### **Dataset description Spanish prompts:**

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This description contains details of the reasoning applied when constructing the prompts and solutions included in the dataset. The dataset description includes the following dimensions:

- A. Physical properties of objects included in the dataset,
- B. The logic applied when writing prompts and solutions,
- C. Explanation of the types of differences between the right and the wrong solutions,
- D. Culturally-specific items incorporated in the datasets.

# A. The dataset covers 100 prompts in peninsular Spanish and 100 prompts in Mexican Spanish and it was created by incorporating the following **physical properties** described by the examples in the table below:

Physical property	The meaning of a prompt and solutions	Logic applied in the prompt	Correct solution
Shape	Two objects with similar shape + one action: 0: a brush with a long handle 1: a broom with a long handle Action: removing spiderweb from the ceiling	Two long thin objects; only a broom with a long handle reaches the ceiling to remove the spiderweb	1
Density	Two objects from materials/substances with different density + one action: 0: a golden coin sinking when thrown into water 1: a golden coin floating on water when being thrown into water Action: Throwing a golden coin into water	Two materials involved in an action (gold and water), two possible results described (sinking and floating), only one result possible due to the density of the two materials. Gold has higher density than water, therefore it sinks, does not float on water.	0
Texture	Two objects from a material/materials with different texture + one action: 0: applying sequin onto a dress by sewing it on 1: applying sequin onto a dress by ironing it on Action: Applying sequin decoration onto a dress	Manipulating a combination of materials (sequin and cloth) in two ways (sewing on vs. ironing), only one way can be applied to reach the goal (can be sewn on but not ironed on because of heat).	0
Hardness	An object made from a material with specific hardness/resistance to damage + two actions:  0: a glass pitcher shattering when falling from the table and hitting the concrete floor  1: a glass pitcher wrinkling when falling from the table and hitting the concrete floor  Action: Hitting a glass pitcher made from a fragile material which falls to the concrete floor.	An action that an object undergoes can only be compatible with one result: due to the the hardness of its material, a glass pitcher shatters, does not wrinkle like a piece of cloth.	0
	1: scratching of the bottom of the pan due to the use of a spatula 0. wrinkling of the bottom of the pan due to the use of a spatula	Due to the hardness of the metal of a frying pan, it can get scratched when a tortilla is made on it with a metal	0

	Action: Frying a potato tortilla in a frying pan with enamel bottom using a metal spatula.	spatula, but it does not crease like a piece of cloth.	
Solubility	An object made from a specific material that can or cannot dissolve:  0: a plastic tupper dissolves when exposed to heat 1: a plastic tupper deforms when exposed to heat Action: A plastic tupper being exposed to heat during heating up food in a microwave	The result of an action (a plastic tupper is deformed in a microwave) stems from the consistency of the material (plastic can be deformed, does not dissolve like liquid).	1
Magnetism	Two instruments (one magnetic, one not) + one action: 0: a long magnetic stick 1: a long electric stick Action: looking for a lost metal earring at the yard.	The success of the action depends on the magnetism of the material, only a magnet (but not an electric stick) can attract a small metal object.	0
Weight	Two actions + manipulating an object/two objects with a specfic weight:  0: piling up delicate flowers in a basket 1: spreading delicate flowers in a basket Action: transporting delicate flowers carefully, so that they do not crush.	Achieving the goal (transporting the delicate flowers without crushing them) depends on the way an action is performed. Only spreading them prevents them from being crushed, piling them up does not.	1
	0: a light package full of clothes is flattened, squashed 1: a light package full of clothes is shattered into pieces Action: placing a light package on the bottom of a box under several heavy packages	The consequence of an action depends on the weight of the objects involved: a light package can get flattened, squashed, but not shattered into pieces like glass when placed under heavy packages.	0
Thickness	Two substances making a liquid thicker or thinner + one action: 0: starch mixed with cold milk is added to a cream while it is heated 1: ice mixed with cold milk is added to a cream while it is heated Action: Mixing starch into liquid while heating it up	The result of an action (adding starch into a liquid, heating it up while mixing) leads to the liquid becoming thicker, while adding ice mixed with milk does not, and so the desired effect (making the cream thicker) can only be achieved via adding corn starch.	0

#### B. The following logic was applied when writing prompts and solutions:

a. One action/phenomenon can have different effects on objects made from different materials. Only one of the two effects described in the two solutions can happen to the object mentioned in the prompt:

Example (1): {"prompt": "¿Qué pasa con las figuras de cartón durante las fallas de Valencia cuando se les prende fuego durante el último día de la fiesta?,"

(What happens to cardboard figures during Las Fallas of Valencia when they are put on fire during the last day of the festivity?)

"solution0": "Las figuras de cartón se endurecen con el fuego.",

(The cardboard figures harden due to fire.)

"solution1": "Las figuras de cartón se queman con el fuego.",

(The cardboard figures get burned due to fire.)

"label": 1}

In example (1) above, exposing cardboard figures to fire leads to the figures being burned, and not hardened since cardboard is inflammable. If the figures were made from clay, they might harden due to heat exposure.

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Example (2): {"prompt": " El níspero se puede usar para decorar los pasteles y para hacer las mermeladas."

(Loquat can be used for decorating cakes and making jams.)

"solution0": "Es una fruta delicada, por lo cual a la hora de transportarse no debería apilarse en una caja porque se puede ablandar.",

(As it is a delicate fruit, it should not be stacked when being transported because it can get mushy.)

"solution1": "Es una fruta delicada, por lo cual a la hora de transportarse no debería apilarse en una caja porque se puede desmigajar.",

(As it is a delicate fruit, it should not be stacked when being transported because it can crumble.)

"label": 0}
```

In example (2) above, the action of stacking delicate fruit cannot cause the fruit to turn into crumbs (like bread), but rather it makes it too soft and mushy.

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Example (3): {"prompt": "Si se me cae una moneda de oro al mar ¿Qué le pasará en el agua?,"

(If I drop a golden coin into the sea, what happens to it?)

"solution0": "La moneda flotará en el agua.",

(The coin will float on the water.)

"solution1": "La moneda se sumergirá en el agua.",

(The coin will submerge in the water.)

"label": 1}
```

In the above example (3), the density of gold is higher than the density of the water, and so when being thrown into water, the coin submerges in the water, and does not float on the surface (like a light and soft material, e.g. a small rubber ball).

# b. Two instruments mentioned in the solutions might have a similar shape, only one of them is appropriate for performing the action described in the prompt due to the properties of its material:

Example (4): {"prompt": "Antes de rellenar las manzanas para poder asarlas, se tiene que hacer un hueco para el relleno dentro de cada manzana."

(Before stuffing apples and baking them, we need to make a hole for the stuffing inside each apple)

"solution0": "Para hacer un hueco dentro de una manzana, cogemos un **descorazonador de metal**, lo colocamos sobre el corazón de una manzana y empujamos hacia abajo.",

(To make a hole in each apple, we take a **metal apple corer**, place it on the top of the apple core, and push it downwards.) "solution1": " Para hacer un hueco dentro de una manzana, cogemos una **pajita de plástico**, la colocamos sobre el corazón de una manzana y empujamos hacia abajo.",

(To make a hole in each apple, we take a **plastic straw**, place it on the top of the apple core, and push it downwards.) "label": 0}

In example (4), both an apple corer and a straw have a long thin shape, however, they differ in the material from which they are made: Only an apple corer made from a hard metal can be used to make a hole in an apple whereas a soft plastic straw bends when being pushed onto the apple.

c. Two actions are described in the solutions, but only one of them can achieve the goal described by the prompt:

Example (5): {"prompt": " Si dejo una playera en el fondo de mi maleta y le pongo cosas pesadas por encima, muy probablemente se arrugue., "

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(If I leave a T-shirt at the bottom of my suitcase and I put heavy things on it, it might crease,)
"solution0": " Para alisar la playera arrugada después del viaje, tendré que plancharla.",

(To straighten the shirt after my trip, I will have to iron it.)
"solution1": " Para alisar la playera arrugada después del viaje, tendré que lijarla. "

(To straighten the shirt after my trip, I will have to sand it.).
"label": 0}
```

In example (5), the two actions (ironing and sanding) are performed by doing similar hand movements, however, only one of them can be applied to clothes to make them straight (ironing).

#### C. The difference between the right and wrong solution stems from:

# a. The types of material mentioned in the solutions (only one of them is compatible with the action mentioned in the prompt):

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Example (6): {"prompt": "¿Cómo se puede evitar que una mantilla de seda se dañe a la hora de plancharla?"

(How can we prevent a silk shawl from being damaged when ironing it?)

"solution0": "Colocando una lámina fina de plástico entre la planch y la mantilla.",

(By placing a thin plastic sheet between the iron and the shawl.)

"solution1": "Colocando un paño fino de algodón entre la plancha y la mantilla.",

(By placing a soft cotton cloth between the iron and the shawl.)

"label": 1}
```

In example (6), a plastic sheet cannot be placed between the hot iron and the soft shawl because it is not heat-resistant, only a soft cloth has the effect of preventing the shawl from damage due to heat exposure. In example (7), not drying cookie cutters properly cannot lead to their stretching (that can happen to flexible materials, such as cloth or rubber due to moisture), but rather to rust being formed on cookie cutters (they are made from tin in this example).

### b. Two different effects mentioned in the solutions (one of them possible, the other one not):

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Example (7): {"prompt": "Si usamos una espátula de metal para preparar una tortilla de patatas en una sartén con esmalte"

(If we use a metal spatula to make a potato tortilla in a frying pan with enamel,)

"solution0": "El fondo de la sartén se puede rayar.",

(The bottom of the frying pan can get scratched.)

"solution1": "El fondo de la sartén se puede arrugar.",

(The bottom of the frying pan can get wrinkled.)

"label": 0}
```

In the example above (7), the hardness of the material of a frying pan is compatible with scratches as a possible type of damage due to using a metal spatula, but not with creasing, which can only be sustained by soft and flexible materials, such as a piece of cloth.

#### c. Two procedures described by the solutions (only one of them is correct):

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Example (8): {"prompt": "Cómo se pueden subir las persianas para que entre más luz en una habitación por la mañana?"

(How do we roll up exterior blinds so that more light can enter the room in the morning?)

"solution0": "Sujetando la cinta de la persiana con la mano y tirándola hacia abajo.",

(By holding the strap with one hand and pulling it downwards.)

"solution1": "Sujetando una lama de la persiana con la mano y tirándola hacia abajo.",

(By holding one piece of a blind with one hand and pulling it downwards.)

"label": 0}
```

In this example, the effect of rolling up the blinds can only be achieved through pulling the strap downwards, not by pulling a single blind downwards with a hand, which would damage the blinds.

# d. Two types of materials mentioned in the solutions (one of them compatible with the substance mentioned in the prompt, the other one not):

```
Example (9): {"prompt": "Para preparar el granizado, trituramos hielo con zumo de fruta y azúcar en una licuadora."

(In order to make slush, we crush ice in a blender and mix it with fruit juice and sugar)

"solution0": "Servimos en vasos de plástico con cuchara y pajita.",

(We serve it in plastic cups with a spoon and a straw.)

"solution1": "Servimos en platos de plástico con cuchara y pajita.",

(We serve it in plastic plates with a spoon and a straw.)

"label": 0}
```

In example (9), the liquid state of slush is only compatible with plastic cups, not with plastic plates.

#### e. Two different amounts of time needed to accomplish a procedure given in the solutions:

```
Example (10): {"prompt": "¿Durante cuánto tiempo se machacan los ajos en el mortero con la sal y el aceite para preparar el alioli?"

(For how long we need to batter garlic, salt and oil in a mortar to make alioli?)

"solution0": "Durante unas 1,5 horas.",

(For approx. 1.5 hours.)

"solution1": "Durante unos 15 minutos.",

(For approx. 15 minutes.)

"label": 1}
```

In example (10), battering the ingredients in a mortar takes 15 minutes, not 1.5 hours, which can be deduced from the softness of the ingredients listed in the prompt (garlic, salt, oil), these ingredients are not so hard to require such a long time to get crushed as indicated in the incorrect ptompt (e.g., making peanut or almont butter by crushing nuts manually might be more time-consuming).

#### f. The different orders of steps in a procedure presented in the solutions:

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Example (11): {"prompt": " Para hacer los chiles en nogada, primero hay que preparar los chiles poblanos y luego rellenarlos con un picadillo hecho a base de nuez de nogada. Al final hay que decorarlos con granada y perejil."
```

(To prepare stuffed green peppers, first, we need to prepare the green peppers and then stuff them with chopped nuts. Last, they are decorated with pomegranates and parsley.)

"solution0": " Para preparar los chiles, primero los **asamos** en el horno en un recipiente de metal y luego los **lavamos** y **pelamos**.",

(To prepare the chiles, at first we **bake** them in an oven in a metal container and then **wash and peel** them., "solution1": " Para preparar los chiles, primero los **lavamos** y **pelamos** y después los **asamos** en el horno en un recipiente de metal.

(To prepare the chiles, at first, we **wash and peel** them and then **bake** them in an oven in a metal container,) "label": 1}

```
Example (12): {"prompt": " Para quitar los raspones del piso de duela,"

(To remove the scratches from a wooden floor,)

"solution0": " la parte dañada de la duela se tiene que lijar y luego barnizar."

(the damaged part needs to be sanded and then varnished.,

"solution1": " la parte dañada de la duela se tiene que barnizar y luego lijar."

(the damaged part needs to be varnished and then sanded.,)

"label": 1}
```

In example (11), the green peppers must be washed and peeled at first, and then baked, not the other way round, while in example (12), the process of repairing scratched wooden floor consists of sanding it first and then varnishing it, not the other way round, which would be counterproductive.

# g. Two types of damage mentioned in the solutions (while both of them can be sustained by the object mentioned in the prompt, only one of them can be caused by the event mentioned in the prompt):

Example (13): {"prompt": " Muchos pasteles suelen rellenarse con una crema hecha a base de leche y queso. Si se agrega un poco de maicena a la crema al calentarla,"

(Many cakes are filled with a cream made of milk and cheese. If we add a little bit of corn starch to the cream while heating it up,)

```
"solution0": " la crema se diluirá.",

(It will dilute the cream.,
"solution1": " la crema se espesará.",

(The cream will thicken,)
"label": 1}
```

Example (14): {"prompt": " Si lavo un suéter de lana en la lavadora a una temperatura demasiado alta, ¿qué le pasará al suéter?,"

(If I wash a sweater made from wool in a washing machine at a very high temperature, what will happen to the sweater?)

```
"solution0": " El suéter se encogerá."
(the sweater will shrink.,
"solution1": " El suéter se estirará."
(the sweater will stretch.,)
"label": 1}
```

In the two examples above, both effects mentioned in the solutions are possible (a sweater can shrink or stretch, a cream can thicken or be diluted), but only one of them is compatible with the action described in the prompt. In example (13), adding corn starch to cream while heating it up makes the cream thicker, not more diluted. While both actions (thickening and diluting) are possible with cream, only one of them is the result of adding corn starch. In example (14), washing a woolen sweater in a washing machine at a very high temperature causes the sweater to shrink, not to stretch, although both effects are possible for clothes.

# h. Two types of damage mentioned in the solutions (only one of them can be sustained by the object mentioned in the prompt, the other cannot due to the material properties of the object):

For example, in (15), a baloon cannot get dented (like a metal object, such as a bumper of a car), it can only burst because it is made of thin rubber material. So, one type of damage (denting) cannot be sustained by a baloon, while the other (bursting) can. In (16), tin cookie cutters can rust due to a prolonged exposure to humidity, but they cannot stretch (like cloth).

### D. To make the datasets culturally specific, the following items were incorporated in the peninsular Spanish dataset:

- **a.) local foods:** *el granizado*: slush, iced drink made from chopped ice and fruit juice; *el gazpacho*: cold tomato soup; *la tortilla de patatas*: fried potato tortilla; *la crema Catalana*: Catalan cream; *la horchata valenciana*: Valencian rice milk; *el turrón de Jijona*: nougat from Jijona; *el pastel de nata*: cake filled with whipped cream; *los Lacasitos*: a Spanish version of m&ms, small candy made from chocolate and covered with coloured hard icing; *las galletas de María*: a typical brand of round biscuits, can be eaten with or without soaking them in milk or cocoa, can be also used to make crust for a cheescake or to make a cake consisting of layers of María biscuits and a filling; *el nispero*: loquat fruit cultivated along the Mediterranean coast, e.g., in Valencia and Alicante as well as in Andalucia, it is used to make jams, jelly, drinks, cake decoration; *el salmorejo*: a cold vegetable soup made with blending crumbled bread in it and sold in supermarkets in cartoon containers.
- **b.) places**: *el Faro de Castillo de Santa Ana*: a lighthouse of the castle of St. Ana located in Castro-Urdiales in Cantabria
- **c.) traditions**: *la vendimia*: cutting grapes by hand in the fall; *Las fallas de Valencia*: a festivity celebrated in March in Valencia to welcome the beginning of spring, during which cardboard and wooden figures are paraded all over the city and then burnt on the last day of the festivity.
- **d.) typical fashion items and typical objects**: *la mantilla de seda*: a silk shawl; *las joyas de filigrana*: lace jewellery made from gold and silver; *las alpargatas de yute*: jute espadrilles; *la peineta de nácar*: a hair comb used for holding hair up made from nacre, a type of pearl; *el porrón*: a wine jar with a long thin spout used to drink wine without the spout touching the mouth, it is used when wine is tasted in a group of people who taste it one after another.
- **d.) architectural features**: *el gotelé*: a technique of painting walls which creates the appearance of water drops on the wall by using thick paint, can be used to cover imperfections.
- **e.)** Common **physical tasks and actions** related to life in Spain were also included, e.g., rolling wooden or plastic exterior blinds up and down every day to regulate the amount of light in the interior of a home; drying beach accessories after coming home from the beach (e.g., yoga mats) and using beach items on the beach (e.g., inflatable swimming sleeves and beach umbrellas). In addition, some typical products consumed or sold in Spain were incorporated, too, e.g., *el alioli*: garlic and oil dressing, *el rimel*: originally a mascara brand, now used as a generic term referring to a mascara, *la garrafa*: a large plastic tank in which water is sold in a supermarket, etc.

#### The Mexican Spanish dataset includes the following culturally-specific items:

**a.) local foods**: *el agua fresca*: a sweetened iced drink made with real fruit juice and/or pieces of fruit often sold in plastic bags with a straw by street vendors; *el dulce de leche*: a thick caramelized milk spread, served as a dessert or used to fill tamales; *los chiles poblamos*: green peppers stuffed with a stuffing made from nuts and coated in white sauce decorated with granada apples and parsley, i.e., the colors of the Mexian flag (white, green and red); *los nopales*: prickly pear, a type of edible cactus served with fried eggs, made into juices, or even baked in an oven; *pozole*: a hot soup made from corn and meat broth and seasoned with pepper, garlic and onion; *el Miguelito*: a brand of chile product containing chile, lemon and salt, which is sold either as a liquid or as a powder and is sprinkled on fruit to give it a spicy flavour; *el pan de elote*: a corn bread; *el agua de jamaica*: a sweet drink made from dried

hibiscus flowers and sugar; *el chocolate Abuelita*: a typical brand of chocolate; *los tamales*: corn dough filled with minced meat, vegetables, or cajeta (a sweet cream); *los tlacoyos*: thick round and small tortillas filled with beans.

- **b.) typical fashion items and typical objects**: *la piñata*: a figure made from cardboard or clay filled with sweets and broken with a hard stick during birthday parties to distribute the candy to children; *Talavera ceramics*: traditional painted earthenware; *los alebrijes*: typical Mexican folk art sculptures made from cardboard or wood and covered with vivid colourful ornaments; *la blusa de huipil*: en embroidered loose-fitting tunic with folklore motives.
- **c.) traditions**: *los murales*: wall paintings; *pintar los alebrijes*: to paint figures made from cardboard or wood representing mythological animals with vivid acrylic paints by hand; El Día del los Muertos (The Day of the Dead) decorating graves with *cempasúchil* flowers to commemorate the deceased.

In addition, the Mexican Spanish dataset reflects important differences in the use of vocabulary referring to everyday actions and objects. Specifically, **americanisms** (words influenced by American English referring to everyday objects, food, and everyday ativities) that are used in Mexico instead of the corresponding Peninsular Spanish equivalents were incorporated into the dataset, as well as **mexicanisms** (expressions proper to Mexican Spanish and used instead of Peninsular Spanish equivalents), as exemplified below:

- **d.** Americanisms: carro (MEX) instead of el coche (ESP) to refer to a car; el cotonete (MEX) instead of el bastoncillo (ESP) to refer to a cotton swab; el jugo (MEX) instead of el zumo(ESP) to refer to juice; the expression por x tiempo (MEX) instead of durante x tiempo (ESP) to refer to the duration of an activity (for x minutes/hours); tomar or agarrar(MEX) instead of coger(ESP) to denote the verb "to take".
- e. Mexicanisms: el popote (MEX) instead of la pajita (ESP) to refer to a straw; la cajuela (MEX) instead of el maletero (ESP) to refer to a trunk of a car; la recámara (MEX) instead of la habitación(ESP) to refer to a room; la nieve (MEX) instead of el helado (ESP) to refer to ice cream; el piso de duela (MEX) instead of el parquet (ESP) to refer to a wooden floor; el durazno (MEX) instead of el melocotón(ESP) to refer to a peach; la vitrina (MEX) instead of el escaparate (ESP) to refer to a shop window; la llave (MEX) instead of el grifo (ESP) to refer to a faucet; el trapeador (MEX) instead of la fregona(ESP) to refer to a mop; el metate (MEX) referring to a grinding stone used to grind spices or corn; el molcajete (MEX) instead of el mortillo (ESP) to refer to a mortar; la charola (MEX) instead of la bandeja (ESP) to refer to a tray; aguarse (MEX) instead of diluirse (ESP) to refer to the verb "to dilute"; el temblor (MEX) instead of el terremoto (ESP) to refer to an earthquake; el tabique (MEX) instead of el ladrillo (ESP) to refer to a brick; el buró (MEX) instead of la mesita de noche(ESP) to refer to a bedside table; la banqueta (MEX) instead of la acera(ESP) to refer to a sidewalk; el borde de la banqueta (MEX) instead of el bordillo de la acera (ESP) to refer to a curb of a sidewalk; los huaraches de cuero (MEX) instead of las sandalias de cuero (ESP) to refer to leather sandals; el resistol (MEX) instead of la pega (ESP) to refer to glue; la alberca (MEX) instead of la piscina(ESP) to refer to a swimming pool; el elote (MEX) instead of el maíz (ESP) to refer to corn; el jitomate (MEX) instead of tomate (ESP) to refer to red tomatoes; prender (MEX) instead of encender (ESP) to denote the verb to turn on; la llanta ponchada (MEX) instead of la llanta pinchada (ESP) to denote a flat tyre.

The regional differences between the two varieties of Spanish have been incorporated both at the **lexical level** as described above and at the **syntactic level** (the periphrastic future ir + infinitive: vamos a mojar la tela = we will soak the cloth instead of futuro imperfecto: mojaremos la tela = we will soak the cloth; pretérito perfecto simple, e.g., tomé, agarré: I took, instead of pretérito perfecto compuesto he tomado, he agarado: I have taken). The pronouns usteded (plural: you) are used instead of vosotros (plural: you), which is used in peninsular Spanish.

The Mexican dataset is thus both lexically and gramatically different from the Peninsular Spanish dataset and reflects the vocabulary use and the grammatical structures that make the Mexican Spanish variety linguistically distinct from the Peninsular Spanish one.