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Moral judgements among neurotypical children, autistic children and adults with intellectual disability

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Background: The present study investigates the possible differences between neurotypical children (NT), autistic children, and adults with intellectual disability (ID) related to (i) morality of the agent, (ii) morality of the action, and (iii) culpability in inappropriate situations.

Method: Eighty-four Spanish participants (32 NT, 30 autistic children, and 22 adults with ID) responded to a task of moral transgression with an unambiguous structure (bad intention – bad outcome), where the stories were classified as first-order Theory of Mind (ToM) (based on simple desires) and second-order ToM (based on revenge).

Results: Autistic group judged similarly to NT group. However, adults with ID had greater difficulty judging the (ii) morality of the action (compared with the autistic and NT group) and (iii) culpability (compared with the NT group). Also, ID adults encountered problems responding the moral questions in the balloon story (second-order ToM) and ice-cream story (first-order ToM).

Conclusions: Autistic and NT children were able to make similar moral judgements, however adults with ID did not respond in the same way – as they were more benevolent in their judgements.

Keywords: autism; intellectual disability; moral reasoning; theory of mind; transgressions; culpability

Introduction

Baron-Cohen *et al.* (1985) first administered the Sally and Anne test to 27 neurotypical (NT) children (M age¹ = 4.5 years), 20 autistic² children (M age = 11.11 years), and 14 Down's Syndrome children (M age = 10.11 years). The majority (85%) of NT and (86%) Down's Syndrome children 'passed' the test by correctly answering the 'belief question' (appreciating Sally's false belief), whereas the majority of autistic children (80%) answered incorrectly. Since then, a large number of studies have demonstrated that autistic individuals have difficulties in shifting their perspectives to judge others' behaviours or thinking (named social cognition, folk psychology, commonsense psychology or theory of mind [ToM]). However, on the one hand, these problems can go both ways: people who are not autistic also have trouble figuring out what autistic people are thinking or feeling (named double empathy theory, for more information see Crompton *et al.* 2021); and, on the other hand, it has

barely been investigated in individuals with intellectual disability.

This capacity (ToM hereon in) is essential to attribute desires, beliefs, and intentions to others (and to ourselves), and for explaining others' behaviours based on mental reasoning, making us capable of judging actions and the agents involved in a specific situation; e.g. attribute moral responsibility to an agent of an offensive act (Cushman 2015, Garcia-Molina and Clemente-Estevan 2019a, Young and Saxe 2009). So, it facilitates establishing relationships or even deciding which people around us are potential social partners, and which people cannot (Young and Tsoi 2013), namely, it eases making moral judgements (judgements based on one's sense, intuition or feeling of right or wrong). As a result, having a 'good' social reasoning - or 'having ToM' - has been linked to specific aspects of prosocial behaviour (e.g. sharing, cooperation) necessary for successful interpersonal relationships (Denham *et al.* 2003, Fenning *et al.* 2011). Conversely, difficulties in ToM have been associated with peer rejection (Banerjee and Watling 2005, Bornstein *et al.* 2010, Villanueva-Badenes *et al.* 2000), aggression, and social

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anxiety (Parker *et al.* 2006) and, as is the case of individuals with different conditions (such as autism), being victims of bullying or mate crime (Forster and Pearson 2020, Maïano *et al.* 2016, van Roekel *et al.* 2010).

While there are several studies that contemplate how autistic individuals make moral judgements, their results varying from being capable of reaching a basic understanding of right and wrong moral aspects (Blair 1996, Leslie *et al.* 2006) to having difficulties in distinguishing the intentionality and, as a consequence, culpability (Moran *et al.* 2011, Zalla *et al.* 2009) - most times explained by the wide variability in the autistic condition (note that autistic individuals diagnosed as 'autistic' prior to 2013 could have language delays or disabilities as well) or differences in the tasks - the development of moral reasoning among people with ID has only been investigated by a limited number of authors. For example, in Langdon *et al.* (2010) it was suggested that individuals with ID progress through the stages of moral reasoning (based on Gibbs' theory 2010), however, they would do so at a slower rate than NT people. Other works closer to the topic of this study highlighted the unique opportunity to study the social cognition of Down's Syndrome (the most common genetic cause of ID) due to their prosocial oriented behaviour, as Down's Syndrome are usually described as sociable and empathic (Freeman and Kasari 2002), and so children with ID could have higher scores than NT children in cooperation (Lind and Smith 1984). However, Down's Syndrome individuals prosocial approach seems not to be supported, as they would experience problems in peer interaction, establishing and maintaining stable relationships (Guralnick *et al.* 2011), and also in emotion understanding skills (Andrés-Roqueta *et al.* 2021). Along this line, Barisnikov and Lejeune (2018) reported that adolescents with Down's Syndrome (10-18 years) exhibited significantly more difficulties in judging, identifying, and reasoning about transgression of social rules. Also, in Hippolyte *et al.* (2010), adults with Down's Syndrome (M age = 32.2 years) - compared with NT children (M age = 5.6 years) - identified significantly fewer inappropriate situations than the NT group. But, when the Down's Syndrome group was able to identify it, their explanations were as good as the NT group. This latter result was also observed in Morales-Martinez *et al.* (2016), as Down's Syndrome participants (M age = 26.12 years) were able to make moral judgements similar to NT adults of the same age; although they gave more weight to consequences and less to intentions than NT individuals. These kinds of judgements were also detected in autistic individuals, making outcome-based judgements (considering visible acts) rather than intent-based judgements (not considering the agent's mental state) (Margoni and Surian 2016). However, as in the Dempsey *et al.*'s (2020)

systematic review argued, greater reliance on outcome than intention need not imply that autistic individuals overlook the importance of intention. For example, in Grant *et al.* (2005) all groups (children with mild ID, autistic children and NT children) were able to judge culpability.

Finally, in terms of participants, it is also important to highlight that they were Spanish. One reason was that Spanish parents of autistic children reported discrimination and exclusion of their children due to the misconceptions about autism in Spanish society (Padilla-Petry and Saladrigas-Tuà 2022, Recio *et al.* 2020); and another reason was the greater emphasis on rules, norms, commandments and feelings of responsibility or culpability that shape personal beliefs and actions of Spanish society, probably linked to the predominance of the Catholic religion (56%) (Centro de Investigaciones Sociológicas [CIS] 2022).

In brief, the present research is a preliminary study that includes three population groups: Spanish NT children, autistic children, and adults with ID, for investigating the possible differences between them related to moral judgements (morality and culpability) in inappropriate situations.

Accordingly, it is hypothesised that:

1. There will be intergroup differences regarding the judgment of the agent, the action, and the culpability.
2. There will be intergroup differences in terms of the mental state inferences (representations of the minds of others) involved in the stories, divided between first-order (what someone is thinking or feeling) and second-order ToM (what one person thinks or feels about what another person is thinking or feeling).

In both hypotheses, the autistic group would find it more difficult to judge the agent and acts and, as a consequence, the culpability, as well as the stories classified as second-order ToM.

Method

Participants

A total of 84 Spanish participants took part in this study.

Intellectual disability group

Participants were recruited by contacting the Down's Syndrome Foundation of Castelló (Spain), a foundation that welcomes individuals with ID associated or not with Down's Syndrome. A criterion for inclusion in the sample was that they were diagnosed with ID, namely, an IQ lower than 70 defined by the standardised assessments conducted at the centre (i.e. Wechsler intelligence scale for children — Wechsler 1991) and their diagnoses had an impact on the general mental abilities for functioning needed for everyday life.

Twenty-two participants with ID (10 men, 12 women) aged between 21 and 55 years were recruited

($M = 350.45$ months; $SD = 94.07$ months; age range: 258 – 668 months) with an IQ of 70 or below ($M = 39.80$, $SD = 9.91$). Fifteen of them had mild intellectual disability (8 men, 7 women), and seven had moderate intellectual disability (2 men, 5 women) based on how they had impairments in conceptual, social and practical skills.

Autistic group

All the autistic children were attending ordinary schools and receiving specific intervention from a speech therapist at school while attending ordinary classrooms. They were fluent in Spanish, with no ID, showed capacity for conversing with and understanding others.

Thirty children (26 boys, 4 girls) had been diagnosed with level 1 – requiring support – Autism Spectrum Disorder, according to the Diagnostic and Statistical Manual of Mental Disorders (5th ed. DSM-5, American Psychiatric Association 2013), and were aged between 7 and 12 years ($M = 112.87$ months; $SD = 18.58$; age range: 87 – 145 months). The research group ensured they all had a typical IQ (WISC-III) ($M = 102.83$; $SD = 14.23$; IQ range: 80–130). Each child had been previously diagnosed with autism by a qualified professional and they all met full criteria for autism based on the Autism Diagnostic Interview–revised ([ADI-R], Rutter *et al.* 2003) and the Autism Diagnostic Observation Schedule – Module 3 for verbally fluent and older children ([ADOS-2], Lord *et al.* 2012). Also, the children had their report updated no longer than three years ago.

NT group

Thirty-two NT children (24 boys, 8 girls) aged between 7 and 12 years ($M = 114.56$ months; $SD = 17.95$; age range: 84 – 145 months) and with a typical IQ ($M = 105.75$; $SD = 12.68$; IQ range: 80–130) with no diagnosis nor difficulties were recruited from the ordinary schools of the autistic children. No significant differences were found between the two groups of children regarding IQ: $t(60) = .85$, $p = .397$, $d = .22$.

Material

Intelligence quotient (IQ)

As explained above, autistic children and adults with ID had their IQ scores in their reports. For NT children, Sattler's short adaptation (1992) of the WISC-III (Wechsler intelligence scale for children — Wechsler 1991) was administered. Sattler's short adaptation (Vocabulary and Block Design) was administered to autistic children in the first place to check the comparison of scores (full and short scale). This was possible as all autistic participants had diagnostic reports from a qualified psychologist or neurologist within the previous two years. The WISC-III full scale IQ correlated highly with the short form as found in classic studies

(Ryan 1981, Sattler 1992). Given this high correlation between the short form and the full scale WISC-III, Sattler's short adaptation was administered to the NT group as a reliable estimate of the group's IQ, with the main objective of ensuring comparable IQ levels in all groups.

Moral judgement task

The material included four stories in which the main character committed a moral transgression with an unambiguous structure: bad intention and bad outcome = guilty agent (extracted from Garcia-Molina *et al.* 2016). Also, the stories varied in terms of complexity related to ToM: two of them (yo-yo and ice-cream stories) were classified as first-order ToM, as the stories were based on a simple desire (the character wants something and s/he takes it); and the other two (balloon and soup stories) were classified as second-order ToM, as the stories were based on revenge: it seems that the intention was good at first, but finally is a bad intention that causes a bad outcome (e.g. Adrián, who is seeking revenge, pretends to help Lola to hang the balloons to explode all of them). See the Appendix.

The stories were presented as a mixed modality shown on a computer: illustrations, text and auditory text previously recorded, as to this format would be the most suitable for autistic children to access visual information (faces, emotions, details, etc.) and verbal information (tone of voice, prosody, dialog, etc.) (Garcia-Molina and Clemente-Estevan 2019b). The task was presented as shown in the Appendix: illustration, text (and the audio) were in the first screen so as to have all the information at once, as recommended in studies such as that of Nader *et al.* (2022) or Remington *et al.* (2019). After each story, the illustrations remained on the screen – to reduce working memory load – and three questions related to the 'badness' and the culpability of the characters and acts were asked, which required forced-choice responses:

- (i) morality of the agent: Is (the perpetrator) good or bad? [good/**bad**]
- (ii) morality of the action: Was what (the perpetrator) did right or wrong? [right/**wrong**]
- (iii) culpability: Do you think (the perpetrator) is guilty? [**yes**/no]

Each correct response (in bold) scored as 1 point, so the score range of each story was from 0 to 3 points, and for each variable (i.e. culpability) 0 to 4 points.

Procedure

This study was approved by the research ethics committee of [content hidden], the school authorities, and the foundation. Prior to taking part in the study, the parents of each child (autistic or NT) gave informed consent for their children to participate, as did the adults with

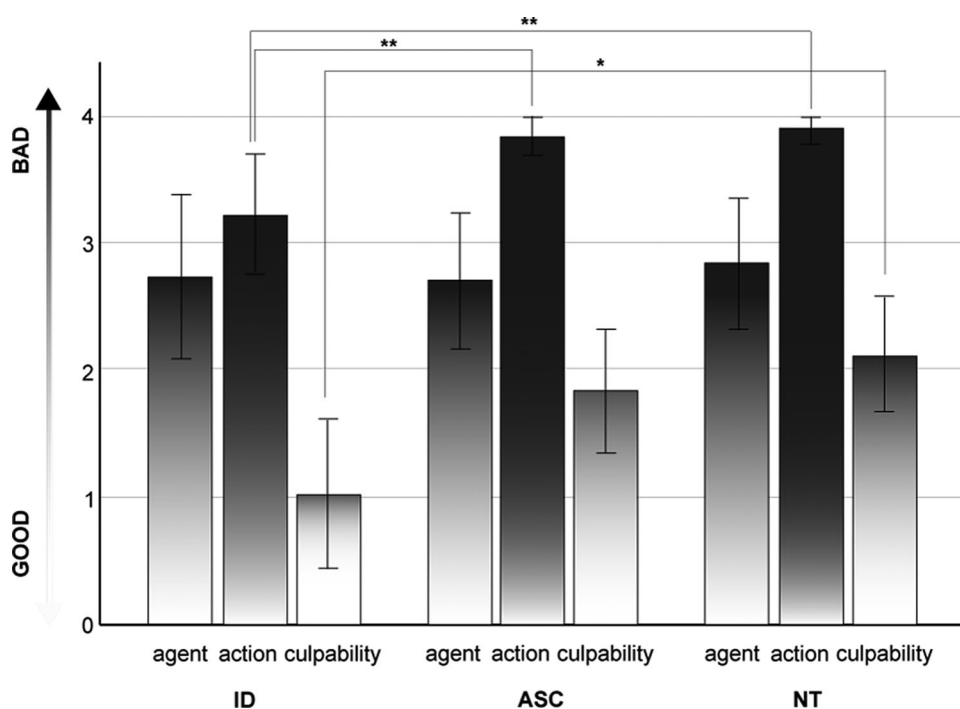


Figure 1. Judgements of (i) morality of the agent, (ii) morality of the action, and (iii) culpability divided by groups. * $p < .05$; ** $p < .001$. ID: Intellectual Disability; ASC: Autism Spectrum Condition, NT: Neurotypical.

ID. Before the administration of the tasks (see *Materials* section), all the participants passed a false-belief ToM task (similar to the Sally and Anne test), with the aim of corroborating that they could understand the first stages of cognitive ToM. The duration of the session was approximately between 30 - 50 min per participant. Stories were presented randomly, and participants were informed that they would listen to a story and be asked questions at the end.

Results

For hypothesis 1, the data obtained from the moral responses were compared by groups using one-way ANOVA. For better comprehension, results divided per variables are presented graphically.

The results of the one-way ANOVA between groups indicated that there were statistically significant differences between the three groups and the average scores for (ii) morality of the action = $F(2, 81) = 6.91, p < .001$; and (iii) culpability = $F(2, 81) = 15.62, p = .014$.

The assumption of homogeneity of the variances of the three groups has been verified, for (iii) culpability: *Levene* $F(2, 81) = .105, p = .901$. For (ii) morality of the action, the homogeneity assumption is not met and therefore the Welch's test was run: $W(2, 43.03) = 3.78, p = .031$.

Analysis of mean differences by Tukey's test indicates that the scores on (ii) morality of the action of the adults with ID group differs significantly from the autistic ($M_{ID} = 3.22, SD = 1.07; M_A = 3.83, SD = .38; p = .005$) and NT groups ($M_{NT} = 3.91, SD = .53, p < .001$);

and in (iii) culpability, only from the NT group ($M_{ID} = 1.04, SD = 1.33; M_{NT} = 2.13, SD = 1.31; p = .011$).

Figure 1 shows how 'bad' or 'good' the agents and actions were judged, and also the culpability variable. For example, the darker the bar regarding culpability becomes, the more 'guilty' the participants judged. Individuals with ID tended to be more benevolent with their judgements; however, autistic and NT children judged more severely.

For hypothesis 2, the data obtained from the four stories were divided and compared by groups using one-way ANOVA.

When the analyses are detailed by stories, the balloon story (second-order ToM) is the most difficult to judge for the adults with ID, but also the ice-cream story (first-order ToM): ice cream $F(2, 81) = 3.50, p = .035$; *Levene* $F(2, 81) = 2.69, p = .074$; and balloon story $F(2, 81) = 11.14, p < .001$; *Levene* $F(2, 81) = .53, p = .594$.

Analysis of mean differences by Tukey's test indicates that the scores of the ice-cream story of the adults with ID group differs significantly from the autistic group ($M_{ID} = 1.73, SD = .63; M_A = 2.23, SD = .82; p = .037$); and for the balloon study, the ID group differs significantly from the autistic ($M_{ID} = 1.63, SD = .66; M_A = 2.33, SD = .71; p < .001$) and NT groups ($M_{ID} = 2.16, SD = .68; p < .001$).

Discussion

As hypothesised, there were intergroup differences for the moral questions. However, contrary to that expected (Hippolyte *et al.* 2010), adults with ID were those who

had greater difficulty judging the (ii) morality of the action (compared with the autistic and NT groups) and the (iii) culpability (compared with the NT group). Namely, the ID group tended to judge morally in a more benevolent way than other groups. This finding would disagree with Barisnikov and Lejeune (2018), who suggested that a developmental delay in social reasoning could be eliminated as ID individuals get older.

Looking in greater detail, when stories were divided into first-order and second-order ToM, ID adults found it significantly more difficult to make moral judgements in the balloon story (second-order ToM) and ice-cream story (first-order ToM). In the second-order ToM story, based on recognising the revenge of a boy who wanted to ruin a girl's birthday; one should integrate the mental-state information of both characters, not only the desire but also the intention and consequences. Nevertheless, in the first-order ToM story, ID adults - as occurred for the other stories - tended to give more benevolent responses, perhaps because, as defined by some authors (Freeman and Kasari (2002), in the case of individuals with Down's Syndrome, or Lind and Smith (1984), in the case of children with ID) they are described as sociable, empathic and able to cooperate. Another possible explanation more centred on ToM could be that, in this case, they did not identify the 'bad desire' that the girl had to skip the line and get the ice cream. Or, perhaps one might wonder whether not stealing an object, not jumping a queue, or not taking revenge are common social norms for children in a schoolyard. These specific situations with objects appropriate for children (yo-yo, ice-cream, cartoons ...) can be seen by adults as childish behaviour.

What cannot pass unnoticed is that the autistic group judged similarly to the NT group, as clearly seen in Figure 1. However, it should be highlighted as a limitation (and future lines of study) that these kinds of stories are unambiguous (bad intention – bad outcome) and it is difficult to know whether autistic children are considering the visible acts or the mental-states for their moral judgements (Margoni and Surian 2016). Also, an important limitation in the present study is that two groups of children were compared to one group of adults. Although some studies highlight that adults with ID were comparable to young NT in social reasoning abilities (Hippolyte *et al.* 2010), it should be noted that age could affect understanding of moral reasoning. Related to the participants, this study could be more inclusive in terms of gender ratio, and in addition, more groups of participants could have been considered (e.g. autistic children with ID, adults with ID and Down's syndrome). Another shortcoming is the number of questions asked. For example, an important question included in the original material (Garcia-Molina *et al.* 2016) that could have been addressed is how the participants would act in the situations described and why. In

this sense, participants could make their judgements based on social norms and rules or interpret others' behaviour the way that they would behave themselves. Therefore, all the shortcomings highlighted pave the way for a future, more inclusive and complete work.

Implications

Many people believe that autistic people lack empathy or are not capable of reaching a basic understanding of right and wrong moral aspects. However, in the present study autistic and NT children scored very similarly, and, instead, adults with ID would encounter problems to judge morally inappropriate situations. First, it is relevant to take a closer look at the structure of the task, which can reveal that when moral stories are based on verbal and visual stimuli, all the relevant information is presented simultaneously in a structured way, and the questions are asked by forced-choice answers, autistic participants can perform as well as NT children.

Second, the intention in this kind of tasks can show some clues to understanding real relationships, and this is key for the prevention of serious problems with peers (bullying, mate crime ...). Finally, as highlighted by Morales-Martinez *et al.* (2016) a full understanding of moral judgements in people with ID could influence the way they are perceived, cared for, and attributed basic rights – which could also be applied in the case of autistic individuals.

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Notes

1. *M* age = mean age.
2. This paper respects the identity-first language preferred by the autistic community (Kenny *et al.* 2016).

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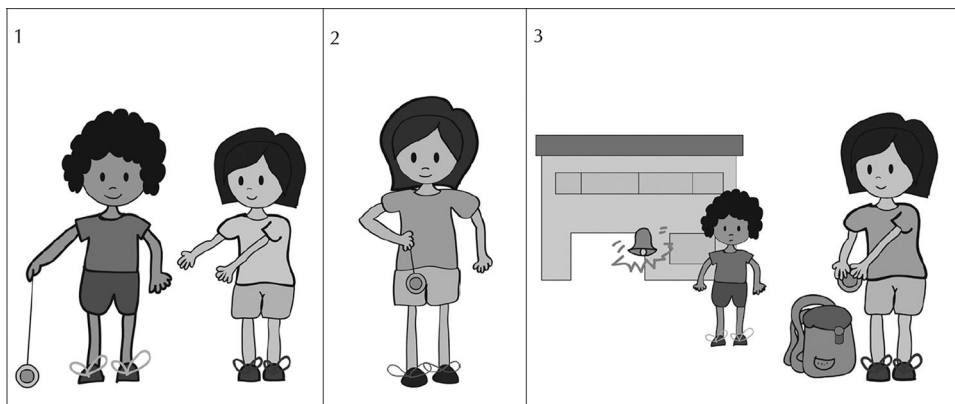
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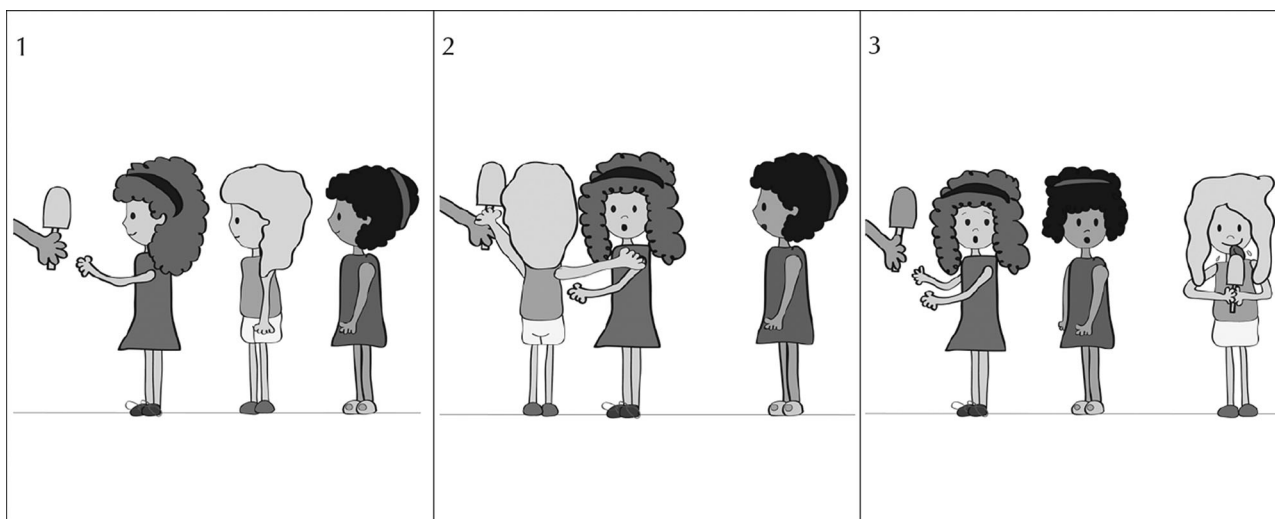
Appendices: Moral judgement task

(from Garcia-Molina *et al.*, 2016)

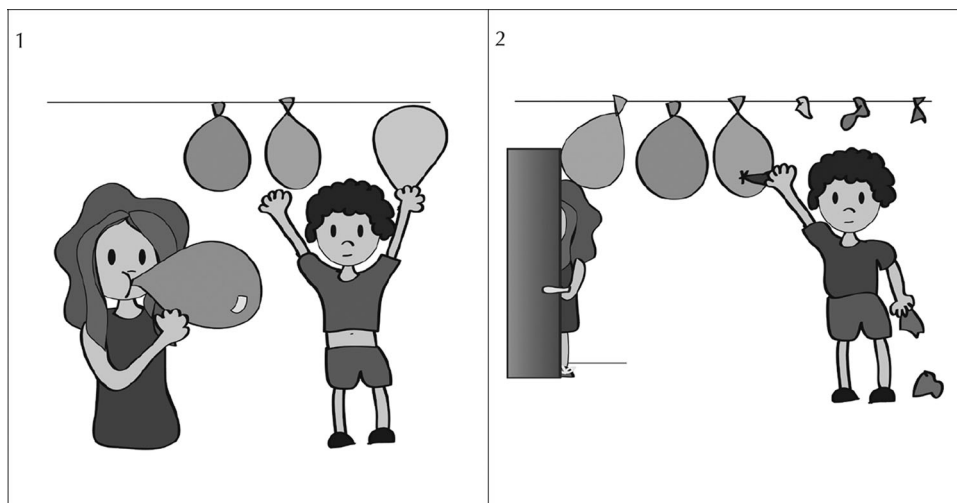
“Yo-yo”. This is Luis and this is Iris. Luis has a yo-yo and he is playing with it because it is playtime. Iris is his classmate, and asks him to play a little. The bell rings, and all children have to go. Also, Luis. But Iris hides the yo-yo in her school bag to play later at home.



“Queue”. These girls are at a birthday party. They are Júlia, Neus and Paula. It’s time to pick up an ice cream, and the girls line up. When it is the Júlia’s turn, Neus jumps the queue, moves Júlia away, and takes the ice cream. Neus is happy to eat her ice cream.



"Balloons". It's Lola and Adrián's birthday, but the whole class has decided to go to Lola's birthday, and Adrián decides to have his party another day. Adrián arrives first at Lola's house, and Lola asks him for help to hang the balloons. When the task is done, Lola goes for the cake, and Adrián takes a needle and explodes all the balloons.



"Soup". This is Diego, who wants to watch his favorite cartoons, but his mother has to go to the doctor and asks him to prepare a soup for his little sister Luna. So, Diego cooks the soup. Luna loves soup and she wants to try it right away. Diego sees how Luna takes the spoon, but he keeps quiet and does not let her know that the soup is still burning, and his little sister burns her tongue.

