score is 52 after being multiplied by the lowest value 1. It should be noted that 0 has not been considered the lowest value because it indicates positive rather negative indications about the level of the participant. Possible differences in ratings are seemingly impossible. This assertion also applies to the ORS subtest regarding the inter-rater reliability. Test-retest reliability was not calculated because the researchers were not able to meet the same participants again in the clinic where they came for speech therapy and medication. Finally, internal consistency reliability was measured for the two subtests (PP & ORS) using Cronbach's alpha. The average internal consistency reliability coefficient is .97 for PP and is .94 for ORS, (Alduais, 2012).

The validity had been examined by the translator (Alduais, 2012) of the TOPL-2 and CELF-4 (PP & and ORS) and reported as the following: 1) translation validity; a) face validity: considerably high, b) content validity: noticeably high; 2) criterion-related validity, a) predictive validity: not calculated, b) concurrent validity: .24,a weak correlation, c) convergent validity: .42 between the Arabic TOPL-2 and Arabic PP (a CELF-4 subtest assessing PC) and -.42 for ORS (a CELF-4 subtest also assessing PC), and e) Discriminant validity: .50, a moderate correlation (in this type of validity, the lower the correlation, the higher the degree of discriminant validity is).

2.3 Design

A non-experiment two-group design was used in this study, which can be depicted using the following notational parallel form:

N O_1 X- O_2

N O_1 X- O_2

N= non-equivalent groups

O= the two measures used

X-= non-treatment study

The two non-equivalent groups, normal and abnormal, have taken the Arabic versions of the TOPL-2 and PP-ORS CELF-4 subtests. As shown above (X-), no program or tool was used in this study that would deem it an experimental study. Thus, this study is descriptive, explanatory, and confirmatory rather than seeking a causal relationship between variables. Due to this, internal validity issues are inapplicable in this study.

2.4 Procedure

Data collection: The cases were all selected based on the participant's availability in the hospital and how well his/her case accommodates the objectives of the study.

Authenticity: A consent form and official papers were issued to establish authentic and confidential prerequisites for the scientific research and to avoid ethical issues. In other words, a consent form was provided to all of the participants' parents. Moreover, official papers were issued to those responsible for archival records and medical reports in the hospital for permission to access the files.

Tests administration: As a formal assessment tool, the Arabic TOPL-2 test was administered by two of the participating researchers following all directions provided in the examiner's manual. The CELF-4 and the two subtests (PP & ORS) were completed by the participants' parents, as they are informal assessment tools.

Time and environment of the tests: The TOPL-2 test administration lasted approximately 60-90 min, and the CELF-4 subtests took the parents approximately 45-60 min to complete. A

quiet room, comfortable chair, and suitable table were provided in the case of TOP-2 administration.

Testing: The participant looks at the picture, listens to the question and then answers the question. Other instructions, warnings, etc., were given as indicated in the examiner's manual. For the two CELF-4 subtests, parents completed the forms according to their direct observations of their children.

Scoring: For the Arabic TOPL-2 test, the scoring system provided in the examiner's manual was followed: (1) point for a correct answer and (0) point for an incorrect answer. For the PP and ORS subtests, the PP includes 52 items (with five scale scores: 1, 2, 3, 4, 0), with 208 being the highest score and 52 being the lowest. The higher the participant's score, the fewer problems s/he has with pragmatics. In the case of the ORS, the highest score is 160 and the lowest is 40. The lower the participant's scores, the fewer problems s/he has with pragmatics.

Preliminary analysis steps: A raw score was first recorded by assessing the correct and incorrect answers for each case. Next, both a pragmatic language usage index and a percentile rank for each case was determined, based on the recorded raw score and the real age of the participant using the appendix provided in the examiner's manual. Grade and age equivalents were also recorded based on each participant's raw score. For the PP and ORS subtests, the items were calculated following the above-mentioned criteria.

3. Results

The 17th version of the SPSS (Statistics Package for Social Sciences) was used for statistical analysis in this study. However, only descriptive statistics tools were used for the purposes of this study, namely, mean, standard deviation (as in table 2), and frequency (as in figures 1-3).

The major aim of this study was to compare the results of a formal and an informal psycholinguistic battery in measuring pragmatic language competency and identifying PLI in individuals with different disorders.

Table 2 presents the calculated means and standard deviations of the 27 children and adolescents who participated in this study, both males and females. The values of the means and standard deviations for the CELF-4 subtests (PP and ORS) are much higher than those of the TOPL-2 tests. This discrepancy is due to significant differences in the number of items and the calculated raw scores rather than from the results themselves. The TOPL-2 battery has three components and seven subcomponents. The CELF-4 has two subtests to measure PC, each of which has various subcomponents. The PP and ORS subtests each have four subcomponents. The highest component score for the TOPL-2 is the discourse context (5.6, with 6.6 SD), and the highest value for the CELF-4 subtests is for the ORS (99.8, with 22.1 SD). In terms of the subcomponents, the highest ranking for the TOPL-2 is abstractions (M: 7.4 and SD: 8.9), the rituals and conversational skills subcomponent for the PP (M: 34.9 and SD: 13.2), and the speaking subcomponent for the ORS subtest (M: 60 and SD: 13.7). Furthermore, the lowest value for the TOPL-2 battery is the purpose subcomponent (M: .26

and SD: .65), nonverbal skills for the PP subtest (M: 5.2 and SD: 3.6), and the writing subcomponent for the ORS subtest (M: 8.8 and SD: 7.3). Finally, the low values for the TOPL-2 in terms of means and standard deviations are most likely due to the number of items that represent each component. The same finding applies to the high values for the two CELF-4 subtests.

Table 2. Results of TOPL-2 and CELF-4 (PP & ORS subtests)

TOPL-2 components	TOPL-2			CELF-4 components	CELF-4	
	n	M	SD		M	SD
Situational context	27	1.4	1.4	Pragmatics profile	76.2	34.1
Physical context	27	1.8	2.5	Rituals & CS	34.9	13.2
Audience	27	1.8	2.4	Information	25.3	14.1
Discourse context	27	5.6	6.6	Nonverbal skills	5.2	3.6
Topic	27	1.7	1.8	Nonverbal support	10.7	8.6
Purpose	27	.26	.65	ORS	99.8	22.1
Semantic context	27	2.3	2.9	Listening	21.7	7.1
V-G cues	27	3.2	3.8	Speaking	60.4	13.7
Abstractions	27	7.4	8.9	Reading	8.9	6.8
Pragmatic E	27	4.2	4.8	Writing	8.8	7.3

Figures 1, 2, and 3 illustrate the participants' performance on two psycholinguistic markers used to assess PC and identify degrees of PLIs. As it can be seen in the three pie charts, very few participants performed well on both tests with positive results. For example, the highest percentage of participants in the TOPL-2 received a below-average or poor score (37% for each category).In the case of the PP and ORS subtests, the greatest proportion of participants (51%) scored poorly; in the case of the ORS subtest, 33% of participants received both average and below-average scores. Another difference between the two markers is that in the case of the TOPL-2, only above-average and average levels were identified (over 3% for the former and over 7% for the latter). In the case of the CELF-2 subtests, participants with an above-average score were also identified. These ratings include a superior descriptive rating

for each the participants (over 7% for both the PP and ORS subtests). Both psycholinguistic markers used in this study identified children and adolescents who are pragmatically impaired as pragmatically unimpaired. Despite this difference, the number of participants identified as having PLIs in the formal test (TOPL-2) is significantly more than those who have been identified using the informal CELF-4 subtests. This finding may indicate that the Arabic versions of both tests have serious problems; however, the formal test is undoubtedly more reliable than the informal one.

Figure 1Descriptive rating on Arabic TOPL-2 Performance

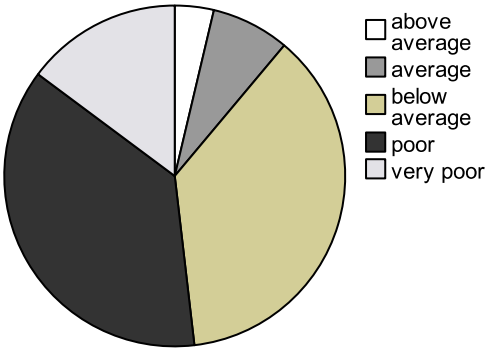


Figure 2 Descriptive rating on PP (CELF-4)

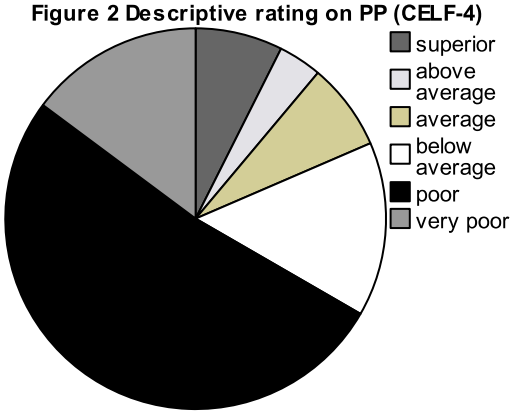
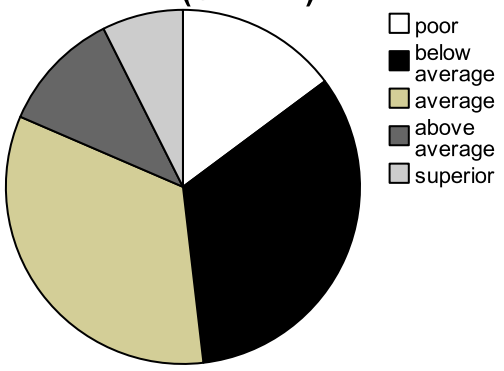


Figure 3 Descriptive rating on ORS (CELF-4)



4. Discussion

Adams concluded in her paper that 'a core set of pragmatic assessment tools can be identified from the proliferation of instruments in current use' (2002, p. 973). Moreover, Volden and Philips (2010) have argued that PLI assessment tools can be classified into two types: formal and informal. In their research, however, they have used the TOPL as a formal assessment tool and the CCC-2 as an informal assessment tool. This study, which aimed to compare the results of two PLI assessment tools, utilized two batteries: the Arabic TOPL-2 as a formal assessment tool and the PP and ORS subtests from the CELF-4 as an informal assessment tool.

For each tool, pragmatics is represented by different components and subcomponents. For instance, for Phelps-Terasaki and Phelps-Gunn (2007), the 43 items represent three components and seven subcomponents, each of which represent pragmatic competency. These components include situational, discourse and semantic contexts as the main components of pragmatic ability. The situational context has both physical context and audience as subcomponents. Discourse context also has two subcomponents, namely, topic and purpose. Semantic context has three subcomponents: visual-gestural cues, abstractions and pragmatic evaluation (ibid). Whereas the TOPL-2 has three components and seven subcomponents, the CELF-4 has two subtests that represent pragmatic ability: the pragmatics profile PP and observational rating scale ORS, each of which entails a number of components. For example, the PP represents pragmatic ability in terms of measuring the relationship and integration of pragmatics with rituals and conversational skills; asking for, giving, and responding to information; nonverbal communication skills; and nonverbal support skills. The ORS subtest presents pragmatic ability in terms of both receptive and productive language skills. In other words, the ORS has four components, each of which represents pragmatic ability: listening, speaking, reading, and writing (Semel, Wiig & Secord, 2004).

As shown in Figures 1-3, the achieved results in terms of pragmatic competency and descriptive ratings differ significantly in the two assessment tools. The TOPL-2 has identified over 89% of the participating cases as pragmatically impaired and only 11% of participants as pragmatically unimpaired. In contrast, the PP and ORS found that less than 82% and 48% of participants, respectively, are pragmatically impaired. By this measure, it can be inferred that the formal battery, the Arabic TOPL-2, identified more participants as pragmatically impaired than did the informal battery. In some sense, this fact indicates the superiority of formal assessment tools over informal assessment tools in identifying individuals with PLIs.

However, it was clear during the administration of the tests and the clinical assessment of the cases that the informal battery was more effective and reliable than the formal battery. This finding was confirmed and supported by the ability of the two subtests (PP and ORS) to assess the participants' internal and covert pragmatic skills. Although the TOPL-2 contains a reasonable number of components and subcomponents, the test items are limited. Because of this fact and because both the PP and ORS consist of a large number of test items that provide greater detail regarding the participants' pragmatic skills, the CELF-4 is superior to the

TOPL-2 in terms of providing a detailed assessment rather than elements of pragmatics kills.

Overall, the weaknesses of the TOPL-2 were overcome by the PP and ORS subtests from the CELF-4, and the gaps left by the PP and ORS subtests were filled by the formal assessment tool (TOPL-2). This finding suggests that using multiple instruments could achieve more feasible results and more plausible judgments regarding individuals with PLIs.

5. Conclusion

This paper claimed that *proliferating* PLI assessment tools would provide more useful results and that formal batteries generally perform better than informal ones in identifying children and adolescents with PLIs. In terms of the first hypothesis, the findings indicate that using both the Arabic TOPL-2 and the Arabic PP and ORS from the CELF-4 result in a semi-comprehensive assessment of the PLIs in individuals with developmental dysphasia. However, the second hypothesis was partially refuted as some of the study's results do not fully support the claim that formal tests are superior to informal ones in assessing PLIs. This conclusion was evident when discussing the impaired elements of pragmatics among participating individuals. In other words, while the TOPL-2 assesses the overt elements of pragmatics, both the PP and ORS assess the covert elements of pragmatics. The data obtained from the formal battery were more focused on linguistic pragmatics, with rough items accounting for non-linguistic pragmatics; the data obtained from the informal battery was more general, including both linguistic and non-linguistic pragmatic elements.

This research has two clinical implications: one for speech-language pathologists, interventionists, and phoniatricians and another for clinical linguists in general and clinical pragmatists in particular. The first group might carefully consider that merging the results of two assessment tools could aid the design of a more effective and comprehensive rehabilitation program or treatment plan. Researchers and specialists in the field of clinical linguistics in general and clinical pragmatics in particular should work to develop a list of the components of pragmatics, including both linguistic and non-linguistic elements. Moreover, they should help test the tools and provide researchers with information regarding which tools are best.

Three limitations were noted in this study. First, in the CELF-4 subtests (PP and ORS), the instructions and directions, especially those regarding scoring, were not followed. Instead, they were replaced with a scoring system designed by the researcher to match the TOPL-2 system. This alteration may have indirectly resulted in the sharp decrease in number of the identified individuals with PLIs: from over 89% in the TOPL-2 to approximately 48% and 82% in the informal batteries. The second limitation is that attention was paid to the number of individuals found to experience PLIs, while possible differences between the different types of developmental dysphasia, including DLD, SLI, HI, LD and MR, were ignored. The third limitation is that one of the participants, although diagnosed with DLD and/or developmental dysphasia, was found to be mentally retarded according to the individual's medical record. It is well-known that individuals with MR experience severe PLI symptoms;

thus, this case should not have been included in the study.

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