Types of Relationships between Events: Their Implication in the Stimulus-Response Relationship

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"Every action of the individual is unique,
as well as every event in physics and chemistry."
(Skinner, 1953/65, Science and human behavior, p.19)

The stimulus, like the response, is an event. Therefore, their relationship can be studied as a relationship between events. This paper describes and analyzes various types of relationships between events and discusses the appropriateness or inappropriateness of each type of relationship as an adjustable or illustrative model of the stimulus-response relationship. The "totally modifying, unidirectional and continuous reciprocal relationship" is proposed as the model which better represents the relationship between stimulus and response. The stimulus-response relationship is inadequately represented by both the interbehaviorist diagram (Behavioral Segment) and by the radical behaviorist diagram (Three Term Contingency). Here, we propose some modifications to both diagrams so they show more precisely what interbehaviorists and radical behaviorists want to show with their diagrams. Finally, the unified behaviorist diagram proposed by Los Horcones is presented.

Introduction

It is said that the stimulus is related to the response and that the response is related to the stimulus. In order to describe this relationship, terms such as "interrelation", "interaction", "interdependency", "interconnection", "mutual effect", "reciprocal influence", are used. But which is the precise meaning of these terms and what types of relationships do they involve?

What is a relationship?

What is a relationship? When is it said that two or more events are related?
We say that two or more events are related when in one way or another, one has an effect on the other or they affect each other.

Types of relationships between two events

There are different criteria we can use to classify the relationships between two events:
1) According to how they relate.
2) According to the direction in which they relate.
3) According to the events that are modified by the relationship.
4) According to the duration of the relationship.

Let us see each of them.

1. According to how events relate, the relationship can be:
a) Reciprocal
b) Non-reciprocal

a) A reciprocal relationship is a type of relationship between events in which all events relate to each other. For example event X and event Y; where event X relates to event Y and event Y relates to event X.
b) A non-reciprocal relationship is a type of relationship between events in which not all events relate to each other. For example between event X and event Y; where event X relates to event Y but event Y does not relate to event X; or where event Y relates to event X but event X does not relate to event Y.

The reciprocal relationship between two events is possible only if the events are not modified when relating. Thus, there is a reciprocal relationship between X and Y, only if they remain unmodified. However, we could speak of a reciprocal relationship between X and Y if we refer to them as event class. For example: X is reciprocally related to Y in the following case:

$X\text{----}>Y\text{----}>X^1\text{----}>Y^1\text{----}>X^2\text{----}Y^2$

The event class X is reciprocally related to the event class Y because the event class X and Y remain unmodified as a result of the relationship, although modified as members of a class. This distinction between reciprocal relationships and between particular events and class events is very important when referring to the stimulus-response relationship, as we will see further ahead.
The second criterion to classify event relationships is the following:
2) According to the direction in which events relate:
a) unidirectional relationships
- Forward unidirectional relationships
- Backward unidirectional relationships
b) Bi-directional relationships

a) Unidirectional Relationships
A forward unidirectional relationship is a type of relationship between event X and Y, when X happens before Y and where the relationship occurs only forward. X relates to Y without Y relating to X.

A backward unidirectional relationship is a type of relationship between event X and Y, when X happens before Y and where the relationship occurs only backwards. Y relates to X without X relating to Y.

b) A bi-directional relationship (forward and backward) is a type of relationship between X and Y, when X happens before Y, and where the relationship occurs forwards and backwards. X relates to Y and Y relates to X.

The third criterion for relationship classification is:
3) According to the events modified as a result of the relationship:
a) Modifying relationship
Totally
Partially
b) Non-modifying relationship

a) Modifying relationship. A totally modifying relationship is a type of relationship between events in which all the events involved in the relationship are modified as a result of the relationship. For example, in the relationship between X and Y, both are modified.

A partially modifying relation is a type of relationship between events in which not all the events involved in the relationship are modified as a result of the relationship. For example, in the relationship between X and Y, only X or only Y are modified when relating, but not both of them.

b) Non-modifying relationship. It is a type of relationship between events in which none of the events involved in the relationship are modified as a result of the relationship. For example, in the relationship between X with Y, neither X nor Y are modified by relating to one another.

4) According to the duration of the relationship
a) Continuous
b) Discontinuous

a) A continuous relation is a type of relationship in which the events are always relating.

b) A discontinuous relation is a type of relationship in which the events are not always relating.

Mixed Relationships

More than one type of relationship can exist between two events. We will present four possibilities, which we consider useful for analyzing the stimulus-response relationship
1) Reciprocal, unidirectional relationship (forward or backward)
2) Reciprocal, bi-directional relationship
3) Reciprocal, totally modifying, bi-directional relationship
4) Reciprocal, totally modifying, unidirectional relationship (forward or backward)

Now let us define each of them.
1) Reciprocal unidirectional relationship
It is a type of relationship between X and Y, where X relates to Y in one direction and Y relates to X in the same direction.

This type of relationship can be: a) forward, or b) backward.
a) Forward: is a type of relationship between X and Y, where X relates to Y forward, and Y relates to X in the same direction.

X----->Y------>X

(X is related forward to Y, and Y is related forward to X).

Note. Unidirectional forward reciprocal relationships are possible only between events that are not modified as a result of their relationship. X remains being X after Y occurs.

b) Backward: is a type of relationship between X and Y where Y relates to X backwards and X relates to Y backwards.

X<-------Y<--------X

(X relates to Y and Y to X, backwards).

Note. Unidirectional backward reciprocal relationships are not possible between events which happen in a temporal dimension.

2) Reciprocal bi-directional relationship.
It is a type of relationship where X relates to Y and Y to X in both directions.

X<---------->Y

(X relates to Y forward, and Y relates to X backwards).

Note. The bi-directional reciprocal relationship is possible only between events that are not modified as a result of the relationship. A bi-directional reciprocal relationship is not possible between events, which occur in time.

3) Reciprocal totally modifying bi-directional relationship
It is a type of reciprocal relationship between X and Y in which both are modified as a result of the relationship and the modifying effect operates forwards and backwards

X^1/X<---------->Y/Y^1.

(X relates forward to Y and modifies it into Y^1. Y^1 relates backwards to X and modifies it into X^1)

Note. This type of relationship is not possible between events that occur in time. The event (Y^1), which occurs in t^2, cannot affect a new event (X), which occurred in t^1.

4) Reciprocal totally modifying unidirectional relationship
This type of relationship can be: a) forward, or b) backward
a) Forward reciprocal totally modifying unidirectional relationship. It is a type of relationship between X and Y in which both are modified as a result of their relationship but the modifying effect only operates forward.

X----->Y/Y^1------>X/X^1.

(X relates to Y and modifies it to Y^1. Y^1 relates to X and modifies it to X^1. The modifying effect only operates forward).

Note. This type of modifying reciprocal relationship is not possible between events that happen in a temporal dimension time. X occurs in t^1 and in t^2. Further ahead we will see a diagram form of this type of relation, which eliminates this disadvantage.

b) Backward reciprocal totally modifying unidirectional relationship. It is a type of relationship between X and Y in which both are modified as a result of the relationship but the modifying effect only operates backwards.

X^1/X<---------Y^1/Y<---------X.

(X relates to Y and modifies it to Y^1. Y^1 relates to X and modifies it to X^1. Modification occurs backwards).

Note. A modifying reciprocal relationship is not possible in events that happen in temporal dimension. Event X occurred in t^3 affects the event that occurred in t^2, and the event Y^1 that occurred in t^2 affects the event X that occurred in t^1.

Characteristics of the events involved in a relationship

The events that relate can be:
a) Dependent
b) Interdependent
c) Independent
d) Repeatable
e) Non-repeatable
f) Modifiable
g) Unmodifiable

Let us see each of them:
a) Dependent: Events X and Y are dependent if the occurrence of event X depends on the occurrence of event Y but the occurrence of event Y does not depend on the occurrence of event X; or if the occurrence of event Y depends on the occurrence of event X, but the occurrence of event X does not depend on the occurrence of event Y.
b) Interdependent: Events X and Y are interdependent if the occurrence of event X depends on the occurrence of event Y; and the occurrence of event Y depends on the occurrence of event X. Event X and event Y cannot occur without each other.
c) Independent: Events X and Y are independent if the occurrence of event X does not depend on the occurrence of event Y and the occurrence of event Y does not depend on event X.
d) Repeatable: An event that occurs more than once in time. Event X occurs in t^1 and in t^2. (X is the same event).
e) Non-repeatable: An event that occurs only once in time.
f) Modifiable: An event that can change in some aspect.
g) Unmodifiable: An event that cannot change in any aspect.
The behavior and the environment are interdependent, non-repeatable (unique) as a particular instance of behavior or environment, and repeatable as a behavior or environment classes; and modifiable.

Interbehaviorist Diagram and Radical Behaviorist Diagram

Based on the relationships between events mentioned earlier, let us analyze the diagrams proposed by interbehaviorism and radical behaviorism.

Interbehaviorist Diagram

For interbehaviorism, the stimulus-response relationship is a bi-directional reciprocal relationship. The diagram it proposes is:

S<---------->R

(the stimulus relates to the response and the response relates to the stimulus. The relationship between them is reciprocal).

Advantages of the diagram:
a) Shows a reciprocal relationship between stimulus and response.

Note. A reciprocal relationship between particular events that change as a result of the relationship, such as the relationship that occurs with the stimulus and response, is not possible. If letter S refers to the stimuli and R to the responses, then a reciprocal relationship is possible between them. (The terms "stimuli" and "responses" refer to event classes).

b) Shows a continuous relationship between stimulus and response.

Disadvantages of the diagram:
a) It does not show a modifying relationship between the stimulus and the response (the diagram does not show that the stimulus as well as the response are modified as a result of the relationship).
b) It shows a reciprocal relationship between the stimulus and the response in a backward direction. The R which occurs in t^2 affects the S which occurred in t^1. (S<----------R)

Note. The backwards reciprocal relationship between stimulus and response is not possible since a stimulus, which already occurred, cannot be affected by the response which occurs. R occurs in t^2 so cannot affect S which occurred in t^1.

It is clear that we can speak of unidirectional modifying reciprocal relationships (but not about bi-directional modifying reciprocal relationships) between stimulus and response since both modify each other when relating but they do it only in a forward direction.

We could reduce the disadvantages of not pointing out the modifying reciprocal relationship between stimulus and response of the interbehaviorist diagram using the following:

S^1---------->R^1
S^2<----------R^2

(Stimulus 1 modifies Response 1 and turns it into Response 2. Response 2 modifies Stimulus 1 and turns it into Stimulus 2).

Advantages of this diagram:
a) It shows a reciprocal relationship between the stimulus and the response.
b) It shows a continuous relationship between the stimulus and the response.
c) It shows a modifying relationship between the stimulus and the response. (The stimulus as well as the response changes when relating).

Disadvantages of the diagram:
a) It shows which of the responses affects the stimulus in a backwards direction. R^2, which occurs in T^2, affects S^2, which occurs in t^1.
b) It does not clearly show how R^2 modifies S^1 to turn it into S^2 as a result of the relation.

We could eliminate these disadvantages with the following diagram:

-------S^1---------->R^1-->R^2---------->S^1-->S^2-------

(S^1 affects R^1 modifying it to R^2; R^2 affects S^1 modifying it into S^2).

But a disadvantage remains: S^1 occurs both before R^1 and after R^2. This is not possible in events that happen in a temporal dimension.

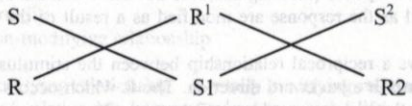
We could eliminate this disadvantage with the following diagram:

-----S^1---------->R^1-->R^2---------->S^2--->S^3------

(S^1 affects R^1 modifying it to R^2; R^2 affects S^2 modifying it to S^3).

But a disadvantage remains: Although it shows that S^1 modifies R^1 into R^2, it does not show how R^2 modifies S^1 into S^2.

We could eliminate this disadvantage with the following diagram which is proposed by unified behaviorism:



This diagram shows how S and R are modified into S^1 and R^1 when relating and when S^1 and R^1 relate are modified into S^2 and R^2. This is the diagram proposed by the unified behaviorism.

Advantages of this diagram:
a) It shows a reciprocal relationship between stimulus and response.
b) It shows that the reciprocal relationship is modifying.
c) It shows that the reciprocal relationship between stimulus and response is totally modifying, which means that both change as a result of the relationship. Therefore, neither the same stimulus nor the same response is ever repeated.
d) It shows that the totally modifying reciprocal relationship is unidirectional —forward. The stimulus and the response are modified forward.
e) It shows a continuous and unidirectional totally modifying reciprocal relationship between the stimulus and the response.

There exists another way of modifying the scheme of the stimulus-response relationship proposed by interbehaviorism:
From the original diagram S<---------->R (Reciprocal relationship between the stimulus and the response) to the diagram

SE---------->RC------->SC

(Reciprocal relationship between a class of stimuli and a class of responses)

Note. From the diagram S<--------->R we do not continue to the diagram SC<--------->RC but rather to SC-------->RC------->SC. The reason is that diagram SC<-------->RC shows a bi-directional reciprocal relationship between stimulus classes and response classes but bi-directional ability is not possible between events which happen in time.

Radical Behaviorist Diagram

Now let us analyze the stimulus-response relationship diagram proposed by radical behaviorism.
The diagram is:

S---------->R--------->S

(The stimulus that occurs before the response relates to it, and the response relates to the stimulus that follows it).

But what behaviorists really read in this diagram is: "the antecedent stimulus affects the response and the response is affected by the consequent stimulus".
Advantages of the diagram:
a) It shows a reciprocal relationship between stimulus-response (although the relation is only forward).
b) It shows unidirectionality (although the form in which behaviorists reads it "the antecedent stimulus affects the response and the response is affected by the consequent stimulus" it shows bidirectionality).
c) It shows that the stimulus and the response occur in a temporal order (as it is indicated in the diagram, not as it is read).
Disadvantages of the diagram:
a) It does not show a modifying reciprocal relationship between the stimulus and the response.
b) According to the way behaviorists read it, it shows that the response affects the stimulus backwards. R, which occurs in t^2 and is affected by S, which occurs in t^1.
c) It does not show continuity.

If the diagram reads: "the stimulus affects the response which produces a stimulus (consequence) which affects the response." Therefore we should use the following:

S------->R< ------->S

(The stimulus relates to the response. The response relates to the stimulus that follows it and this stimulus relates to the response).

Advantages of the diagram:
a) It shows a reciprocal relationship between the stimulus and the response.
Disadvantages of the diagram:
a) It does not show a modifying relationship between the stimulus and the response.
b) It shows that the stimulus affects the response backwards
c) It does not show continuity.

We could eliminate the disadvantages of this diagram with the following:

------S^1--------->R^1--------->S^2---------->R^2------

(Stimulus 1 relates to response 1. Response 1 relates to stimulus 2. Stimulus 2 relates to response 2).

Advantages of the diagram:
a) It shows a relationship between behavior and environment.
b) It shows that the stimulus and the behavior relate forward (unidirectional).
c) It shows continuity.
Disadvantages of the diagram.
a) It does not show a modifying relationship between the stimulus and the response.

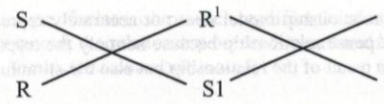
We could eliminate this disadvantage with the following diagram:

---S^1----->R^1-->R^2------>S^2--->S^3---------

(S^1 affects R^1 modifying it to R^2, R^2 affects S^2 modifying it to S^3).

Disadvantage of the diagram:
a) Although it shows that S^1 changes R^1 to R^2, it does not show how R^2 changes S^1 to S^2.

We could eliminate this disadvantage with the following diagram:



This diagram shows how S and R are modified into S^1 and R^1 when relating and when they relate are modified into S^2 and R^2.

This is the diagram proposed by unified behaviorism.

Advantages of the diagram:
a) It shows a reciprocal relationship between the stimulus and the response.
b) It shows that the reciprocal relationship is modifying.
c) It shows that the reciprocal relationship between the stimulus and the response is totally modifying, with the stimulus as well as the response change as a result of the relationship. Therefore the same stimulus and the same response never repeat.
d) It shows that the totally modifying reciprocal relationship is unidirectional —forward. The stimulus and the response are modified forward.
e) It shows that the totally modifying forward unidirectional reciprocal relationship is continuous. The stimulus and the response are always relating.
This type of diagram shows more clearly the type of relationship proposed by radical behaviorism where the contingency scheme shows the three terms as immutable.

There is another form of modifying the stimulus-response relationship proposed by radical behaviorism:

From the original diagram:

S---------->R--------->S

to the diagram:

SC---------->RC------->SC

(Reciprocal relationship between a stimulus class and a response class) is developed. But the relationship is between event classes and not between a stimulus and response.

Possible types of relationships between stimulus and response

We will analyze the types of relationships between the stimulus and the response progressing from the most simple to the most complex.

1. S------->R (The stimulus relates to the response).
Type of relationship:
Non-reciprocal (The stimulus relates to the response but the response does not relate to the stimulus).
Unmodifying (The relationship between stimulus and response does not modify the stimulus, nor the response).
Unidirectional (The relationship between the stimulus and the response only occurs in one direction:)
Discontinuous (No continuity is shown in the relationship).

2. R-------->S (The response relates to the stimulus)
Type of relationship:
Non-reciprocal
Unmodifying
Unidirectional
Discontinuous

3. S <---------> R (The stimulus relates to the response and the response to the stimulus)
Type of relationship:
Reciprocal
Non-modifying
Bidirectional
Continuous

Note. This is the inter-behaviorist diagram. It is appropriate in the sense that it shows a reciprocal relationship between the stimulus and the response but it is inappropriate in the sense that it does not show that they are both modified as a result of relating.

4. S------>R----->S ------->R----->S (The stimulus relates to the response, and the response to the stimulus).
Type of relationship:
Reciprocal
Non-modifying
Unidirectional
Continuous

5. S-------->R^1/R^2 (The stimulus relates to the response and modifies it from R^1 to R^2).
Type of relationship:
Non-reciprocal
Partially modifying
Unidirectional
Discontinuous

6. R--------->S^1/S^2 (The response relates to the stimulus and modifies it from S^1 to S^2).
Type of relationship:
Non-reciprocal
Partially modifying
Unidirectional
Discontinuous

7. ----S---------->R^1/R^2---------->S/S^1---- (The stimulus relates to the response and modifies it from R^1 to R^2. The response (R^2) relates to the stimulus and modifies it to S^1).
Type of relationship:
Reciprocal.
Totally modifying
Bidirectional (Although it seems unidirectional it is not because the relationship R2 to S1 is backwards.
Continuous

8. -----S-------->R/R^1---------->S^1/S^2---------->R^3/R^4----- (The stimulus relates to the response and modifies it from R to R^1. The response modifies (R^1) and relates to the stimulus (S^1) and modifies it to S^2. The stimulus S^2 relates to the response (R^3) and modifies it to R^4.
Type of relationship:
Reciprocal
Totally modifying
Unidirectional.

Continuous

Note. It does not show how S is modified to S^1.

9. S R^1 S^2

R S^1 R^2

S relates to R and as a result S is modified to S^1 and R to R^1. S^1 relates to R^1 and as a result S^1 is modified to S^3 and R^1 to R^3.

Type of relationship:
Reciprocal
Totally modifying
Unidirectional
Continuous

Note. This is the diagram proposed by unified behaviorism.

Modifying relationships between the stimulus and the behavior

There are three types of modifying relationships between the stimulus and the response:
a) Forward unidirectional totally modifying
b) Forward unidirectional partial modifying
c) Backward unidirectional totally modifying
d) Backward unidirectional partial modifying
e) Bidirectional totally modifying

a) Forward unidirectional totally modifying
It is a type of relationship in which the stimulus as well as the response are modified; the relationship occurs forwards.

S---->R-->R^1------->S->S^1

This relationship is totally modifying because the stimulus-response relationship modifies both. This relationship is unidirectional because the stimulus-response relationship only occurs forwards.

Note. This type of relationship does not accurately represents the stimulus-response relationship because R^1 which occurs in t^2 affects S which occurs in t^2 (although the diagram shows that events occur in time).

b) Forward unidirectional partially modifying
A type of relationship which modifies either the stimulus or the response and the relationship occurs forwards. There are two kinds of forward unidirectional partially modifying relationships: partial modification of response, and partial modification of stimulus.

Partial modification of the response:

S---------> R--> R^1

(S relates to R and modifies it to R^1).

This relationship is partially modifying because the stimulus-response relationship modifies the response.
This relationship is unidirectional because the stimulus-response relationship occurs only forwards.

Note: This relationship model does not accurately represent the stimulus-response relationship because not only the response is modified as a result of the relationship but also the stimulus.

Partial modification of the stimulus:

R--------->S--> S^1.

(R relates to S and modifies it to S^1).

This relationship is partially modifying because the stimulus-response relationship modifies the stimulus.
This relationship is unidirectional because the stimulus-response relationship occurs forwards.

Note: This model of relationship does not accurately represent the stimulus-response relationship because not only is the stimulus modified, but also the response.

c) Backward unidirectional totally modifying
It is a type of relationship which modifies the stimulus as well as the response; the relationship occurs backwards.

S1<---S<-------R^2<---R^1<---------S

(S relates to R^1 and modifies it into R^2. R^2 relates to S and modifies it to S^1).

d) Backward unidirectional partial modifying.
It is a type of relationship which modifies either the stimulus or the behavior; the relationship occurs backwards. There are two kinds of backward unidirectional partial modifying: partial modification of the response, and partial modification of the stimulus.

Partial modification of the response:

R^2<--R^1 <--------S

(S relates to R^1 and modifies it to R^2).

This relationship is modifying because the stimulus-response relationship modifies the response.
This relationship is unidirectional because the relationship only occurs in one direction: backwards.

Note. This model of relationship does not accurately represent the stimulus-response relationship for two reasons: a) not only the response is modified as a result of the relationship but the stimulus is also modified.

b) the S which occurs in t^2 can not affect R^1 which occurs in t^2

Partial modification of the stimulus:

S^1<---S^1 <--------R

(R relates to S^1 and modifies it to S^2).

This is a modifying relationship because the stimulus-response relationship modifies the stimulus.

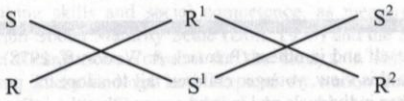
Note. This model of relationship does not accurately represent the stimulus-response relationship because of two reasons: a) both the stimulus and the response are modified as a result of the relationship. b) the R which occurs in t^2 can not affect S^1 which occurs in t^1.
c) Bidirectional totally modifying.

It is a type of relationship which modifies the stimulus as well as the response; the relationship occurs forward and backwards.

S^1<----S<---------->R----->R^1

Unified Behaviorist Model

Unified behaviorism describes the stimulus-response relationship as a totally modifying, unidirectional and continuous reciprocal relationship.



S relates to R and as a result S is modified to S^1 and R to R^1. S^1 relates to R^1 and as a result S^1 is modified to S^3 and R^1 to R^3.

We will define each of the terms used to classify the relationship.

- Reciprocal

The stimulus response relationship is reciprocal, when referring to the stimulus and response as event classes and not as particular events. Any stimulus-response relationship changes both therefore there is not reciprocity.

- Totally modifying

The stimulus-response relationship is totally modifying because the stimulus as well as the response change when relating.

Both the interbehaviorist and the radical behaviorist diagrams do not explicitly show the modifications of the stimulus and the response. Inter-behaviorism states that there is a reciprocal relationship between the stimulus and the response, but it does not make explicit the fact that the relationship modifies the stimulus as well as the response, making impossible any interaction between them. Therefore, it is not accurate to say that stimulus-response relationships as particular events are reciprocal because neither the stimulus nor the response remain unmodifiable.

Note. After relating, the stimulus and the response are never the same. They do not exist as immutable elements in a relationship. Thus, each instance of relating between a stimulus and a response is unique, although it occurs within a continuum of stimulus-response relationships (stimulus event classes and response event classes).

- Unidirectional

The stimulus-response relationship is always unidirectional. The stimulus and response only relate forwards. The reciprocal relationship between stimulus and response is not bi-directional because the stimulus occurring before a response cannot be directly affected by the response; nor can the response which occurs before a stimulus be affected by the stimulus which follows it. We cannot speak accurately of bidirectionality between events which occur in time.

The interbehaviorist diagram points out the bi-directional relationship between stimulus and response by showing between them an arrow in two directions. The radical behaviorist diagram implies bidirectionality when stated that a stimulus which follows the response, affects it, when states that the consequence affects the response which already occurred. The fact that the stimulus-response relationship is unidirectional does not mean that the stimulus and the response do not affect each other mutually (that there is not a modifying reciprocal relationship between them) but just that this reciprocity happens in the direction in which the events occur in time.

Relationship between the stimulus and the response as event classes

We could speak of a reciprocal stimulus-response relationship when we refer to stimulus classes and response classes. For example: S reciprocally relates with R in the following case.

S^1-------->R^1-------->S^2------->R^2------->S^3--------R^3.

The event class "S" is reciprocally related to event class "R".

- Continuous

The stimulus-response relationship is continuous. However it is opportune to clarify that the relationship is continuous only between the stimulus and response as event classes: this is to say, between the environment and behavior event. The relationship is not continuous between a particular environmental instance (stimulus) and a particular behavioral instance (response). Continuity in the same stimulus-response relationship is not possible because both response and stimulus change when relating.

Reciprocal relationship between particular events and event classes.

The stimulus and response events pertain to the environment class and to the behavior class. At a molar level, when referring, to behavior and environment (stimuli and responses) it is appropriate to speak about a reciprocal relationship between them; but a molecular level – when referring to a stimulus and a response, is not appropriate to speak of a reciprocal relationship. A reciprocal relationship is not possible between a specific environmental event (stimulus) and a particular behavior event (response) since both continuously change as a result of the relationship.

Neither the interbehaviorist nor the radical behaviorist models make explicit the following fact: the stimulus and the response are continuously modified as a result of their interaction.