Using visual strategies to support verbal comprehension in an adolescent with Down syndrome

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Abstract
It has been frequently reported that children with Down syndrome have deficits in verbal short-term memory while having relatively good performance in visual short-term memory tasks. Such verbal deficits have a detrimental effect on various high-level cognitive processes, most notably language comprehension. In this study, we report the case of an adolescent with Down syndrome whose verbal short-term memory and comprehension capacities are impaired. Noting that his visual memory remained relatively well preserved, we developed a remediation strategy based on his visual abilities to support his verbal memory deficit. This remediation led to significant improvements in verbal short-term memories of story and thematic units as well as in overall story comprehension. These results are consistent with recent findings suggesting that deficits in verbal short-term memory can be compensated by efficient visual memory abilities.

Keywords
comprehension difficulties, working memory, remediation, Down syndrome

Introduction
Working memory plays a central role in complex cognitive and linguistic tasks such as text and story comprehension. Working memory span is indeed highly predictive of performance in text comprehension (Daneman and Carpenter, 1980), ambiguous grammatical construction processing (Miyake...
et al., 1994), reasoning (Barrouillet and Lecas, 1999) or complex learning processes (Shute, 1991). The verbal component of working memory has also been shown to be a crucial factor in vocabulary acquisition and in learning to read (Gathercole and Baddeley, 1990; Baddeley et al., 1998).

Many studies have reported that children with Down syndrome have a deficit in verbal short-term memory (Marcell and Armstrong, 1982; Mackenzie and Hulme, 1987; Marcell and Weeks, 1988; for a recent review, see Jarrold et al., 2006). For example, Kay-Raining Bird and Chapman (1994) found an average verbal span of 3.5 items for individuals with Down syndrome (given that children with no developmental problem have an average span of 3 items at three-years-old and 7–8 items at 16-years-old; e.g. Chi, 1976). This is a result that has been replicated in several recent studies (Jarrold and Baddeley, 1997; Jarrold et al., 2000; Brock and Jarrold, 2005).

However, a deficit in verbal memory is not systematically associated with a deficit in visual short-term memory. Several studies have reported better performance in visual memory tasks compared to verbal memory tasks in people with Down syndrome (e.g. Marcell and Armstrong, 1982; Bower and Hayes, 1994; Kay-Raining Bird and Chapman, 1994; Jarrold and Baddeley, 1997; Jarrold et al., 1999; Purser and Jarrold, 2005). In these experiments, performance was measured in visual-spatial tasks (e.g. Corsi test) and in verbal span tasks (e.g. counting span tasks). Individuals with Down syndrome were reported to have deficits in the verbal memory tasks while their visual-spatial task performance was comparable to those of control groups. Note that the reverse pattern was obtained for children with Williams syndrome (Wang and Bellugi, 1994; Jarrold et al., 1999).

In order to compensate for this verbal deficit, several studies have tested remediation programs aimed at increasing verbal memory capacity through training, for example, with verbal rehearsal processes (Broadley and MacDonald, 1993; Broadley, 1994; Comblain, 1994; Laws et al., 1996). For instance, Laws et al. (1996) showed that relatively short training using verbal rehearsal induces a slight but significant improvement in memory span. However, although these improvements endure over several months, they do not seem to last for longer periods (Laws et al., 1995; Jarrold et al., 1999).

Other remediation strategies have used visual memory capacities to supplement the verbal deficit. Starting from the observation that children with Down syndrome have lower vocabulary development compared to control groups matched on mental age (Miller, 1992), some studies have shown facilitation in spoken language development through the teaching of sign language (Kouri, 1989; Layton and Savino, 1990). The use of signs and visual memory capacity may thus serve as a compensatory strategy in verbal lexicon development. For example, Kay-Raining Bird et al. (2000) compared novel word learning for children with Down syndrome in three conditions: signed only, spoken only, signed and spoken combined. The assumption that the combined-modality condition facilitates word learning was supported by higher scores on spontaneous imitations and comprehension probes.

In this work, we have extended the logic of these remediation studies to the issue of story comprehension. Our hypothesis is that preserved visual-spatial memory capacity can supplement a verbal short-term memory deficit. If individuals with Down syndrome are provided the opportunity to remember visual representations rather than verbal ones, they should be better able to recall story information. One way to achieve this goal is to train the child to visually represent the verbal information.

In the following, we present the case of Paul, an adolescent with Down syndrome. Paul has poor story comprehension together with poor verbal short-term memory capacity but preserved visual memory abilities. A remediation program was designed to compensate for his verbal deficit by utilizing his spared visual abilities. The idea was to train Paul to develop a visual representation of story sentences by asking him to draw their content. For this purpose, we employed a recent computerized drawing tool that is easily used by children with cognitive impairment.
II General presentation of Paul

Paul was an adolescent, 17 years old at the start of the study, with trisomy of chromosome 21. His father and mother work in the medical field, and he has a brother who is three years younger. Paul was monitored by the Special Education and Home Care Department (Service d’Éducation Spécialisée et de Soins à Domicile) from the age of two. At three years old, he started nursery school part-time, and at six years old he entered the first-year class at primary school, again part-time. Due to serious relational problems with his teacher, this experience had to be interrupted.

He entered the Introductory and Initial Vocational Training Section (Section d’Initiation et de Première Formation Professionnelle: SIPFP) at a Special Needs School (Institut Médico-Educatif) when he was 14 years old. He participated in four educational activities a week, pre-vocational workshops and expressive activities. He also received psychotherapeutic assistance. Paul was described as a pleasant but anxious adolescent. He has shown a fondness for reading, writing stories and listening to music. Paul was always motivated during the working sessions, and as he became aware of his progress, his anxiety decreased.

III Assessment of cognitive processes

1 General intellectual skills

Paul was tested with the Wechsler Intelligence Scale for Children (WISC III) and the Raven Progressive Matrices (PM 38). With the WISC III, he obtained a verbal IQ of 46, a performance IQ of 46 and a total IQ score of 41. For the PM 38, the total test lasted 17 minutes, and the score was 12 (out of 36). It was noted that his reasoning by analogy could only be used in the simplest situations.

2 Language abilities

To test Paul’s vocabulary, we used the Peabody Pictures Vocabulary Test (Dunn and Dunn, 2007), adapted in French by Légé and Dague (1976). He scored 89 on version A and 87 on version B (average 88 – row scores). This performance corresponds to a mental age of 7 years and 9 months.

Paul had no problem decoding a simple text of approximately 150 words (extracted from a school book corresponding to the second year of primary school). Overall, he was fluent when reading aloud, having a relatively good oral pronunciation, and producing only few omissions and substitutions. Comprehension of the text was not evaluated at this stage.

Paul had difficulty writing alphabetical letters in order. He had better success in writing letters from dictation, although he mixed up lowercase and uppercase. In a spelling test, Paul wrote most of the words phonologically using several grapheme-to-phoneme relations.

3 Mental arithmetic

Paul was able to add two single-digit numbers. He started with the first number and then added the second using his fingers. He understood the notion of 0 as a zero amount. He also added a two-digit number and a single-digit number, but he made mistakes with two two-digit numbers (e.g. 11 + 10 = 12), indicating that the notion of tens and units had not been acquired.
4 Memory span (counting and reading span tests)

In the counting span test, three series of two, three or four cards, with red and green dots, were presented. For each card, Paul had to count and remember the number of red dots. He then went on to the next card. At the end of the series of cards, he had to recall in order the number of dots counted for each card. Paul did not make any dot counting errors. He was successful with the three series of two cards to be remembered, failed with the series of three cards, and succeeded with one of the series of four cards.

In the reading span test (Desmette et al., 1995), Paul had to read aloud one sentence at a time and memorize the last word. After two, three or four sentences, he had to recall all the last words. He succeeded when the test involved two sentences but he did not manage to recall all last words for more sentences.

5 Visual working memory tests

Paul was tested with several sub-tests of the Children Memory Scale (CMS; from Cohen, 2001). In the face recognition test, he was first familiarized with a list of faces (men, women and children), and afterwards had to discern those faces from a list of new faces. The recognition test was given immediately and again after 25 minutes. He had a score of 27 (out of 36) on immediate recall and 22 on delayed recall, two scores that are significantly different from chance (one-sided binomial test: p < .001 and p < .05, respectively).

Paul was also tested with the CMS ‘family scene’ test that measures visual-spatial memory and the participant’s ability to recall details from a family scene with both immediate and delayed trials. An image is presented in which characters are shown in a setting. Then the same image is presented without the characters. Paul had to replace the characters in the setting and to indicate what they were doing. He obtained a score of 39 (out of 48) on immediate recall and the same score on delayed recall.

Paul’s visual memory abilities were also evaluated with a memory computer game. In this test, counters are placed on a grid made up of four lines and three columns. Paul had to remember the position and quantity of counters. When the counters were removed, he had to click with the mouse on the grid to retrieve their position. The game started with one counter, and an additional counter was added after each success. Paul was able to recall up to 7 counters. Overall, this set of visual memory tests suggested efficient abilities in this domain.

6 Text comprehension (CMS test)

Paul heard two short stories of four and seven sentences that included story units (words or groups of words, total = 57) and thematic units (the stories themes, total = 13). After listening to each story, he was asked to recall it immediately and again after a 25-minute delay. He could only recall 5 story units (out of 57) on immediate recall and could not remember any thematic units. The results were similar for the delayed recall.

7 Cognitive capacities: Summary

Paul has a moderate cognitive impairment (i.e. IQ level between 35–40 and 50–55), good graphophonological and phono-graphemic decoding procedures, and basic arithmetic skills. With respect to memory, Paul exhibits a dissociation often reported in the literature in Down syndrome between verbal and visual short-term memory. Paul is impaired in verbal span tasks (i.e. counting and
reading), but performs well in visual span tasks (face recognition test, family scene test and visual memory game). Finally, he generated poor results in story comprehension tests, recalling only a few story units and no thematic units. Based on this dissociation between verbal and visual memory, we developed a remediation method aimed at improving his verbal memory and story comprehension abilities by relying on his visual memory skills.

**IV Remediation method**

The main goal was to train Paul to recode verbal information visually in order to compensate for deficiencies in his verbal memory. By training Paul to use a dual-coding strategy – derived from the theoretical propositions of Paivio (1986) and Barsalou (1999) – it was hypothesized that his verbal short-term memory deficit could be overcome through his preserved visual abilities.

To assess the method’s effectiveness, a series of tests were conducted at each stage of the remediation. These tests were all constructed based on the CMS comprehension test. Before beginning the remediation, we carried out a first pre-test with neutral characters to record a baseline performance. In a second pre-test using Disney characters, we observed that a rehearsal strategy did not improve memory and comprehension. These two pre-tests provide baseline scores indicating that Paul had stable and severe problems in text comprehension. The remediation method was then proposed to Paul, and it produced strong and positive results. After the remediation, a first post-test using Disney characters was done with Paul to see whether he could apply the visual recoding strategy without any drawing software, simply by mental imagery. Paul was successful in this test showing a higher level of performance in text comprehension compared to baseline tests. A second post-test, using neutral characters and mental imagery, led to a similar growth in performance.

**I Materials and procedure**

Twenty-five texts of 5–6 sentences were created for this study. Fifteen of these texts involved Disney characters while the 10 remaining texts involved neutral characters (e.g. a small boy, a mother, a hair-dresser, cats, etc.). Out of the 15 Disney texts, five were used in testing the simple rehearsal strategy, five in testing the remediation method using the visual recoding strategy and drawing software, and five in testing the generalization of the visual recoding strategy without using software. Out of 10 neutral texts, five were used for establishing the initial baseline performance, and five in the final generalization test.

Comparing the results of the baseline and final generalization tests quantified the remediation’s effectiveness. However, for this critical comparison to be valid, the neutral texts used before and after the remediation needed to be matched by their level of difficulty. We therefore tested the 10 neutral texts beforehand with three different adolescents from the Special Needs School as part of their weekly educational activities. These texts were then divided into two sets matched by their level of difficulty.

Following the CMS testing methodology, each text was divided into story units (i.e. word or group of words used in the text) and thematic units (i.e. themes developed in the story). On average these texts consisted of 29 story units and 6.2 thematic units. Recall of story units provides an index of the memorization of specific text information, and recall of thematic units provides an index of the ability to integrate several pieces of information. Therefore, performance in recalling thematic units is a better indicator of comprehension ability than performance in recalling story units. Story and thematic units were scored separately. One point was counted for each story unit or thematic unit recalled correctly. Responses were initially recorded using a tape recorder, and subsequently written down and quantified. An example of text scoring is provided in Appendix 1.
The drawing software that was used during the remediation, *Dessinez, c’est Disney* (Disney Interactive, 2003), includes a large library of pictures consisting of Disney characters (e.g. Mickey, Minnie, Donald, etc.), backgrounds (e.g. a beach, a castle, a kitchen) and accessories (e.g. a table, a bike, a book). The size and orientation of each picture (characters and accessories) can be changed using the computer’s mouse. Paul was very familiar with this software. Before starting the remediation, we noted that Paul was able to represent simple sentences using Disney characters, such as ‘Mickey and Minnie have a picnic on the beach’ and ‘Daisy climbs on Pluto’s back to pick up apples from the tree.’

We now describe the content and procedure of the five series of tests that were done to measure the evolution of Paul’s performance in text comprehension. These five series were organized in:

- two series of pre-tests providing baseline performances;
- one series assessing the effect of the remediation; and
- two series of post-tests addressing the ability of Paul to use the visual recoding strategy without the computer software.

Note that each test was done on different days and that each series of tests followed one another.

2 Pre-test 1: Baseline: Neutral texts

In this test, Paul listened to each neutral text and was expected to recall the story immediately afterwards. Next, he was asked to remember the story during a short delay (15 minutes) and then to recall it again.

3 Pre-test 2: Rehearsal strategy: Disney texts

To test the effect of rehearsal on memorization and comprehension (e.g. Laws et al., 1996), text sentences were repeated to Paul. These texts involved familiar Disney characters (e.g. Mickey, Minnie, Dingo or Daisy). This was followed by the same immediate and delayed recall procedures as in Pre-test 1.

4 Remediation: visual recoding with drawings created on the computer: Disney texts

For each of the five new Disney texts, the story was read sentence-by-sentence. After each sentence, Paul had to draw what was read using the computer software. His drawings were printed, but temporarily kept out of his sight. He was asked to remember the drawings done for each sentence. The recall procedures were the same as in the previous tests.

5 Post-test 1: Visual recoding with mental images: Disney texts

Again, for each of five new Disney texts, the story was read sentence-by-sentence. Paul then had ‘to imagine in his head’ the way in which he would draw the content of these sentences. The recall procedures were the same as in previous tests.

6 Post-test 2: Visual recoding with mental images: Neutral texts

To test whether Paul was able to generalize this method to neutral texts, the same procedure as in Post-test 1 was applied to five unknown neutral texts. The recall procedures were the same as before.
7 Scoring procedure

For scoring the performance of Paul, we followed exactly the same procedure as the one described in the CMS. As exemplified in Appendix 1, each text was decomposed into story and thematic units. For story units, one point was given to Paul each time he produced the main part of the story unit (e.g. for the unit ‘large lawn’, one point was given if Paul said either ‘lawn’ or ‘large lawn’). For thematic units, one point was given when the general idea of the unit was present.

V Results

The average number of story and thematic units recalled by Paul in the various tests, and in immediate or delayed recall situations, are given in Figure 1. An analysis of variance was conducted on items (i.e. texts), using the number of story and thematic units as dependent variables, Recall (Immediate or Delayed) as a within-item independent variable, and Testing session (Pre-test 1, Pre-test 2, Remediation, Post-test 1, Post-test 2) as a between-item independent variable, texts being used as random factors.

For story units, the main effect of Recall was significant, $F(1,20) = 5.84, p < .05$, Paul having a better performance on immediate (10.0 units) than on delayed recall (8.84 units). The main effect of Testing session was also significant, $F(4,20) = 46.3, p < .001$. However, the interaction between Recall and Testing session was not significant ($F < 1$). Planned orthogonal comparisons revealed no significant difference between Pre-test 1 (4.2 units) and Pre-test 2 (4.9 units), and between Post-test 1 (11.6 units) and Post-test 2 (12.2 units) (all $F$s < 1). Significant differences were obtained between Remediation (14.2 units) and post-tests, $F(1,20) = 7.87, p < .05$, and also between pre-tests and Remediation + post-tests, $F(1,20) = 176.5, p < .001$.

For thematic units, the main effect of Testing session was significant, $F(4,20) = 23.3, p < .001$. There was no significant effect of Recall ($F < 1$) and no interaction between Recall and Testing session, $F(4,20) = 1.48, p = .25$. Planned orthogonal comparisons revealed no significant difference between Pre-test 1 (0.2 units) and Pre-test 2 (0.3 units), and between Post-test 1 (2.8 units) and Post-test 2 (3.3 units), all $F$s < 1. A marginally significant difference was observed between Remediation (3.9 units) and post-tests, $F(1,20) = 3.73, p = .068$, and a significant difference was obtained between pre-tests and Remediation + post-tests, $F(1,20) = 88.4, p < .001$.

Overall, similar results were obtained for story and thematic units. Prior to remediation, the performance of Paul in text comprehension was poor and stable. Repeating the sentences given to Paul during Pre-test 2 did not improve his performance compared to Pre-test 1, indicating that this simple rehearsal strategy had no effect. Both pre-tests therefore provide a reliable baseline of Paul’s performance.

More importantly, the results show that the performance of Paul improved significantly, relative to the pre-tests, once he started to use the visual recoding strategy (i.e. during the remediation phase and the post-tests). The visual recoding of text sentences not only facilitated the retention of isolated pieces of information (story units) but also allowed Paul to recall more integrated and meaningful information (thematic units), indicating improved text comprehension. Foregoing the use of drawing software led to slightly worse results than those obtained during the remediation phase. Nevertheless, the scores remained higher than those obtained during the pre-tests. In addition, the results for Post-test 1 (using Disney characters) were similar to those for Post-test 2 (using neutral characters). This suggests that improvements obtained during remediation were not restricted to Disney characters, and that the visual recoding strategy with mental images could be transferred successfully to more neutral content.
VI Discussion

Just like a large number of studies that describe a dissociation between verbal and visual memory in children with Down syndrome (Marcell and Armstrong, 1982; Bower and Hayes, 1994; Kay-Raining Bird and Chapman, 1994; Jarrold and Baddeley, 1997; Jarrold et al., 1999; Purser and

Figure 1  Mean number of story units (a) and thematic units (b) recalled by Paul in each text comprehension test (error bars correspond to standard errors)
Jarrold, 2005), we also noted this pattern in Paul, an adolescent with Down syndrome who displayed relatively unaltered visual memory capacities and a deficit in verbal short-term memory. By training Paul to visually recode the spoken sentences of a short story, we observed that his ability to recall story and thematic units increased significantly compared to a control baseline.

These results are consistent with previous findings, suggesting that verbal short-term memory deficit can be compensated for by developing visual recoding strategies (e.g. Karlan et al., 1982; Kay-Raining Bird et al., 2000). Because visual memory capacity seems to be preserved in people with Down syndrome, we found that explicitly asking Paul to use a form of mental simulation (Barsalou, 1999) enabled him to retain more information from stories and increase his comprehension.

To train Paul applying this visual recoding strategy, we first used computer drawing software to recode each story sentence. Paul already had extensive practice with this software before using it in remediation. This might be a prerequisite to this remediation. Alternatively, future investigations may reveal whether such a mental imaging strategy can be induced more easily by asking for sentences to be visualized, or whether computer software tools are good catalysts to rely on this type of mental simulation.

The observed improvement may also be related to the fact that, through drawing, Paul spent more time on each of the sentences and may have ended up memorizing them better. Even though an attempt was made to rule out this hypothesis during the second pre-test (when sentences were repeated), rehearsal rather than visual recoding may account for this improvement. The results obtained in post-tests 1 and 2 (where Paul was told to just visualize the sentences he heard) suggest that increased memorization and comprehension do not strictly result from the use of drawing software and the resultant more time spent processing story sentences.

As suggested by Jarrold et al. (2006), people with Down syndrome appear to have impaired verbal short-term memory. Several factors have been put forward to explain such an apparent deficit. Originally it was attributed to physiological disorders generally associated with Down syndrome, such as deficits in oral perception (e.g. Dahle and McCollister, 1986), or deficits in oral production (e.g. Dodd and Thompson, 2001) caused by a cleft palate or an outsized tongue relative to the oral cavity. Poor coding of verbal information together with a limited ability to accurately produce a language’s phonetic sounds effectively restrict processes from retaining and repeating verbal information in the short-term memory. In Baddeley’s (1986) working memory model, the phonological loop (or sub-vocal rehearsal process) occupies a central role in retaining verbal information. The peripheral deficits of perception and spoken language production can limit these processes effectiveness and induce poor verbal short-term memory performance. Recoding verbal information to a visual format would alleviate functional phonological loop deficiencies by creating a network of visual-phonological associations. This would slow down verbal information decline in the short-term memory.

The success of the present remediation strategy is reported through the lens of a single case study, which is usually considered both positively and negatively. It has indeed been argued that single case studies provide important detailed descriptions of the cognitive system allowing for a precise test of theoretical models (Caramazza, 1986; for an example in the field of Down syndrome research, see Groen et al., 2006). They also avoid excessive generalizations that sometimes emerge from group studies in which single inconsistent cases may be hidden behind the average performance of the group (Caramazza et al., 2001). However, one potential limitation of the single case approach precisely concerns generalization. The fact that a remediation produced positive effects on a single case does not indeed guaranty that it will also work with any person having a similar profile of cognitive impairment. There exist examples in the rehabilitation of phonologic alexia showing that a specific therapy, leading a patient to recover his ability to read (e.g. De Partz, 1986), may not always produce the same positive outcome with another similar patient (e.g. Nickels,
However, the precision of single case descriptions may allow understanding why it did not work with this other case and research may generate new ideas to adapt or extend the therapy to this interesting, diverging case.

In the present situation, we show that the visual recoding remediation does generate positive effects on Paul’s ability to comprehend texts. It suggests that it could also help other pupils with Down syndrome having a similar cognitive profile to improve this important cognitive skill. It is true however that even a similar case may present crucial cognitive differences, which will prevent this pupil from benefitting of the remediation. In this case, the remediation will probably be inappropriate or will require some adaptation. Nevertheless, reporting the success of a single case remediation may benefit a large number of pupils that have all the cognitive requirements for grasping the advantages of the visual recoding strategy. It may also inspire educators or teachers to apply the principles of the remediation to younger pupils within classroom instructional settings.\(^3\)

In conclusion, an analysis of Paul’s cognitive capacities revealed a deficit in verbal short-term memory. This deficit appears to be present in most people with Down syndrome and restricts other more integrated processes such as text comprehension. The analysis also revealed greater visual memory capacity. Implementing a visual recoding strategy improved retention of verbal information and its comprehension. While this cognitive remediation had a positive impact on his capacity to memorize and process texts, it was not the only positive effect. This cognitive reinforcement has indeed emerged as a possible tool to reduce the confusion this child experiences, a state of confusion induced in particular by verbal memory dysfunction.

### Notes

1. The Corsi test (Corsi, 1972) consists in a series of nine blocks arranged irregularly that are tapped by the examiner in different sequences of increasing length (two trials per sequence). After each tapped sequence, the subject has to reproduce it (in forward or backward order). The test is interrupted when the two trials of a sequence are failed.

2. To preserve anonymity, we have changed his true first name to ‘Paul’.

3. Although the present remediation was done with a 17-years-old adolescent, there are theoretically no objections to start this kind of training earlier in development.

### References


Appendix 1. An example of text scoring

Target text:
Mickey has received a present for his birthday: a black and white soccer ball. One afternoon, Mickey goes playing with Dingo in a park with a large lawn. The two friends start to play. Mickey kicks the ball strongly. The ball gets very high in the sky and falls down on Dingo’s head.

Response of Paul in immediate recall:
‘Mickey, a ball, there’s Dingo, the black and white ball … there’s a lawn … and Dingo again.’

<table>
<thead>
<tr>
<th>Story units</th>
<th>Thematic units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mickey</td>
<td>Mickey has received a ball for his birthday</td>
</tr>
<tr>
<td>has received</td>
<td>0</td>
</tr>
<tr>
<td>a present for his birthday</td>
<td>0</td>
</tr>
<tr>
<td>soccer</td>
<td>0</td>
</tr>
<tr>
<td>ball</td>
<td>1</td>
</tr>
<tr>
<td>black and white</td>
<td>1</td>
</tr>
</tbody>
</table>

| One afternoon | 0 |
| Mickey | 0 |
| playing | 0 |
| with Dingo | 1 |

| in a park | 0 |
| a large lawn | 1 |

| Two friends | 0 |
| start to play | 0 |
| Mickey | 0 |
| kick the ball strongly | 0 |

| The ball | 0 |
| gets very high in the sky | 0 |

| It falls down | 0 |
| on Dingo’s head | 1 |

**TOTAL**

| Mickey | 6 |
| has received | 0 |
| a present for his birthday | 0 |
| soccer | 0 |
| ball | 1 |
| black and white | 1 |

| One afternoon | 0 |
| Mickey | 0 |
| playing | 0 |
| with Dingo | 1 |

| in a park | 0 |
| a large lawn | 1 |

| Two friends | 0 |
| start to play | 0 |
| Mickey | 0 |
| kick the ball strongly | 0 |

| The ball | 0 |
| gets very high in the sky | 0 |

| It falls down | 0 |
| on Dingo’s head | 1 |

**TOTAL**

| Mickey | 6 |
| has received | 0 |
| a present for his birthday | 0 |
| soccer | 0 |
| ball | 1 |
| black and white | 1 |

| One afternoon | 0 |
| Mickey | 0 |
| playing | 0 |
| with Dingo | 1 |

| in a park | 0 |
| a large lawn | 1 |

| Two friends | 0 |
| start to play | 0 |
| Mickey | 0 |
| kick the ball strongly | 0 |

| The ball | 0 |
| gets very high in the sky | 0 |

| It falls down | 0 |
| on Dingo’s head | 1 |

**TOTAL**